HYDROGRAPHIC SERVICES REVIEW PANEL

JANUARY 25, 2005

Reported by: An N. Chau

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MR. RAINEY: I'm Scott Rainey, chairman of the Hydrographic Services Improvement Act, and I would like to welcome our presenters, speakers, and members of the public. We have a public sign-in sheet posted out front. I'd appreciate it if you sign in for us. I'm excited about today's meeting. We're focussing on NOAA's role and capabilities for their navigation services in recovery efforts for national manmade disasters and looking at their capabilities and re-opening the ports and supportive commerce.

And I just have a few brief opening remarks. I thought what we could do is turn over here directly to the large program, and if we can just take a minute and go around and let the Panel members introduce themselves and their affiliations, briefly, and the speakers we have as well. Again, I'm Scott Rainey, I'm chairman of HSRP. And maybe we can go around the table.

MR PARSONS: I'm Roger Parsons. I'm the director of the Office of Coast Survey and the designated federal official for this Federal Advisory Committee.

MS. BROHL: I'm Helen Brohl. I'm with the director of the U.S. Great Lakes Shipping Association. I'm currently deputy chair of the Panel.

MR. MCBRIDE: Adam McBride, Port of Lake Charles.

MR. SKINNER: Thomas Skinner. I'm with a small environmental consulting firm, Durand & Anastas in Boston, Massachusetts.

MR. OSWALD: John Oswald. JOA Consulting Firm in Anchorage, Alaska.

MR. LARRABEE: I'm Rick Larrabee. I'm director of Port Commerce and the Port Authority of New York and New Jersey.

MR. SZABADOS: Mike Szabados. Director of NOAA Center for Operation Oceanographic Products and Services.

MS. HICKMAN: Sherri Hickman. Houston Pilots Association.

MR. WEUST: John Weust, emergency preparedness manager for Marathon Oil Company, and I represent American Petroleum Institute.

MR. JAGOE: I'm Don Jagoe. I'm the vice president for the Marine Science Technology Division of Science Applications International Corporation.

MR. JANGULA: I'm Terry Jangula. I'm the site manager with Corps of Engineer of Panama City site office.

MR. RAWSON: Charlie Rawson. I'm with the

Coast Guard Sector of New Orleans out of New Orleans.

MR. BARNUM: Steve Barnum with NOAA, Mission Goal, Commerce and Transportation.

MR. KEENEY: Tim Keeney, deputy assistant secretary commerce, NOAA.

MR. WHITING: Larry Whiting. Hydrographic surveyor. Recently retired.

MR. DASLER: John Dasler, director of Hydrographic Services and David Evans & Associates.

MS. DICKINSON: Elaine Dickinson with Boat U.S. We have 630,000 members who are all recreational boat owners.

MR. WEST: I'm Dick West. I'm president of the Corps Consortium for Oceanographic Research and Education. We represent about 100 research and academic institutions in the United States and Washington D.C.

MR. MYRTIDIS: I'm Minas Myrtidis. Director of Norwegian Cruise Lines.

MR. ASLAKSEN: Michael Aslaksen, NOAA's national geodetic survey.

MR. LAPINE: I'm Lou Lapine. I'm chief of the South Carolina geodetic Survey.

MR. RAINEY: Okay. Thanks very much. All the gear checks out, and so it's a normal procedure.

We do have a court reporter to get a transcription. So, again, if members could use the mikes. The mikes work one at a time. It would be good to use it for today. Let me turn it over, then, to Captain Parsons for the International Operations.

MR. PARSON: Thank you, Scott. I'm Roger Parsons. One other function I'll serve today is as time manager, I think. We've got a full schedule. It's a little more lax in the afternoon because we weren't able to fill the program entirely, but this morning the agenda is fairly full. The intention is to allow the representatives of the various organizations to make their presentation, and then we will allot roughly 15 minutes for discussion of Q and A by members of the Panel.

Again, let me clarify. Again, this is a public meeting. Everything said is being recorded, and I ask that you speak clearly and enunicate and utilize the microphone so that everybody can hear.

It's my pleasure this morning to introduce our keynote speaker, Mr. Tim Keeney. Tim is the deputy assistant secretary for commerce for Oceans and Atmosphere. And in this capacity, he's responsible for NOAA's environmental policy strategic planning of the program analysis. His particular responsibility is

focused on coral reefs, habitat restoration, invasive species, an area that is a particular interest to those who are gathered in this room on NOAA Observation Systems.

Mr. Keeney was formally served as NOAA's general counsel as director of the National Ocean Services Ocean and Coastal Resource Management Office, and is the former commissioner of the Connecticut Department of Environmental Protection.

Mr. Keeney?

MR. KEENEY: Thank you, Captain Parsons, for that kind introduction. Good morning, everyone. On behalf of Vice Admiral Conrad Lautenbacher, who is the undersecretary of commerce and administrator of NOAA, I'm pleased to be here and welcome everyone this morning to what I hope will be an informative and productive day in reviewing the role of NOAA's Navigation Services in responding to emergencies that directly impact the U.S. Marine Transportation System.

First of all, I'd like to thank our host yesterday, Captain Rich Kasler (phonetic), captain of the port here in Houston, for giving us a tour of the ship channel, and taking us onboard the Sam Houston, and pointing out the various technology that's used on that vessel, and taking us through the vessel traffic

center to show us the VTS System. And what most impressed me, I think, was the NOAA's Navigation Response Team No. 4, which we were able to go aboard the vessel, talk to the crew.

And I was very impressed with the level of energy and determination and pride we have on the vessel. So I want to thank all those who were involved in setting up the events of yesterday afternoon. I certainly got a lot out of that, and very much appreciate being part of it.

I would like to take a moment to provide some background on the committee that is meeting here today and tomorrow, the NOAA Hydrographic Services Review Panel, so that we all understand the rationale and expectation for today's discussion.

In October of 2003, Secretary of Commerce, and that was Secretary Don Evans, established a Federal Advisory Committee as directed by the Hydrographic Services Improvement Act of 2002. In accordance with the Federal Advisory Committee Act, the Hydrographic Services Review Panel advises the NOAA administrator on matters related to NOAA's Navigation Services Programs.

Those are programs that reside primarily within three offices of the National Ocean Service. Those are the National Geodetic Survey, NGS, the Center

For Operational Oceanic Products and Services, CO-OPS, and the Office of Coast Survey.

This Panel is composed of a diverse field of experts in hydrographic surveying, vessel pilotage, port administration, tides and current, coastal zone management, geodesy, and recreational boating, marine transportation. The Panel provides the NOAA Administrator and Navigation Services program managers with an independent and objective perspective on how we're doing, how we can be better, and whether we're heading in the right direction.

NOAA's Navigation Services programs trace their roots back to President Jefferson's establishment of the Coast and Geodetic Survey in the year 1807. Jefferson recognized then the need for accurate navigation information to support the development and commerce of a new nation utterly dependent on the sea for trade and travel.

200 years later, as NOAA begins looking forward to celebrating the bicentennial of its nautical charting heritage in 2007, the nation continues to rely on the Marine Transportation System and NOAA's navigation data more than ever to fuel the economy and move goods and people safely and efficiently from place to place.

NOAA's Navigational Services provide professional mariners, ship's pilots, recreational boaters, port authorities, emergency responders, and coastal zone managers with an integrated suite of navigation and decision-making tools and services that are necessary to protect life, property and the environment.

Today, this Panel will review the role of NOAA's navigation service programs in responding to natural and manmade events impacting the nations's marine transportation infrastructure. The Panel's goal is to increase its own and the public's familiarity with NOAA's capacity to respond to maritime emergencies, to identity any gaps in NOAA's ability to provide emergency navigation services, and to develop recommendations and provide advice that will enhance these capabilities and capacities, strengthen the role of NOAA's hydrographic services contractors in emergency response, and improve Federally-coordinated and integrated navigation response efforts. We need to hear how to improve our services and response.

The Panel has invited representatives from the U.S. Coast Guard and Army Corps of Engineers to speak on their agency roles in responding to maritime incidents, along with representatives from various

sectors of the Marine Transportation Community who will discuss the impacts of port and water closures on their industries, the need to quickly re-open shipping channels to maritime commerce. The Panel also needs to hear their perspectives on NOAA's role in providing emergency navigational services.

The recent devastation brought by Hurricanes Katrina and Rita provides an opportunity to review NOAA's response activities within the context of these specific events. NOAA responded to the hurricanes on many fronts, from storm forecasting to commercial fishery recovery to coastal zone impact assessments. However, today we will primarily stick with navigational services response.

In 2005, the hurricane season certainly focused the spotlight on NOAA's Navigation Services emergency response capabilities. I believe we met the challenge. However, I freely acknowledge that this is not a fully objective opinion, and today's participants will provide us with a more global view.

It is an effective response to the hurricanes depended, without a doubt, on a combined effort. It was a team endeavor that included the Coast Guard, the Army Corps, the Navy, NOAA, and private sector contractors. It was truly a

federally-coordinated and integrated effort. NOAA programs mobilized on the ground, in the water, and in the air even before the storms hit the coast.

NOAA's response included the Office of Coast Survey, the National Geodetic Survey, the Center for Operational Oceanographic Products and Services, and the Office of Response and Restoration as part of the federal interagency response.

NOAA responded immediately to the destructive 2005 hurricanes with aerial imagery of the impacted coastline to help emergency responders assess the situation, Scientific Support Coordinators to address over 400 hazardous material spills, Navigation Response Teams to survey for obstructions to navigation in order for the Coast Guard to safely re-open the ports to maritime commerce recovery operations.

Before landfall, data from the National Water Level Observation Network tide stations in the region helped forecasters make accurate storm surge predictions and provided emergency responders with realtime storm tides -- storm tides. Following the re-opening of the Ports of Houston and Galveston, NOAA's Physical and Oceanographic Realtime System, PORTS, facilitated the safe movement of ships lined up offshore into these critical ports.

It's important to recognize how dependent the Gulf is on maritime transportation, and how dependent the nation is on the Gulf for imports and exports, food goods, oil and petroleum.

Ninety-five percent of the overseas trade goods, more than two billion tons of both domestic and foreign commerce, pass through America ports each year. The Port of New Orleans, the nation's fifth largest port, thought it would be shut down for at six months or more. With NOAA's Navigation Response Team and Corps of Engineers surveys to verify clear shipping channels, the navigation lanes were re-opened 14 days after Katrina.

Even today, the NOAA capabilities continue to support the impacted areas with response to spills and maritime incidents, which you saw yesterday NRT 4 on the ship channel.

NOAA has also invested more than $3.7 million in 2005 grant funding to Gulf states to build, and in some cases re-build, infrastructure and capacity to determine and deliver consistent, accurate and timely height information.

Accurate land and water levels are critical to determining effective highway evacuation routes, storm surge modeling, flood plain damage, sub-flood

plain damage, sea level rise calculations, vessel under-keel and bridge clearance, subsidence monitoring, and restoration of coasting habitats.

On a related note, the United States is in the process of identifying the components of an integrated Ocean Observing System called "IOOS". I specifically want to bring this to your attention because this is a hot topic of NOAA. I want to make sure -- I know the Panel is familiar with this, but that others are as well.

Within IOOS, I stress the word "integrated", Integrated Ocean Observing System. It involves the cooperation and support of federal agencies with marine mandates, regional associations that are composed of regional stakeholders, and the representatives that use, depend on, manage and study marine systems, including state and local governments, universities and private sectors.

IOOS is being designed to satisfy user needs for coastal and ocean data, and will facilitate the greater understanding and mitigation of ocean resource issues. The first IOOS Development Plan has recently been approved by the Interagency Committee tasked to coordinate and integrate activities of ocean-related federal agencies.

The system is envisioned as a coordinated national and international network of observations, data management and communications, and data analysis and modeling that systematically acquires and disseminates data and information on past, present and future states of the oceans and coasts, and the Great Lakes.

Beneficiaries will include resource managers, emergency responders, scientists, Homeland Security officials, educators, and marine transportation community. The United States has hundreds of coastal ocean observing systems that have been built for different purposes and applications.

These systems may become part of the federal national backbone, or may become part of a regional observing system that generates tailored products and services to address specific regional and local ocean resource needs.

Members of the marine transportation community gathered in this room today, benefit every day from existing components of IOOS, data provided by the 13 Physical Oceanographic Realtime Systems that assist in transiting ships safely in and out of ports, data from the National Water Levels Observation Network that support storm surge forecasts and tidal

predictions, and bathymetric data acquired by NOAA hydrographic assets and its contractors to support the production and maintenance of accurate nautical charts and the development of storm surge models.

National IOOS guidance provided by NOAA and other federal agencies will ensure that the regional systems will continue to evolve organizationally, and involve stakeholders in the design of the regional observing system and the evaluation of the system's performance. Stakeholders' involvement, particularly that of the marine transportation community, will be critical to the success of IOOS. I urge those in this community who are not engaged in their regional association to do so that your interests are represented and your requirements can be met.

Another point I wanted to make was NOAA's leadership fully supports NOAA's navigational services programs, though our domestic programs are competing for scarce federal resources. Of course, many of you know that the appropriations subcommittee has been reorganized on Capital Hill, and particularly on the Senate side right now and the House.

NOAA is planning to -- sort of skip page (phonetic) of competition with agencies like NASA and

the National Science Foundation. And I just wanted to make sure people understood that this competition is -- can be fierce. We're talking about science, and NOAA is not the best known of the three agencies, nor do we have the best, sort of, people looking out for us on that committee. The people who looked out for us in the past, they're no longer there. So I think it's more important that people on those committee be educated as to what NOAA is all about and how it fits together.

We're one of many agencies with important programs that have national relevance and benefit. If you, the members of the marine transportation community, are concerned about how NOAA is supporting your requirements, please let us know. The Administration of Congress also want to hear from you, to be sure that we are all aware of issues and concerns impacting the U.S. Marine Transportation System.

In closing, I'd like to note that NOAA's outstanding response to Katrina and Rita is the norm for these programs, how they operate on a daily basis. Our previous experience in providing response services alongside our federal and private sector partners has helped ensure the success.

The 2005 hurricane season is indicative of

their exceptional performance to virtually every -- to virtually any event requiring NOAA support that impacts our marine transportation system.

I want to thank you, and answer any questions you might have. I'm going to be here, by the way, the entire day. So if you have any questions I can answer, I'd like to do so. No questions?

MR. MCBRIDE: Mr. Keeney, if I may?

MR. KEENEY: Please.

MR. MCBRIDE: You referred to the physical oceanographic system and its role, an integrated observing system, as well as the fact that it provides services to 13 ports. But we understand that that system is significantly at risk to the budget cuts, and is on life support, at least for the current fiscal year, pending the fiscal '07 budget outlook, with a very real possibility that it will be reduced in scope rather than enlarged.

And we understand, as well, that the 13 ports, which we have a PORTS system, have it largely because they have national resources to acquire those facilities, while there has not been an objective strategic economical or safety analysis of the various ports and using that as a basis for inserting port systems.

I'm wondering if you can guide us on how -- Since you have asked us for our input on it, if we're not doing well enough in certain areas, we're not doing well enough on ports. And perhaps you can guide us on how we can better convey to the leadership of NOAA, and certainly into the budget committees that are responsible, the importance of these types of systems, and in deed to not only fall on that previous level, but to extend them to those strategic and economically critical ports throughout the nation.

MR. KEENEY: Thank you for that question. As you know, these are tough budget times, and NOAA's got all the money that they need to do its job, and Congress thinks they gave it to us. The PORTS system is designed as a shared-cost system, and that NOAA provides certain services. The local committee pays for its share of those services.

That's just the way the program is designed. I think ideally we'd like to have it where NOAA provides a greater financial participation. However, I think that -- particularly, one thing this committee panel could be very helpful on is you stay focused on the value of the PORTS system.

And what it means at the local level, with regards to the transport commerce -- this, of course,

is the commerce across the nation, not just for that port -- I think that many of the people on the Panel are folks who are aware of the recent study done in Tampa where it indicated the benefits -- I think it was somewhere around $1 million, I think, was invested in the PORTS system in the range of $7 million.

I'd like to hear a little more about that myself to better understanding exactly what those benefits were, and how they relate to the local region, how they relate to the larger area. But that kind of approach, I think, is -- has a lot of sway in convincing appropriate managers and people on the Hill that this is a system that has much larger benefits than readily apparent.

So I think that kind of analysis, if it could be provided to us, could indeed be helpful in our being able to underscore the importance of that program, and importance in expanding the program with regards to federal investments.

MR. RAINEY: Other questions?

MS. BROHL: If I may, to elaborate on what Adam McBride had said. I think -- I know that the Panel has sent recommendations to the administrator in the past supporting ports, and we appreciate the fact that you acknowledge it. And the importance of ports

in real-time hydro observation in IOOS. So we thank you very much for kind of hearing back that it's understood at your level.

What -- There's two aspects to ports, and we have discussed in the past with a cost-share issue. But put that aside for a minute and to -- Because you understand that the Hydrographic Services Improvement Act says that the administrator of NOAA shall fund these realtime systems, subject to appropriations, of course. So putting that aside and whether somebody in your industry could convince Congress to support it.

We expressed concern amongst ourselves yesterday, not having yet decided how we would follow up, about the fact that in the '06 budget Congress/Senate in this case -- naivete, perhaps, that's how I would like to look at it -- actually cut just the administrative money of ports, not -- They obviously didn't put any money to create new port sites or to do operation and maintenance port sites, but the basic administrative money to support ports was cut in half.

This means that all the resources under CO-OPS have had to be reshuffled to even provide the data in this budget in this fiscal year. And it's only a million and a half dollars. And we do respect

completely the fact that NOAA's budget was cut overall. It's very difficult.

But without having any -- We have not discussed at length without having any thoughts on how a million and half dollars could be found in NOAA to keep the program running. What would be a shame. And I realize it's not NOAA's fault. It's Congress's fault. It would be a shame if these -- It's tough enough that we have to force a locality to come up with their own money to support their navigation safety. That's a Congress issue, probably.

It's really nerve wracking to think that these people have come up with money to support their own and maintain their port site, but NOAA may not have the money to even provide that data within six months because it was cut in half.

Again, don't have any thoughts on how it could be assisted, but it is a consideration, and I wanted to clarify that because in -- There's two aspects to discussing ports: One, is that long-term support and growth support, our realtime systems; and the other is this burden hand we have, which is unfortunate that NOAA may not be in the position to even continue providing that data. So Sherri would go online in six months, and it wouldn't be available for

her because Congress cut it in half.

So, again, I have no answers to it, but I want to clarify the immediate concern, and that was that there's no administrative for ports at this time.

MR. KEENEY. I think a couple of important points: Number one, it's important to hear from the Panel about the importance of this program and its value. I think I made that point already, but it's important to know because that allows NOAA to react about it as best we can, and say this is a priority of the program.

As you know, in the 2006 budget, because of -- I think there's a direct correlation put on various terms between earmark's impact on NOAA's basic programs. What we have is $600 million earmarks. Because of that and because of the fact there were various special items -- like the hurricane response and the War in Iraq -- needed to be funded.

The subcommittee looked for places where they could find money, and it looked at NOAA's overall level of funding and said, "It went up by a couple of hundred million -- several hundred million. So they're in good shape. So we'll take a couple of hundred million out of that." So that's why NOAA ended up with $234 million of program cuts to its base budget.

And I think that the earmark element of that is directly related to that. So I would encourage support for our base program. And with regards to the PORTS system, again, I think -- Again, communications are important. The Panel can report back. Letters are important, too. You may be interested in the level of tension that hundreds of letters get, in a very positive sense, with regards to "Jeez, this really does underscore the importance of this program" and we need to do all we can to support it."

I think 2006 is what got us -- a wake-up call for a lot of these programs that we thought were pretty in good shape, and we thought Congress understood the importance of them. Obviously, there was not quite as much understanding as we would have liked to have had on the Hill. And this is -- This is the year we need to double our efforts to make sure that these values of the programs are understood, and the implications to reduce the support as to what that means, and the alternative, what additional dollars would build towards a future network.

MR. RAINEY: Mr. Secretary, I'd would like to just tell you, after -- upon our briefing from the program manager, Mike Szabados, yesterday, in offer that we accept that invitation. We've got a number of

people, and we've been following closely to the development of the IOOS.

And we are going to look at a strategy to try to provide some recommendations to the program for short term that may be helpful in bridging the program until the IOOSs are to comment with those requirements and in that context. And so we'll definitely follow up on that and with that work.

And I think it's an interesting time right now as the IOOS is building the capacity, going through the developmental stages to -- I think in general, we can say, from our work and our interests with the maritime industry here and through the fact, that we certainly would love to see continuous support of NOAA's navigation services, their existing level. And hopefully we can work together to build those. And we'll try to come up with some ideas here presently on -- for that particular program to bridge that over.

MR. MCBRIDE: Mr. Keeney, Adam McBride speaking again. This is a great discussion, but I just -- I come back with the fact -- at least I and several other members of this panel -- all spent many, many days and hours working on this issue. We have recommended to NOAA the expense and solid funding for ports.

We spent a lot of time on that subject on observing systems. Many of us care about it and see the need for it very deeply, and, yet, we see it cut by 50 percent at the same time as we see the expansion of Alaska crew measurement by almost precisely the same dollar amount as ports was cut by.

And so given that we have been working on this issue, made these recommendations and done try to do the education, I guess I'm a little concerned that we're spinning the wheels, and we're not getting the message through. I suspect we're getting it to the leadership of NOAA, but we're probably not getting it through at Congress. So how can we do that?

MR. KEENEY: As I recall, the ports' budget was fully funded through Administrative Budget Request. And this is not the only program at NOAA that was severely impacted by budget cuts in 2006. There are several dozen programs that are in the same kind of shape.

Again, it was a real eye-opener to us, and, hopefully, to the constituencies who support these programs. I think there's a lack of understanding on the Hill of the importance of this program. So I think that it's our job to redouble our efforts this year to make sure -- Again, I fully support any comments that

you can give us that we can use as ammunition or for whatever other purpose to educate the Hill. I guess "ammunition" is not the right word.

But, anyway, I think -- And, again, and indicates what's at risk here. I think just from my perspective -- And I did work for six years on the Senate appropriation committee back in the good old days when there were lots of support for NOAA programs, and lots of understanding for their value. I think -- I don't think that's the case now. And as I said, with the competition we have with NASA, and NSF, and the fact that they have members on the subcommittees that are their flag carriers, very supportive of those agencies. And NOAA doesn't seem to have that, other than a regional, sort of local interest in the Gulf states.

I think we've got -- we've got to work that much harder this year, and expect that if we can get the word out and we can educate the members and we can underscore the priority programs and their value, then we can bring the level back up to where they need to be.

Of course, one of the problems we have is that when a program gets cut by Congress, no one is taking a look at that -- Somehow they look for savings

in the next year's budget, which sometimes relates to reduced level funding in 2007 versus 2006. That's another problem. It's an internal problem. Again, support from this Panel and input from this Panel can be tremendously valuable, and I encourage you provide that.

MR. LARRABEE: I know you understand all of this, but I'm encouraged of the fact that you came to tell us IOOS is important, and NOAA is stepping up to the plate, because that's important. We can argue about all of these -- One of your problems is, you know, is you have so many line items. And it's easy to pick them off, quite honestly. What you've got to do is roll up what's important for IOOS within NOAA and make that a line submission and make it important to the nation instead of us sitting here arguing about ports or this or whatever.

NOAA has to make a case that a basic fundamental forecasting system for the ocean is important. And you don't -- That's all part of it. And that's what -- So was encouraged by -- I don't think NOAA has said stepped up and said, "I'm going to be the lead program office for IOOS", yet. And I understand the politics behind that, but you're close. There are a few that came out to getting the industry

involved, explaining, designing what this is all about. It's important.

NOAA has to include ports. That's what we're saying here. If you roll that all up, I think we have a better case, not only for getting these things funded, but in these committees. I mean, everybody pretty much knows what NSF does. Everybody knows what NOAA does, for sure. But they're not quite sure what NOAA's mission is. You're going from fishes to weather forecasting. So we've got to make a case where ocean observing is an important mission of NOAA. A subpart of that is, of course, what you're seeing here on this Panel. That's what I think we ought to be doing, and we're certainly going to support it.

MR. KEENEY: I appreciate those comments, Admiral, and I think I'd underscore the word "roll up". It's incredibly important. NOAA needs to put together some of these programs and present them as a package. They can purse (phonetic) them out in the explanation, that explains why the number of dollar is important. But I think the package approach is the way to go.

I also think it's very important that the constituencies that benefit from these programs speak their mind and the upfront, and be counted in this process because it's important that our customers

(phonetic) enunciate what the value is of these programs and their importance. Not only to their particular locale, but their nation.

MR. LARRABEE: I agree. And we need to support NOAA based on that. When you have so many line items, when you cut them you get a million letters. But you have a huge number of line items so it becomes a bunch of letters -- about each particular line items instead of a bunch of letters that support NOAA's top line. That's really where we need to go. So we have to support what you can roll up for us. I think it's much more effective than us rolling in and asking for a paltry million and a half ports, which we all find quite amazing we can't come up with. But we can. The system doesn't allow us to the way it's done now. We've got to roll up as an important part of ocean observing. We can all jump on board, and everyone has to support the role of NOAA and the federal government.

MR. KEENEY: Thank you.

MR. PARSONS: As Tim mentioned, he'll be here all day. You'll have opportunities at lunch and otherwise to give him a piece of your mind. Thank you very much.

MR. PARSON. The next three speakers -- actually, the next four speakers will weave a story for

this Panel about, particularly, in the events of Katrina and Rita in the last few months about the integrated coordinated approach to respond to these type of calamities, NOAA, U.S. Coast Guard, U.S. Army Corps of Engineers, and one of our contracting partners will do just that.

To tell the NOAA piece of the story, Captain Steve Barnum, who is the Commerce and Transportation Goal Team Lead for NOAA. Captain Barnum has served for 25 years in the NOAA Commission Corps in a number of capacities. And this includes support to NOAA's Navigation Services programs. He has been the commanding officer of the NOAA Ship Whiting, and the NOAA Ship Thomas Jefferson, both hydrographic survey vessels. And prior to coming on board is the Goal Team Lead for Commerce and Transportation, Captain Barnum was the chief of the Office of Coast Survey Navigation Services Division. Captain Barnum?

MR. BARNUM: Thank you, Captain Parsons. It's a pleasure to be here to speak to this group. And it's fun to be here in Houston. The last time I was here in Houston, I was being chased by Hurricane Willie from Lake Charles to Houston, trying to make the decision which way the hurricane would go, and where I can take my ship to a safe port. So thank you, and

it's a pleasure to be here.

I'm going to talk about the introduction -- I'm going to give you an introduction while I talk about it, and that is NOAA's Mission Goal, Commission and Transportation, how that fits into NOAA in my role. NOAA's Navigation Services before, during, and after the event, a hazardous event, and assessing NOAA's Navigation Services response activities, and planning for the future.

So before I dive into the navigation services and response, I'm going to talk about the NOAA big picture. In this slide you'll see some familiar titles. On the left, the Atmospheric Research, NEDIS, National Ocean Service, National Weather Service. In the last three years, by the time the Logmagger (phonetic) has instituted a program that tie together these various -- what appear to be disparic programs, to maximize their effectiveness and their efficiencies.

And there are four mission goals: Ecosystem Goal Team, you think about as fisheries, the ecosystem sanctuaries; the Climate Goal Team, goal of the climatic change; the Weather and Water Goal Team, local forecast in the morning, hurricane prediction; and the Commerce and Transportation Goal Team.

The Commerce and Transportation Goal Team

ties together the programs from the various line offices, and it ties them to the strategic plan of NOAA's strategic plan so that your stakeholder's input, which goes to the strategic plan, then gets reflected into the Commerce and Transportation Goal. The programs that comprise the Commerce and Transportation Goal are the Marine Transportation System, Geodesy, Aviation Weather, Marine Weather, Surface Weather, and Emergency Response.

The Marie Transportation System was designed to enhance navigational safety and efficiency by improving critical information products and services for the nation's network of navigable waterways, ports and harbors, as well as intermodal hubs. Facilitating environmentally sound port development.

The Geodesy Program: Evolving and delivering the foundation of National Spatial Reference System for all positioning activities throughout the nation, including the Horizontal position. It includes models, tools, and local capacity to use the National Spatial Reference System. And I'll talk more about that later.

Aviation Weather: Developing and transitioning to service aviation weather forecast capabilities that reduce weather-related flight delays

and the number of weather-related mishaps.

Marine Weather: Increasing the safety and efficiency of marine transportation systems and other recreational and commercial activities through the production and delivery of marine warnings and forecasts. I think all mariners can relate to that one. And, certainly, the aviation when we all fly.

Surface Weather: Identifying and implementing internal and external partnerships to reduce the annual loss of life and productivity from surface transportation crashes and delays. This includes trucking, rail and pipeline. Surface weather plays a major role in pipeline.

Emergency Response: Reducing human risk as well as economic and environmental consequences resulting from natural or human-induced emergencies through coordination and integration of NOAA Emergency Response capabilities.

And finally, Commercial Remote Sensing Licensing and Compliance Program: It's a program we work with our commercial partner, and basically a shutter control. When they can and cannot take pictures of the area.

The goals and programs contribute to information that moves America so that in the future,

through our strategic plan, NOAA has enhanced the American public to know where they are, get where they are going safely and efficiently, make appropriate decisions for a safe, secure, efficient and environmentally sound transportation network. NOAA's essential services are uninterrupted, to depend on them, and are available during emergencies and critical events.

If you think of that in context of navigational services, I think you will agree that these goals capture what our customers demand with regard to navigation services; accurate and timely and dependable.

NOAA and Hazards: I'm going to talk about three phases; before, during and after. Preparation, response and rebuild. So I'm going to talk about how NOAA is postured to help communities prepare, respond, and rebuild in the event of a maritime disaster event that affects the MTS.

First, I'll talk about preparation. Strong, local partnerships ensure an integrated response to hazards. We couldn't have been successful without partnerships. For example, our navigational managers, our MTS national geodetic survey state advisors that work with the local, state community for

positioning. Scientific support coordinators that work with the local communities on school response.

The need for a strong relationship before an incident cannot be overstated during an emergency. It's too late to figure out who is your partner and how you're going to engage successfully. NOAA participates in and conducts oil spill exercises that involve many of our services that include exercises by the partners of Homeland Security, Coast Guard, and local and state authorities.

A NOAA Wide Approach: I'm going to talk about what happens at the headquarters. We talked about local partnership is very important, and I will say partnerships are critical. NOAA doesn't do it alone. We have partners, which include the Coast Guard, Corps of Engineer, our private sector partners. They all create a chain that enables us to deliver our products and services.

NOAA is part of the national response plan. We are involved in the emergency support function for oil and hazardous material response. We have a NOAA incident coordination center that's -- that run at headquarters that includes all the line offices. So when there's a large incident, such as what we saw with Katrina and Rita, it's the headquarter's coordination

function that talks to the field or navigation managers, our state advisors, our oil spill coordinators so that we have a good contact of the field.

We have a coordinated body at NOAA that also talks to the Department of Homeland Security operations that are out of Nebraska Avenue. That is a facility down on Nebraska Avenue and in Washington, D.C., and that is the NER (phonetic) standard for all the federal agencies so there's a connection from the Department of Homeland Security office where many federal agencies are represented in one room to the NOAA coordinated incident center, down to our local managers. So we're getting information from the local level and also the high level. So not just operating from Washington, D.C. Communication is the key.

NOAA's support of the Marine Transportation System includes nautical charts, hydrographic surveys, spatial reference network -- I mentioned that earlier -- horizontal and vertical, water level and current data, PORTS, marine weather information and models, shoreline data, and the regional liaison to the community.

Nautical charts have to be accurate. Storm surge is critical for evacuation routes. Particularly

the vertical aspect of our shoreline and near shore is critical for storm surge modeling. Certainly, forecasting, marine forecasting, looking at the preparation, where to evacuate, where to run. It's critical decisions for ships.

Shoreline data is critical for radar navigational orientation. We mentioned shoreline by the folks who sail. If you don't have GPS, you're going to need the shoreline for radar navigation, and the landmarks for visual navigation. So those needs to be kept up to date and current. I know that the Coast Guard call that position and rely on nautical charts and the shoreline for navigation.

Hurricanes Katrina and Rita: Now, I'm going to shift to response. We've been doing response for years, but Katrina and Rita, I think, highlight an event that I hope in our lifetime we never see again. Again, we could not have done this without our partners, and it was an credible event.

These two storms were coming nearly one month -- Rita coming almost one month after Katrina, really highlights the vulnerability of our coastline. Preparedness occurs before forecasting of events. They painted a picture of Katrina and Rita, hand pictured so that everyone understands, and they created

unprecedented damage yielding extensive loss of life, social and economic impacts. It also -- I read this -- created one of the largest migration of people in the United States. That's something to think about.

The Response Team: I mentioned earlier NOAA is not alone in this. Within NOAA is the National Weather Service, NESDIS. The folks that take the aerial satellite photographs of the storm. Their prediction was that -- There were two National Weather Services predictions.

The office research for the modeling and capabilities for predicting the storm's track national and service, which embodies the coast survey and NGS, Co-Op. NMAO, which provides the ships, aircraft to execute our duties. And the CIO, Chief Information Office for delivering information on the Internet, such as aerial images, and other information, ports data, NWLON data to use.

The larger team includes the Coast Guard, Corps of Engineers, U.S. Navy, Air Force, Maritime Pilots, port authorities, private sectors, federal state and local emergency managers. This list is not exhausted, but gives you a flavor.

Some of the services provided during Katrina and Rita -- and this is pretty much all storms:

Surge models, navigation surveys, aerial photography, water levels and ports, National Spatial Reference System -- we'll talk more about that -- hazardous materials response. These set the stage for how these services fit together.

First, NOAA Hurricane Storm Tide: When a storm tide is approaching a port, having a handle on what the expected storm surge is, is critical to the maritime community, and also to the evacuation of people, and also the hand resources, such as ships and other important assets.

So the actual storm tide elevation shown here from a hurricane is a combination of the storm surge and the astronomical tide. Storm surge is predicted using NOAA storm surge models, and tides are predicted and observed at NOAA tide stations. The data from the NWLON system and ports is fed in the surge model to produce an accurate prediction of how high the surge may be. Ultimately the extreme water levels include the storm tide and any effective wave on top. So here, we show the storm surge, and then the waves on top of that.

This was brought to reality for me when I lived in Argan (phonetic) and I had the National Weather Service educate me about storm surge modeling

several years ago. This is right after I moved into a house that was about six meters above sea level, and he informed me that if a Category Three Storm were to hit that area, it's going to be a 20-foot storm surge.

Again, here's a picture of the storm surge model. Scientists at the National Hurricane Center utilize data from NOS tide gauges for both operational and post-storm surge analysis.

Operational Storm Surge Forecasting: In preparation of storm surge forecasts using the SLOSH, Sea, Lake and Overland Surges from Hurricanes, realtime water level reports are utilized to initialize water level values for SLOSH model runs so the data, the realtime availability of the water level is fed into the hurricane model to be able to produce a prediction of a storm surge.

It is, again, important to the marine community. I used this data certainly when I made my decision when I was sitting on the day Isador went to the Port of Lake Charles. They graciously accepted me there, and I told them that if they got me coming there, I would survey out, and they appreciated that.

But when Isador passed and Lily came, they headed for Houston. Many of you remember that. It was a big question whether it was going to make a turn.

And at the last minute, the forecast center made -- it forecasted a turn, and it left Lake Charles and went to Houston. So it's important and my major concern of the storm surge was whether my vessel was going to float up on the pier and land on the beach.

Navigation Surveys: NOAA provided surveys that allows critical ports and harbors to open commercial and emergency vessels for traffic sooner. It allows commerce to resume. It allows the needs of supplies to be delivered. The Navigation Response Team, NOAA ship Nancy Foster and Thomas Jefferson, and private sector contract survey companies surveyed rivers and ports to assure waterway is clear from hazards.

The partnerships were critical for making this happen. It allowed food, fuel and lodging to be delivered to the ports. The partnerships are also critical to our -- to our response effort. One of the major issues when responding to an area that's been heavily damaged is food and fuel and lodging for the response personnel.

Over the years, that's what we've been getting better at is working with our local partners to ensure that we have those services available; food, fuel and lodging for the personnel for them to

effectively respond. To include -- something to think about -- is police escorts to get through the response unit to the team, Particularly the Navigation Response Team, because they are trailer-based units. And the underlining importance of knowing your partners before an event occurs, so making that connection before the event is key.

Here is an overview of graphic picture, which tells a thousand words, I'd say. It shows NOAA's assets, NOAA's data service providers. The yellow are NOAA's ship that the data contract provided. The green are by the Navigation Response Team. You can see this is a huge area. It's covered all the way from Pensacola to Galveston.

This coordination of effort was, again, done with the Coast Guard and our partners for which ports open -- for which ports to address first. You think of it in terms of a center of disaster working our way in from the edges, trying to get to the worst.

Our critical component of opening these ports is the water level. Water levels are critical for providing accurate hydrographic surveys. The restoration is a title in case it's essential to make this happen. Many of the tide gauges along the coast were destroyed by Katrina and Rita. The point is these

services are interlinked and depend on each other. You can't have water level -- you can't have accurate hydrographic surveys without water level. You've got to have both.

Here is a picture depicting the water level location that was destroyed or damaged. Tandems and all were destroyed. The gauges have been replaced, but the replacements are temporary. If another event happened this year, it's all likely the possibility these gauges will be lost. There is currently no funding available to put in permanent tides. They're temporary in nature.

One of the issues we like to push forward, and it requires funding, is a hardened tide station. We have two hardened tide stations; one in Dauphin Island and one in Grande (phonetic) Island. This is an elevated tide station, and these tide stations are the only one that survived the direct impact of Katrina and Rita.

You'll also note that there are leveraging tide stations out there, meteorologic sensors that are located on the tide station to that the National Weather Service can also get meteorologic observations from the sensors. It's important for the storm surge model and the forecasts.

Another point is that each stations are collate (phonetic) taken to -- Mike, we have one station, right -- Dauphin Island where that we can tie together the spatial reference network where you are on land or at sea level to the water level data. Basically, trying the two datas together.

Obstructions and Salvage: NOAA coordinates closely, again, with our partners with the Corps of Engineers and the Navy, to identify and remove hazardous obstructions. This particular example is after hurricane Isabelle, where we located a large pipe that was sticking out in the Deep Draft Channel.

There were many, many, obstructions that were discovered on the ports after Katrina and Rita, all kind of debris. Again, we worked and surveyed and identified those with Navy and the Corps of Engineers, which then came after and removed those or mitigated those obstructions.

In addition, our data support coordinator worked with the Coast Guard and locals to ensure any hazardous materials aboard those vessels or obstructions were mitigated before they were moved to cause further damage to the environment.

Aerial Photography: Aerial photography includes to be a very crucial piece of information in

response efforts. NOAA has collected 10,000 digital aerial images and partnered with private industry to make it available to the public. We use the images for damage assessment, public information, split response prioritization, search and rescue, and access routes for Navigation Response Teams.

In addition to the uses mentioned above, insurance adjusters used NOAA aerial photography in processing claims. The priority of aerial photography is to ensure navigation safety. Second priority looks at areas of major damage for emergency managers. And third priority is FEMA. The flight lines, again, are laid out in cooperation with the Nav managers linked to the local community. We did not do this from headquarters. It was done at the local level.

This is a picture depicting aerial coverage. It's a huge area. 9 days, 19 flights, 8,300 images, 40 terabytes. Covering the coast and the major ports for Katrina and Rita.

Mike, do you know how many hits were downloaded in our site?

MR. ASLAKSEN: When we first officially put the data out, we were getting a gigabyte a second per eight hour. As far as the number of users, we couldn't track it, but the 40 terabytes is for the -- primary

for the Katrina response.

MR. BARNUM: I grew up in New Orleans. I had many friends there, and they're very appreciative of the photography. They can look at their home and see the condition.

PORTS: PORTS are very critical. I mentioned earlier, it's a critical component, especially in the area of estuaries that is affected by meteorological events, such as wind, water and rain, rainfall. The effect of a hurricane can last for several days after the event comes through.

So the effects of abnormally high water levels or low water levels can exist for several days after. So it's important to have realtime data, not just predicted data, of what the water level would be, particularly when we try to move large vessels and ships through the channels. The Houston/Galveston infrastructure was spared most of the effects. Particularly in the light of the damages to the Port of Lake Charles, particularly in New Orleans.

I think we all saw the effects of the price of gasoline going up. We all wondered where it was going to stop. I think sometimes we -- if the event might have lasted it a little bit longer -- Tim Keeney mentioned that we opened the port much faster than the

six months predicted. I think if we had taken longer, I think the general public would know much more about the marine transportation system and its importance to the United States, particularly with the price of gasoline, and particularly, also, with the need to get our agriculture out of the Heartland and delivered down to New Orleans down the country.

I did hear one article on NPR -- that's a radio -- talking about that issue. So it's exciting to finally hear about the importance of the movement of goods in our waterways.

Water levels and PORTS is important for storm surge modeling and the hydrographic survey. We've been using water levels to help the Corps of Engineers to rebuild levees and restorations.

I talked a little bit earlier about the hazardous material response. This is one of the largest oil spill responses that we have not seen before. It's compounded by the destruction of infrastructure, roads, electricity, communications, and in some cases it's even further compounded by the remoteness of the situation. NOAA is still on scene and working on those issues to mitigate these spills and working with the local community.

The Nancy Foster, I mentioned earlier, she

was in Key West during Katrina abating the storm there after the storm passed. She was -- became aware of the effect that Katrina was going to have on her. She was outfitted with a multibeam system, and responded to opening, served by survey, to the Port of Mobile and other ports and areas along the Gulf Coast.

She is primarily intermitted for oceanographic -- primarily intermitted for contaminant survey. So after doing her multibeam work opening up the Port of Mobile, she was -- did her cruise to -- in the Gulf Coast. There was a larger concern about whether contaminant -- I mentioned oil spills -- went into the water and whether they were contaminated in the food chain. So as a result of her crew, it indicated that the contaminant had not entered the food chain.

NOAA Private Sector Partnerships: Again, we could not have done this without our contract support to the National Geodetic Survey, Office of Coast Survey, and CO-OPS. They provide survey support, aerial photography, observations and infrastructure support.

Certainly, SAIC and Fugro were critical under the event, and others, the Texas CO-OPS partnership for support of Houston ports and NWLON

stations, and certainly in the cases of Office of Survey. Fifty percent of our collection efforts incorporate in private sector contractors. That's overall.

Now, I'm going to shift to rebuild. What does NOAA do for rebuild? The critical issues: Navigation chart updates, the spatial reference system, water levels and PORTS, critical data for accurate surge models.

Nautical Chart Updates: Priorities. The critical areas are ports and waterways. We have a lot of new area that we haven't even defined yet on what needs to be surveyed. I think we saw examples of vessels hitting objects in the Gulf, uncharted islands. It's a huge area. There's a lot of missing rigs that we don't know where it went. All kinds of debris that was washed offshore to the water. All kinds of danger.

The existing 500,000 square mile, critical square miles in the survey didn't go away. There was 70,000 square mile reach into the Gulf of Mexico, and 300,000 in Alaska. So these events only added to our survey backlogs.

The National Spatial Reference System: The National Spatial Reference System operate -- The National Spatial Reference System is the reference

system for which all our positioning is tied to. Nautical charts, the data -- the data -- your property lines and your property, the roadways, everything, where everything is positioned. It has to be accurate. It's the foundation for which everything is built upon.

The National Spatial Reference System was used during the event to control the aerial imagery, as the plane in the air. They use that information to position the airplane. They use that information post hurricane to provide accurate data on how to rebuild the levees, how to rebuild the infrastructure, make sure that we build the infrastructure at the correct heights so that future years when we have storm surge the infrastructure, it will be at appropriate heights so they're not damaged. Certainly, so we don't have a repeat what we saw in New Orleans with the major flooding and the levee topple over.

The stars indicate currently CORS, Continuously Operating Reference System. These are highly accurate record systems that are used by the private surveyors. And the dots indicate positions where they were -- post hurricane where they had access the CORS data to provide -- The CORS system provides a system where a private surveyor can collect and use their own system and submit data to the National

Geodetic Survey.

And then that National Geodetic Survey will send that result back with a highly accurate position that is accurate within two-and-a-half centimeters. So it's our partnership with the National Geodetic Survey and private surveyors for them to get very highly accurate positions so that when they go survey to build the new infrastructure, they have the right information that it will be built at the right height. Same thing applies to the levee.

Water levels and elevation data is critical to the rebuilding of Louisiana. It's a huge task building the infrastructure. NOAA is serving on Interagency teams, such as the Interagency Performance Evaluation Task Force to design and evaluate hurricane flood protection systems for New Orleans.

NGS and CO-OPS are re-establishing the baseline vertical reference systems, both geodetic and tidal. What I talked about earlier. Tying together the CORS data and the vertical data and the water level data is critical. CO-OPS sea level trends and exceedance probability analyses of nearby long term NWLON stations are also being used to understand return periods of events.

Critical Storm Surge Data; elevation and

bathymetric data: Again, coming back to the National Spatial Reference System and the need for accurate bathymetry. For predictions on storm surge, you need accurate bathymetry, particularly along and near shores.

We often need accurate topography. So you have to have accurate data to be able to produce accurate storm surge models. So on this chart, you can see an area here, this juncture right here. This is where a survey was done about three years ago, done by a Navigation Response Team in response to the local. We produced an in-chart which we all have.

But you can see here, this data over here was collected in 1934, and this is an 18-foot curve right here. Well, over here, the data was so different, we couldn't even junction the data. So all in here it's unsurveyed. You can see here the shoreline is dashed because we don't know what it is. So to be able to do accurate storm surge modeling, we need this data.

The data can also be used for production of a nautical chart for safe navigation. My point is there is the data, and its multiple use for storm surge modeling and protection of people, where they evacuate, where it's going to flood. The data is also used for

navigation. So there's two stories here.

Overview of next steps: Initial assessment, assessment activities, improvements needed, future challenge. Initial Assessment: Strong pre-existing relationships improve response effectiveness; the flexibility and collaboration is essential; NOAA needs to increase the depth of their essential capabilities, both in-house and through partners.

The ability to respond to more than one event of hurricane, say a hurricane in the Gulf and a hurricane in the east coast, will stretch our limit. I don't think we'll be able to respond effectively to an event like that. In an event case, like Rita and Katrina, they were relatively close together and were able to work that coast. Having two simultaneous events, one in the Gulf Coast, and a tsunami in Alaska, could potentially stretch our limits.

Assessment Activities: NOAA is conducting a NOAA-wide review, internal review of operations and services of an activity before, during and after the event. Emphasize the perspective of customers and partners, and focus on readiness, communication, coordination, continuity of operations, and recovery.

We all heard about the nice kudos that the

National Weather Service received, certainly from Congress and others. As I mentioned, it was a dual effort with the federal response. I think, also, that certainly NOAA's role in this response effort of marine transportation was also a key. Again, I'll emphasize again, we couldn't have done it alone. But, again, we -- I think we did a great job.

Improvements Needed: Improving capabilities. NRT 7 and 8; I mentioned the NRT is the Navigation Response Team. The Navigation Response Team are not just for emergency response. They're also for conducting chart evaluation surveys along our coasts. They work to make sure all our navigations body are active. That includes the chart evaluation, the coast pilot in the shoreline.

Currently, NRT 7 is in the shed, but we have no money to operate it. NRT 7 was destined to go to the mid-Atlantic to fill a hole between New England and Florida to give the official capability on the east coast. NRT 8 is destined to go to the Gulf coasts. So we have two Navigational Response Team units for the Gulf coast, in addition to the team that travels back forth between the Great Lakes and the Gulf. It gives us additional capabilities.

Next, we have storm surge forecast models.

I mentioned that. VDatum tool allows to convert between multiple datas. The near shore bathymetry, I mentioned earlier. Vertical Datum improvement, height modernization. Supporting the storm surge modeling, infrastructure improvement, water level assessment, topographic data. The fleet is the construction and delivery of SWATH vessel not assured. It's in design now, but the future is in question.

Survey Technology Improvements: Certainly, technology changes very quickly. I think we can all relate to that. Multibeam sonars technology changes. These are instruments that are in salt water. It's expensive. It includes, side scan sonar, navigation systems and satellite data transmission. We would like to look for in the future to be able to transmit our data from the field.

Data Access: Alternate systems for disruption of land-based communications, such as CORS sites, lost communications. It's been very valuable to have communications with the site to get satellite for the response effort for the aerial imagery. Additional bandwidth to NOAA's Internet delivery of imagery. Again, being able to put it in and reflected out to the users.

Future Challenge: The challenge to NOAA is

large. The support to MTS demand is not getting smaller. We are a maritime nation, based on competitiveness -- competitive market. And in the face of budget reality, this is very challenging.

The whole maritime community will be challenged for years to come, specific challenges include: 2,500 square nautical miles currently mapped per year, striving for the completion of 10,000 per year mapped. The 500,000 miles critical square nautical mile area is a huge area. We can't do it alone.

525 current ENCs, striving for 950. Again, the FY '06 budget was not kind to that. 13 ports currently installed that service 39 of the top 150 50 U.S. ports. CO-OPS, 175 water level stations. Again, we would like to modernize it to provide realtime data. NGS, height modernization for the whole unit, not only MTS.

Currently, we're only able to respond to one spill of national significance. We are -- Again, in a hurricane or major event, if there were two major spills, the U.S. would be stretched very thin to respond to these events.

In conclusion, the hurricane season for 2006 starts in less than five months. Partnerships,

again, were critical in helping NOAA respond to the 2005 season. NOAA is a link, as I mentioned earlier, in the larger NTS system, and its relationship to global competitiveness. In New Orleans, again, was closed for six months. I think the general public realized the story here. But it's up to us to send that story to our constituents and reflect that to Congress. Alberto, Beryl, Chris, these are the first three. Thank you. I'll take questions.

MR. DASLER: Captain, I was wondering -- You mentioned the NRTs often have to do repairs to NWLON stations and get those online before hydrographic surveys were conducted. And I was wondering if NOAA is looking at the use of realtime kinematics (phonetic) GPS in getting those assets on the NRT, since some rather inexpensive eleague (phonetic) deployable type gauges, and a lot of districts have separation models that are doing RTK surveys in a lot of the harbors already.

MR. BARNUM: We are looking at RTK. Commander Derick Lane (phonetic), hydrographic technology program is very interested in that, but it comes down again to funding. We're trying to expand the resources. I mentioned this earlier in the piece. I didn't tell you what my piece of the pie is for

(inaudible) and education is 168 million, but that's out of $3.8 million. And that includes the aviation marine (phonetic) and service weather. We would like to see multibeam on all NRTs.

MR. LARRABEE: Steve, did you get any supplemental funding for Katrina?

MR. BARNUM: No -- I take that back. There was a digital camera. There was a P3 for hurricane reconnaissance, money for model, but not for the NTS.

MR. LARRABEE: That's hard to imagine. I mean, we can now get a better sense of why there's no money for other things.

MR. RAINEY: Captain, do you have a number, yet, on the cost to the programs that we can look at for that response, you know, the total cost. And from that, the impact on the programs? I mean, that was obviously a very large anticipated drain on the recourses. Do you have any sense, yet, of the magnitude on that?

MR. BARNUM: I don't have those numbers off the top of my head. Certainly, there were fixed costs that we were already incurring for the NRT and the ships. The cost above that includes overtime and fuel, and the replacement of damaged equipment. Certainly, the tide gauges, and certainly costs for redirecting

recourses to events.

What's not said is things that are undone, surveys that didn't get completed. And Thomas Jefferson was working surveys in New England right down the Gulf. I could get you those numbers.

MS. BROHL: Captain, to follow up on Admiral Larrabee, how much did NOAA get in hurricane supplemental funding, total?

MR. BARNUM: I don't know. Ted, do you know?

MR. PARSONS: I can tell you NOS got zero dollars.

MS. BROHL: So the gauges that were blown out from the hurricane didn't --

MR. BARNUM: You're talking about a high.

MR. LARRABEE: Steve, thanks. Let me call on this train of thought and tie back to what Secretary Keeney said earlier about the role of NOAA. What's impressive today this morning is there was a forecast about what could have happened or what did happen in New Orleans. In fact, it was forecasted to happen. And it keeps referring to the Homeland Security giving this --

My point here is you don't get recognized for what you do. I assume that a lot of this came from

NOAA. And here's this image problem. They don't know what to do. And I saw lots of good stuff here that I hadn't been aware of before. So my question to you is: Have you taken your goal briefing to commerce, for example? Have you taken it to OMB, for example?

MR. BARNUM: The high time mackers (phonetic) division is new within NOAA. It's slowly integrating it more towards commerce and transportation, having a larger role. The bunch takes the message to the constituents.

These services are connected and looked at a whole, to be supported as a whole, and how they support. I know in the CMTS meeting that was held back in November, the Secretary was engaged and the secretary knew. Talked about the opening of ports. So it's good for him to hear that, understand the role if NOAA and services to commerce and transportation.

MR. KEENEY: Steve, just to follow up on that, I would like to hear from you some of things that you you've been doing recently with regards to underscoring the importance of the connection between the navigation services, the transportation, the forecasting, and transportation and commerce, particularly with the idea that if entities and agencies and OMB and the Hill understand the

connection, the value, say opening the ports of certain services that are available.

It seems to me that you're going to be able to much better tell your story and connect the dots. And as Admiral Weust said, it is also, at the same time, underscore the importance of services that NOAA is providing to the nation regards to transportation and commerce. Could you just tell us a little bit about what you're doing in trying to sort of push the envelope there?

MR. BARNUM: I've been in the job for three months, but in that time, part of what I've been trying to -- my song, and again, this is -- I am competing within -- certainly within educating other constituents at NOAA to understand certainly the NTS's role and what it brings to NOAA, in the underplayers and other service issues. That's one role.

The other is certainly through our Department of Commerce and understanding of NOAA's contribution to the economy and the competitiveness and how important the MTS gives to our nation. We are a maritime nation. And we are -- We depend on that for our economics of survival. It's -- it's a message that we anticipate doubling the trade is not out there, and people need to wake up to that.

I was at a Transportation Research board meeting yesterday, when I was on a panel talking about surface weather, its importance to service transportation. And in that venue I had the opportunity to talk about the larger picture of this anticipated doubling trade on a ship, and how we're going to get that product onto the integral (phonetic) connection in delivery it to heartland.

The folks weren't looking at that. They were looking at road, weather, in respect to clearing snow and how much salt to put down and commuter. Not looking at how we're going to get this product from our ports to the Wal-Mart in Utah.

MS. DICKINSON: Steve, you mentioned aerial photography, which I think would be incredible. And I think it's kind of another example where it reached probably millions of people, and they may have not known where these images came from. They were showing up on our website. Can you talk just briefly about what you did with Google on that, how that worked?

MR. BARNUM: I'm going to defer that question to Mike. He's the expert on that.

MR. ASLAKSEN: Yes, ma'am. Very early on, we -- we, of course, interacted with lots of folks to get requirements as far as where to fly and along the

line. Google had stood up, what was called Google Earth at the time, which is kind of a new interactive -- I'll call it interactive GIS, online interactive GIS system.

So the night of our first flight, we actually deployed the first day after the storm -- and we have a clip -- most of Mississippi on that day. We started talking -- They contacted us directly in junction with NASA AIMS (phonetic). And we worked pretty diligently through the night with Google, an NASA AIMS in order to give our data in the format presented on Google Earth.

The outcome of that was that they developed an automated system to grab our data as soon as we posted it, and displayed it to Google Earth, but the big winner in all this was all the federal response agency in that area were given free licenses (phonetic) of the full Google Earth package with this imagery in order to do damage assessment and search and rescue. Lots of different applications.

But Google Earth was one of -- one of the private sector folks that grabbed it. It was Global Explorer (phonetic), as well as some private companies in contract -- under contract to FEMA, and the Corps of Engineers that they actually grabbed the data and used

it, rectified it and used it for other many, many other applications that FEMA is responsible for. Steve, thanks to the technology, I did find out there's -- at this point in time, there's 80 million hits to the Katrina site alone.

MR. LARRABEE: The point you made that stuck with me is re-opening the ports with PORTS. That's the first time I've heard it. I'd be interested to hear what our Panel have to say about that, as making that a national reason why we should have more and better support for the system.

You know, the problem -- I think Tim brought up this morning about the issue in Tampa of economic return. That's a double-edged sword, as we talked about yesterday. You know, Congress who called that's going to return eight to one on your dollar, and Tampa is going to pay for it, and there's -- You can make an argument to this, but that's the truth. We're talking about a national issue now of opening all of our ports, and that's the first time I've heard that. We probably ought to do something with that.

MR. PARSONS: I believe this afternoon when Captain Morris presents on behalf of Houston Pilots, he will certainly bring to light the importance of the PORTS system and their operations. I might add that

while NOS, the line office, both of NOAA's navigation service programs reside received no funding in the supplemental.

There were several FEMA mission assignment tasks to the Navigation Services Program, but they were primarily to reimburse contractors for the work that was done in support of that, with some of the money going to reimburse marine and aviation operations for additional fuel expenses, which were certainly not budgeted for. But little to none of the dollars were used at the direction of FEMA for actual response activities by these agencies themselves.

MR. BARNUM: Anybody else? Well, I'll be around all day, so any other questions, feel free to ask me. Thank you.

MR. RAINEY: Thank you very much. At this time we'll go ahead and take our break.

(Break was taken.)

MR. PARSONS: As we've indicated on a number of occasions, the co-star of the Corps of Engineers that made the response in the Gulf of Mexico a success is Commander Rawson. Commander Rawson has 18 years of active in the Coast Guard. He is currently the assistant chief, Chief of Prevention at U.S. Coast Guard sector in New Orleans.

In that capacity, he is responsible for vessel safety and vessel inspection, marine casualty investigations, and vessel traffic services. He's currently tasked with completing a FEMA mission assignment to clear navigable water in channels in the Katrina related, vessels and debris from Louisiana. That, in and of itself, is probably a monumental task beyond just response to the initial events. With that, Commander Rawson.

MR. RAWSON: Thank you, and thank you for the opportunity to come here to speak. And I do look forward to being able to give my opportunity to present some of the experiences that we've had, and taking and receiving various questions, and hopefully offer advice into the way the Coast Guard performs some of these response missions.

I'd like to talk today mostly about just purely the responses that the Coast Guard has done in the New Orleans area in response to Hurricanes Katrina and Rita. The overall program Captain Barnum did was a good job in presenting all the different pieces that NOAA was involved with, and their piece of the program. I just want to touch on our own experiences on how we dealt with some of the issues and how we had some of our relationships with NOAA.

As I said, I am in the Coast Guard sector of New Orleans, which is the capital port office that's responsible for New Orleans. It includes the Morgan City in Homa (phonetic). So it goes from all the way around Calcasieu Parish all the way east to the Mississippi border.

It used to go farther than that out into Mississippi, but after Katrina, because of the amount of issues that were being addressed and the way that FEMA was breaking this down by state, we accelerated our pace of boundary changes. And New Orleans only goes to the Louisiana border now.

My job at the Marine office, that sector now, is in the preventions department. What we do is do the waterways and management, the ports and waterway safety engaged in navigation, as well as the vessel protection. My own background is as a marine inspector and vessel technical expert.

So one of my primary jobs has been on salvage. There are numerous cases of vessels grounding the Mississippi River, how quickly we can remove those. And my job is to come in as a salvage engineer and review the salvage work that's going on there to make sure that we get those obstructions cleared in a speedy manner as possible. That gives me the opportunity, as

Captain Parsons mentioned.

At this point now, I've been designated full time to work on the wreck vessel and debris removal following Katrina, which is, right now, about $75 million directly for this mission by FEMA to effect that waterway clearing. I'll talk a little in the end about how that mission works and how we've been using various assets around us to help us with that.

Our office is located in Downtown New Orleans. I literally look right over the top of the Superdome where I work. And had a continuity of operation plans in effect when a hurricane was scheduled to hit into the New Orleans area. We put that into effect when we evacuated up into Alexandria with our higher command post in order to stand up operating.

It turns out for Katrina, I was very fortuitous because all of our logistic ties, all of our communication ties were completely severed, and we had to recreate those up in Alexandria. A very challenging time, but one of the things -- The reason we're able to have a lot of success was we took with us some of the other liaisons and people that we deal with all the time.

For example, NOAA has the scientific

support coordinators in-house with us, which greatly facilitated our ability to work within the NOAA system and said, "Okay. This is the specific information we need", whether it's mapping services, wether services, haz mat coordination. We had personnel on site with us, and we were able to use them to get the information we needed and execute that piece of mission, and the rest of the search and rescue mission and all just continues to grow.

As we talked about a little bit, New Orleans is a -- is very much a central port. It's very vital. We have major crossroads for the east and west to the ICW (phonetic), the Mississippi River, the exchange ground for the agricultural products out of the Midwest to overseas. In my capacity, as the waterways management piece of it, as -- you have the waterway still closed, the Mississippi River still closed.

As Captain Barnum mentioned, the Department of Agriculture was pressuring us to move and open up that river. I was one of those ones on the other end of the phone from the Secretary's office, "We need to get this open." It was about the coordination, where we didn't have the coordination we had with the various agencies, the Navy, the Corps, NOAA, private industry,

whoever responded to find out what exactly status we had because we were just located from the location. We never would have been able to open up as quickly as we did.

Just quickly, I'll go through some the stages that we went through in terms of pre-storm activities. From the forecast, we started notifying our ports and industry in New Orleans of a potential Category One Storm that could affect us on Thursday. As the forecast increased and we got closer to it, we continued to issue more notifications.

We started putting restrictions on. So by Saturday, on the 27th, at 1:30, in conjunction with working with the Pilots Associations, we actually asked that the southwest pass the entrance to the Mississippi River be closed to all deep draft traffic. By Sunday, a better picture of what exactly the storm was going to do. We all had a little better idea of what the impacts could be.

We had already closed all the waterways within New Orleans area. That includes the Gulf Intercoastal Waterway through our entire zone; Mile 60 East Harvey Locks (phonetic), which is out near the Alabama border, Mississippi/Alabama border, all the way up to 177, which extends to the western part of the

state.

The Mississippi River all the way from the mouth up to Mile 507. Again, that's the extent of our entire zone. The Mississippi River, Gulf, the major shipping channels which allows vessels to come in directly into the New Orleans area without going to through the Mississippi River.

The alternate routes, the Port Allen Alternate Route, Atchafala Alternator, either channels that allows us commerce to move from the Mississippi River down into the Gulf area, and spread out into the Gulf of Mexico. All of those routes had to be closed because of the impending storm that was coming through.

The next picture shows -- this is just an output from our Vessel Traffic Service taken using our GIS equipment and AIS of what vessels were in the area. This is a section of the river just below New Orleans. It's actually where the Inner Harbor Navigation Canal is. That's the cut that comes off where the ICW moves.

It's just to show that by the time we came up on Sunday evening, the only thing that was left in the river were the smaller boats that were trying to winter-over or storm-over in some of the more localized areas. There's some pictures of some vessels taken after the storm (indicating).

Immediately after the storm passed we had overflights go up. Captain of the ports went up on a helicopter oversight to get an idea of what the entire river looked like. He came back with just stories of massive damage. Barges all over the levees, vessels thrown up on the dock, bridges out in numerous places.

Somewhat interestingly, he didn't really report too much on flooding because we all expected flooding to be in New Orleans because of the lack of pumps when they went out. So our focus was strictly on the waterways and making sure what was the status of the waterway, and what would it take to be able to open those up.

From that initial overflight, we had already had a plan in effect to open the river up as early as possible to tug and barge traffic. What that allowed us to do was, given the size of the Mississippi, we weren't too concerned with obstructions that would block a tug and barge going down, but what it would do is give us more eyes out on the water.

We had a system in place to call local towing companies to report that back to us. Tell us what you see. They would do some pathometer (phonetic) surveys that were they were running up and down. Tell us what are our particular concerns. And could factor

that in, try to prioritize where we thought would need greater emphasis.

We were also starting to collect various other surveys that had already been pre-planned and were in effect. So we were starting to be able to get some of the waterways open by Tuesday. Probably one of the primary areas of concern -- we talked a little about that in the earlier presentation -- was on the opening of the west corridor, the ICW.

We all know the gas prices and everything else started going up, and we needed to restore that corridor for the ability to bring the barges from various refineries out to the storage area for distribution. So one of the biggest priorities was opening up that ICW. We were able to do that for industry sources, Navy sources, contract sources, NOAA sources to do some of those surveys and work our way through those.

By Friday, using mostly the CORS work that had done a centerline survey of the Mississippi River, we were able to open up the Mississippi River to deep draft traffic less than 35 foot. This was very important because by this time, the search and rescue mission was very important and a growing need.

The logistic requirements were just

unbelievable, and we needed to be able to get those large assets to supply water, power, personnel, lodging, transportation. And we needed to be able to get the water open to do that.

This was somewhat unusual when we deal with post-storm cover because normally when you're up with a storm and we're dealing with the Mississippi River, our primary concern tends to be around the silting on areas where you have water coming in and placed silt in the areas where it wasn't there before, or not as much as what we expected.

But due to the amount of debris, barges, vessels that were in the way, we had no reasonable expectation that there wasn't submerged barges in the river as well. So what we needed to do was do a graduated approach. On the basis of the centerline surveys done by the Corps early. We were able to say, yes, we know that the centerline is open for a deeper draft.

But with the loss of aids to navigation -- below the city of New Orleans there were 70 percent of them aids to navigation were lost. We worked with that that's what we're going to be able to stay within that centerline area. So we knew we needed to move forward with more surveys.

This slide kind of goes through more of the details of how we opened certain areas and the time frame on when we opened them. But what we're seeing is that a great many of these surveys and the work that were being done, in terms of the opening, was concentrated on the areas where we knew we had issues before.

It was much easier to tie up either the ICW or baptiste collette or one of these other small feeder waterways. So therefore, there was more access in place and there were more pre-programs that go into those areas to go and do the clearance activity. But what that didn't do was that didn't really give us enough confidence to be able to open up the Mississippi River because, again, we didn't know on the extent of the submerged barges and the other vessels that were out in that area.

This is where we really started depending upon the scientific support coordinator and coordinating, bringing in as many different information sources for us. This is actually a NOAA slide that I put in intentionally to show. As we came through we realized -- we got to the feeder with waterways opened up, we still need to support the Mississippi River. We needed to get a more coordinated approach.

And we brought in various teams, three of the NRTs that worked in the area. We show a previous slide how they went pretty much from Baton Rouge all the way down to the mouth using the NRTs, and one of the largest vessels, the Davidson. We had the Navy do some of that work. We had the Corps doing some of that work. We had private contractors doing a lot of these survey work.

And then there was a massive undertaking in coordinating and interpreting the data that was coming back. The volume of data in terms of different contacts we were identifying to be followed up with phenomenal. It wasn't just underwater surveys in the channels. It was obstruction on side of the river.

One of the key areas that assisted us in effecting the ability to open up the waterways as quickly as we could was having those resources available to us on a short-term basis. The NRT was very quickly available to us. The Davidson was able to come in and start on the mouth of the river and worked their way up.

And the other piece of it, which was very important to us, was the Navy provided us a hydrographer on staff with us at the command post in Alexandria. What this did was we had a whole lot of

technical data that all these survey teams are putting together; somewhat in different formats, somewhat in different levels of analysis.

And we talked earlier. Sometimes we had tide stages, sometimes we didn't. So for those of us that were more on the operational side, we couldn't interpret that in a quick and easy manner. That's one of the areas where it was very helpful having the SSCs (phonetic), Rick Fletcher from Captain Parsons' office, and the Navy hydrographer on staff with us to be able to interpret this for us, identify what we thought should be actionable items, which ones weren't going to be too much of a concern.

And then the Coast Guard could go back to its role to try to notify the industry of these things, work with them to let them know what the situation was, and try to risk manage the whole process, and see when we could open the waterway in a safe manner.

The next couple of slides talk about some of the stint of the aids to navigation, and how -- the effect on that. We did open up the river up to limited depth to support the Navy vessels and some of the other support vessels into the river, but it had to be done during daylight only.

As I said before, below the city of New

Orleans we lost over 70 percent of the aids to navigation that were in place, and it took a massive effort from our aids to navigation team, and the contract aids to navigation team to bring those back in.

These are just more details, specifically into areas of the Mississippi River as to where some of the aids were lost and where we had concerns. We had, in effect already previously, agreements and working with the pilot and the Office of Aids to Navigations at the 8 District where critical areas of aids to navigation were, so that we could identify it if we had outages in certain areas, how would that affect us, how much traffic could we let through in areas, if we wanted to do restrictions, such as one-way transit only during daylight hours. So we had a lot of that pre-planned into it, and we could then target where we could send our teams.

Once we got above algiers point, which is essentially the city of New Orleans, again, the aids time was significantly less. The expectation of submerged barges into the river was significant less, so we were able to open that up much quicker, be able to allow transit -- inter-float (phonetic) transits for the deeper draft tug boats so they could continue to

load cargo.

Summary: On the next page of the aids to navigation. The other significant influences that we were dealing with was we were trying to balance all these issues of the waterway was the massive pollution response that had to be active. The next few slides I'll run through real quickly. But this is a summary slide. Just talking about some of these major spills that we had to address and to the various refineries and storage areas along the Mississippi River.

It was a massive overtaking. We're talking somewhere on order of around eight million gallons of water level that were lost during that time. Some of these actions are still ongoing. Most of them are in the final phases of that.

The next few slides are just some specifics of how we recovered some of the oil and where it ended up. This is Murphy Oil, the one that was quite out in the front, in the media side because of the impact with local residences was quite heavily.

The tank in this picture right next to it is residential. They were impacted both by flooding, several feet of flooding, and then oil on top of that. As you can imagine, that was quite an impact in the area. Some of these are farther south in Plakamin

(phonetic) Parish, which is now towards the mouth of the river. As you can see, the volumes are still very significant. If I remember correctly, about 85,000 barrel storage tanks. These are more details (indicating).

Finally, I'd like to move into one of the current activities that I'm involved with, and will probably stay active through the end of the year at least. The Coast Guard has been requested by FEMA to enact the removal and salvage of vessels from the navigable waters and channels of Louisiana. To date, we've identified more than 5,000 commercial and recreational vessels that could potentially have to be removed.

We are only responsible for pulling the ones out of the navigational channels. And many of the high risk ones, the ones that were in the Mississippi River that were affecting the navigation have already been removed. They were moved in the earlier stages, either by the owners, by commercial salvagers under contract that were directly with us, or done through this process from FEMA where we were working with them on a reimbursement-type basis to clean out the waterway.

As of now, we're looking at probably about

1,500 or so vessels that still remain into the southeast Louisiana area that we still need to either work through the owners, have them remove them, or work through a consortium of salvage companies that will work through the removal of them.

This picture (indicating) shows an area around Mile 52 of the Mississippi River, and it gives a good idea of why we had such concerns with the bottoms of the river. There were so many barges that were just strewing everywhere up on the levee. Many that were out into the water. You could see a piece of that still sticking up in the water (indicating). And we didn't know how many of them would be on the bottom that were potential hazards for the vessels coming in.

In this mile, there was just over about 120 -- if I remember correctly -- barges that were strewing out. The way barges are normally laid up, it's not always easy to track down exactly how many of them were in place at one time. They have records of them. It's constantly a dynamic changing process. So to the number of how many is not always right.

We can get close, but when you start asking about what happened to this particular vessel, they can't always give you an answer. So you couldn't just go out and try and do an accounting to say which ones

are there. We needed to do some other work to find out was there anything else impacting into the water land.

So far, within 1,000 vessels in our area have been salvaged. Our mission has been salvage. We, ourselves, and the Coast Guard contract have done over 400 using assets such as this one, the salvage operations that we're working with. We have on staff with us the scientific support coordinators. I have one assigned full time to work with my office in New Orleans. One of the reasons for that is we need to be able to interpret a lot of the various data we have from the underwater survey.

We need to make sure that a lot of these salvages that are occurring out in the environment-sensitive areas are being done in a responsible manner. The SSCs have also been charged with verifying, according to the State Historic Land Preservation Act, that we are not disrupting historic land. We have several older ports in the area right outside of the Mississippi River, barges that were impacted in that area.

These are two, apparently, larger than 200-foot vessels that ended up on the road (indicating), the main highway down in the Byan (phonetic) Parish, Highway 23, around that area. Like

I said, at this point we're still looking at over about 500 vessels that we need to recover.

It's the largest salvage operation in the history of U.S. that we're working through right now. And the funding, we've been promised around $85 million to do this work. We also have work on the levee, put up on the levees with the Corps of Engineers. They can start reconstructing the levees down in this area.

The other part of this mission, in addition to the vessels, is a debris-removal process. When FEMA asked us to do this work, it wasn't just removal of vessels, but they needed all of the debris removed in the navigable water. That is also a massive undertaking. In various places we have old buildings, hundreds of cars, all types of pieces of structures, trees, in many cases, marsh. Marsh is literally picked up and moved into some of these waterways. That all had to be cleared out.

And that is a long-term process, and we're trying to work through and figure out how can we better effect that work, how can we work through all the different agencies, how can we get enough contractors to put all that work together.

A significant part of that is how deep are we -- do we need to verify the debris in the area?

Just under my definition of navigable water -- which is a limited definition of navigable water, because everything south of I-19 is navigable -- we needed to restrict what the definition of navigable was. We worked with FEMA to do that. But what that still leaves us is just about 1,400 miles of waterways, many of which are small bayous and slews that lead up into fish houses and ice houses and fuel docks for commercial fishermen.

Not many are federal projects for dredge work. Some of them are state owned, some of them are federal owned, some of them might be private owned, and we need to work our way through all of those. In order to make sure we've actually completed our job, we need to have some level of survey to be done to do this.

That's one of the issues that's ongoing right now, to figure what level of survey has to be done, what level can be done, given the money and time constraint that we're under, where are the most critical areas that we need to open up, where are the ones that -- if we open one backup, the fisherman can work their way and find another route to get where they need to go. That's going to be an ongoing issue that we're still working.

This slide (indicating) depicts where --

Some of these boats -- Again, some of these are fairly significant size boats, 65-foot steel whole vessels, 100, 120 tons sitting out in the middle of the marsh that we don't exactly have access to. The questions are: How are we going to remove vessels from that area without causing more damage, and how are we going to proceed with that type of operation? Again, that's an area where we rely on our NSCs.

Another NOAA slide (indicating) because we rely heavily on what they've been able to provide us has been on some of the aerial photography and visual depictions what is out in that area. One of the problems -- not problems, but one of the facts of southeast Louisiana is that the waterways are constantly changing. Roads are being cut in, roads aren't there anymore that used to be. And this is all before the storm.

We're trying to explain to a bunch of contractors that come in that "we need you to go to this particular area." We can't refer to it by waterway names because it goes by four or five different names, depending on what locale you're talking about. But the imagery that we had has been just invaluable to us to be able to depict. "This is where you need to go. We need you to go to this area.

We need you to go pick up this boat that's sitting in that area."

This is an example of one area in areas. This is Empire, Louisiana. It's an imagery that we got off of a website right off of NOAA. And what we've done since then is we've documented all the vessels that were grounded, stranded, turned upside down, whatever it is, with a case number. Plotting those onto an imagery so we know where we stand.

And then what we further did was identity them by color codes. If it's green on this color code -- and I realize it's hard to see on this slide -- if it's green on there, work still needs to be done. If it's the orange color, that's work that we've already completed and moved out of the area. It's either by us or the owners have taken care of that.

But that type of imagery and that type of ability to tell a contractor, "I need you to go into that specific canal," which doesn't have a name, just knowing by the name of the fish house, which is no longer there. It's been invaluable to have that ability to go in and identify where we're going.

A more personal note piece of it, as I said, my office was located in New Orleans. We had to relocate out to Alexandria during the storm period. As

the situation progressed and the search and rescue grew, and the lack of communication and everything else, we were all working these 20-hour days trying to support and get fuel and get helicopters and people moved out and everything.

Meanwhile, in the back of all of our minds, we didn't know the status of our houses were. In the end, once we finally got out of this, we found out about 70 percent of the 800 people attached to the sector of New Orleans, houses had a significant or major damage. Over 50 percent lost their homes and had to be relocated into hotels.

But we're up there working 20-hour days in Alexandria, lost from everybody else. And when we first started hearing about the web having these NOAA images on it, it just became a progression of people moving over to those computers so that we could find out what was going on. It gives you a little peace of mind. At least I know what the status of my house is.

Not only on the professional side in terms of the imagery that we're able to use, but just being able to know what the status was. That did a lot to boost our morale to keep our folks working through to know what was going on.

And with that, I want to go quickly through

the operational piece of it so we could open up any kind of questions that is more directed to the concerns that the Coast Guard came across and how we prosecuted some of these.

MR. PARSONS: Questions?

MR. LARRABEE: Great presentation. It looks like you have a lot more to do. You certainly have been diverted from your day-to-day operations. How are you continuing to do the normal job that you were being paid to do before this event on top of all the activities we just saw?

MR. RAWSON: Well, the first issue has been just making sure that we continue operation. And having, out of the four search and rescue stations that were in our sector -- Grande Isle, Venice (phonetic), New Orleans, and Gulf Port -- three of them sustained complete damage. We had to provide the logistics in order to get those people in hotels, get whatever they needed.

That has been a significant part of our reconsitution efforts. In terms of a manpower, once we were able to get those stations re-manned, we were able to get like, say, 50 percent of our staff set up in hotels, set up into these areas so they could do their work. All their families were taken care of because

they're located all around the country now.

We were able to really do our mission. So I would say at least since mid-November we have been at almost 100 percent operational capabilities. The aids to navigation mission, which was huge, because of the loss of the aids, we nearly completed that work. And that's been done, again, since the mid-November time frame.

In terms of prosecuting the mission currently, what's happening is we've gone out to other units. Right now I'm in charge of a group of about 40 persons that come from all the other Coast Guard units. Literally, from every deep unit.

The Coast Guard has sent people down to assist us with that. And I am the only person from the sector New Orleans that is engaged in that operation. And that's because our mission hasn't gone away. We need to maintain that. We've had to take in from other resources.

MR. RAINEY: Thank you. Could you describe a little bit of the process at how the Coast Guard allocates the limited federal survey resources, and how you prioritize, you know, the utilization of those across the mass and scope?

MR. RAWSON: There are various levels that

we go through to try to identify the priority area. In most cases, what we are doing is sitting down and industry meetings, going through and identifying with the ports, with the users, with the pilots to identify where those areas you guys have concerns with, where we -- that we need to support this particular piece of infrastructure.

We take that in by industry debates, have various councils that we put together so we can discuss where the highest priority issues are. Then we put together a contingency plan. As we go through these areas, we can see these are the areas we need to make sure needs to get done.

One of the things we found during this particular incident was our worst-case scenario, probably didn't go as far as what we're talking here, again, because I don't think any of the plans that we had talked about had envisioned such a need to do a survey on the Mississippi River itself. So that really wasn't a prioritized waterway. It was just assumed by everybody that it was the number one priority, but we didn't have plans in effect to actually survey that.

MR. RAINEY: Can I ask one other question? It's a tremendous scope of this, and you talked about not only the vessel removal but also the debris

removal. I'm looking forward to that ahead. And we noted that we had, I think, at least three of the NRTs. In other words, that's half of NOAA's entire capacity in the country of a Navigational Response Team.

And I'm wondering, as we move forward -- we're still faced with surveying -- if you feel like there's enough survey capacity, or if there are any plans from the Coast Guard, I don't know if there's any supplemental funding or anything, but to try to prosecute all the service that need to be done. Just kind of a needs versus capacity. If there's any, you know, ability to expand the capacity.

MR. RAWSON: That's an ongoing question we continue to ask; not just in the world of survey, but how do we balance the pollution response equipment, the salvage equipment. There's a cost to maintaining these equipment. And if you don't go through those water scenarios, you have to say who you really want to have that fixed cost in place when we don't need to use those all the time.

For this particular incident, because it was in the Gulf where there are normally a lot of assets available, we had quite a bit of assets to pull from. The offshore industry extensively uses survey equipment and surveying contractors which, although not

directly related and tied to us during post-incident, we were able to draw from.

And then in my own opinion, working with the way that the Coast Guard looks at a lot of these things, rather than trying to stockpile a lot of additional assets, one of the better ways to do that is to make sure you maintain your relationship with all of these stockpiles that are out there so that when you have an incident that exceeds your previous expectation, you have the ability to go out and pull those in as needed. In this case, that worked really well. That's what we're doing both on the survey side as of September, and what we're doing now. There's simply not enough salvage capacity.

MR. RAINEY: And then to take advantage of those vessels of opportunity, were you able to contract them through the oil fund, or did you have existing vehicles in place to execute those contracts to get the private industry support?

MR. RAWSON: I'm probably not in a good position to answer a whole lot on that. Our primary funding vehicle for those type of incidents was through the oil fund. We had a lot of discussions. And we did, in fact, do many assessments. I'm not sure if we did the water-born survey assessment. I know we did

the aerial (phonetic) assessment. We've gone out looking for pollutions. In order to use that fund it has to be related to the pollution side.

We were able to use various other sources, whether it was through the Navy, who had contract mechanisms in place to pull people in. We requested the Navy to do this work under other funding instruments, and they could do the contract as well as through NOAA, and bring some of their resources in to do those work. The Coast Guard, itself, doesn't maintain or hasn't maintained that contract or capability.

MR. PARSONS: If I could ask one last question before we move on to our next speaker. We tend to focus a lot on near-shore and in-shore activities, but could you address briefly the -- I know that John Weust addressed it, from API, as well as this afternoon. The offshore infrastructure, I read anywhere from 65 to 8,500 pieces of infrastructure offshore.

Does the Coast Guard have a comfort level that they knew exactly what was out there before the hurricane? And, consequently, do you have a good feeling? You know what's missing or what's been moved since the passage of the hurricane?

MR. RAWSON: In many cases, most of the assets that are in the offshore, within the offshore area, don't fall specifically within the Coast Guard realm. We deal with floating assets, the potential platforms and whatnot, that are very far from shore. But when you get in the pipelines, it's a fixed platform, we don't carry that type of information. We rely on the same relationships with mineral (phonetic) managing services who maintain the extensive network of what is out there, where their platforms are, and they continue to work with the industry.

One of the areas that we found was lacking was once we got off the outer continental shore areas -- in other words, into the three miles areas -- that's where we didn't have nearly the same information, and the pre-storm knowledge on what was in place. Offshore that, we had a good knowledge of what was there, and it just became a difficulty in how you survey that vast area, how you prioritize those vast area. Near shore -- and I'm talking about the three-mile boundary -- it became much more difficult to know what we had.

UNIDENTIFIED SPEAKER: I do have the numbers on that, but I can give it to you this afternoon.

MR. ASLAKSEN: Commander, thank you for being here. Based on lessons learned and your experience and as it pertains to ELLA (phonetic), going five months away from our next hurricane season, what would you like to see NOAA to do better or NOAA play more of a role in the Coast Guard as far as integration to support your operations that you -- that didn't see from the Katrina? Where could you see us play a stronger role and/or coordinating better just to make things better and more efficient in the future?

MR. RAWSON: I think the best way we see the most impact is by maintaining and establishing relationships with the representatives of the various agencies. Again, the scientific support coordinators are the Coast Guard's primary vehicle as to what services NOAA can provide. Ability to have them on scene is the greatest thing. It's been difficult for us to have an NSC specifically devoted just to this mission, but that's where we see the most advantages to it.

Our mission is so wide and so diverse, so many different stakeholders and so many different agencies that are involved. It's tough for us to become an expert in all the various areas we need to be in. What we need is those experts who already know us,

who know what our missions are, what our capabilities are, where restrictions are right at our fingertips so we can then work with them during that crisis time. I do think that went very well. If anything, we could probably establish more of those types of liaisons.

MR. PARSONS: Thank you very much, Commander. Again, if we haven't expressed it earlier, please pass on to your co-workers and the Coast Guard the appreciation that we have, everybody in this room has as to what the Coast Guard did.

MR. RAWSON: Thank you.

MR. PARSONS: The last federal presenter this morning is Terry Jangula, with the Army Corps of Engineers. He's currently with the Mobile district. He as three to four years of service with the corps of engineers. And as you've heard, both the Coast Guard and NOAA indicate that they were strong partners in this response. Since 1992, Terry has been with the operating division of Panama City, and he's currently involved with the federal navigation projects in the Florida handle. Terry?

MR. JANGULA: Thank you very much for inviting us here today. I'm here mainly to brief you how we respond to hurricanes, and work with the inner agency groups and comment on our response to

hurricanes. Mobile district is one of the bigger districts in the Corps of Engineers. We basically -- From all across the Corps of Engineers, we respond to all except probably irrigation. The area of our responsibility is very large. It's all of the state of Mississippi, Alabama, and portions of Georgia and part of the Panhandle.

We've got four main offices that deal with navigation; two of those along the coast. We're basically responsible for 400 miles of coastline. We've got seven deep water ports, 22 shallow draft ports, 5 inland waterways. A total of about 2,200 miles of waterway.

What we do: Condition surveys, navigation notice to mariners. From basically -- the condition survey, we go out and survey all our channels, all our large busy channels in the Port of Mobile, Port of Pensacola, port of -- those surveys are often in ports. Some of the others, we may survey once a year at the most.

Navigation Notice to Mariners: Any obstruction channel we find, any shoaling (phonetic) -- even just not working the channel, we put out navigation notices to mariners to let them know that there is a hazard out there that they need to avoid.

Of course, dredging. Everybody knows Corps of Engineers does dredging. That's one of the main things we do. We feel that after the condition surveys, that's our most important responsibility, trying to maintain those projects.

More and more dredge material management is getting to be one of our functions. Trying to find uses for this dredge material so that it will not be considered just a waste material. That's one of the biggest problems we have with our environmental community. It's not so much of our dredging as to where we're placing the material we're dredging. Of course, we do the normal. We've got several locks and dams to maintain.

On Condition of Surveys: This is the website you need to go to for any navigation crisis. Mobile district. The first page, you click on "Navigation", second page you click on "Hydrographic Surveys". The next page you either pick the state or the project you're interested in, or you click on GIWWW. The GIWW covers the Louisiana line to St. Marks, Florida.

So if you're interested in channel conditions anywhere along there, you can click on the mile number -- or you type the mile number in and then

it will give you the map for that area. If you're interested in, for instance, Mobile Harbor, you click on Alabama, then you click on Mobile Harbor, and then the maps for that area pops up. It's in three formats, PDF, EGN, which is Microstation, and the ZIP file. You can download it.

This is what you're going to find if you go to one of these maps (indicating). The black lines outline the off right limits, and then the number indicates the depth of water levels. Any other color, red or black is something beyond the authorization.

Notice to Mariners: Again, you go to the same website, click on "Navigation". On the next page, click on "Navigation", "Notice to Mariners" on the following page. Then you will have to pick the bulletin you're looking for; either by the date or issue or the location. This is about what they look like (indicating). Basically, it's a general description of the hazards, where it's located and the contact number if you need additional information.

I put this slide in here to show you how narrow the Corps of Engineers' responsibility is, or authority is, compared to U.S. Coast Guard or NOAA. The channel you see outlined in red are fair authorized projects in Biloxi, Mississippi. That's the only area

that we have the authority to work. If you look, that's a very narrow band. When it says it's 150 foot wide, okay, we can survey -- we can go out there and survey 150 foot wide, plus what we consider the back slopes of that project. That's all we've got the authority to do.

Now, if we dispose area or looking for disposed area, we can survey a little further. So where we can do something for the country is very limited. It may be critical and important, but it's very limited to the response compared to NOAA and what the Coast Guard's got.

What do we do? Pre-storm: The first thing we do, of course, is look for a safe place for us and our contractors. We're no good to anybody if we're not around after the storm. We've got what we call windshield teams. What they do is they go out the morning after a storm and they just look around. They go to our projects, get a visual look at the jays (phonetic), for instance, erosion protection works, or just the road, boat ramps, and they start calling me back. They've been given their assignment before the storm, and they've been told where to go.

We compare survey vessels for deployment. Just the normal stuff. Make sure they've got all the

necessary files, make sure they're fueled up, that they're safe somewhere. We determine what surveyor resources we've got. We know our in-house. We'll start contacting our dredging contractors. "Hey, can you get a surveyor party in the area? Are you willing to contribute?" Most of these companies will put their survey parties out not even charge us, because they want the Coast Guard out just as much as we do, because they can't go back to work. Most of them don't get paid if they're not working.

Tim Oswald, with NOAA, is my primary contact. If I don't call him by the day the before the storm, he's calling me to let me know what he's got out there. We have contract parties under contract, indepth indelivery contract that we call on help to do survey. And then we conduct a pre-storm meeting with the PAET Team.

The Coast Guard in the Mobile sector has gotten a post emergency advisory team. Basically, what that consists of is the Corps of Engineers, Coast Guard, the ports, Gulf Analysis Association is in that. Just people in the industry around that are dependent on the navigation. We meet periodically. When we know a storm is heading in, we start out telecon.

All these people call in. We've got

representatives from the captains of the port at these meetings, and we start talking; what ports need to be shut down, what sections of the waterway, which ships are in trouble because they can't get away from the port, who is tied up where. Just information like that. We've got to get information. As far as I'm concerned, the greatest thing we've got going for us in the Mobile district are these PAET teams.

During the storm we got bridge operation set up. Calling people, get contact going. Basically, where the storm is at, what it's doing. And the PAET teams provide us with that. Believe it or not, we're -- we've got people expecting us to tell them the morning after the storm what kind of damages we've incurred and what it's going to cost. So while the storm is going on, it's dark and raining, we already have to get numbers on what kind of help we need. Of course, that doesn't mean we're going to get help.

Planning Survey Strategy: The first time I got a laptop or a cell phone I thought that was the greatest thing ever. Now, I know it's a choke chain around my neck. During the storm we're e-mailing, calling each other. "Where is everybody at? What's going on?" We're already strategizing what we're going to do, and we don't even know what we're look at yet.

A great example is Katrina. I was not affected that much by Katrina for a big part of my project. My area of responsibility is basically from the Louisiana/Alabama line to St. Marks, Florida. Katrina didn't hurt us much, take it from Panama City east. We really weren't affected. So we're already strategizing, "Well, we won't survey this end. We'll survey that end. We'll talk to the captain of the port of opening this end up without surveying that." That's fine.

Post Storm: The first morning after the storm at 8:00 our PAET is on the telecon. That's all the folks I mentioned before. I don't know how the system can it handle these days, but you can be amazed how many people are on there. Basically, we're all right, we're here, we're looking at things, we'll get back together at 3:00 this afternoon and start.

As a rule at that time -- sometimes -- you know, I guess these teleconferences, we do it twice a day for as long as PAET thinks it's necessary. It's once a day to once a week. But we keep these meetings going. But the biggest thing, I think, has happened was the last few years, with our hurricane response communications, we finally figured out that you've got to talk to each other.

I think it took us a long time to realize that, but I've been on this job for a lot of years. And I would say kind of -- we did some of this back in the older days, but I would say the first time we came close to doing it right -- within 12 hours, basically the first day, we tried to come to some kind of agreement between us and the captains of the port as to what we can open up without surveying and what we just need to survey. Normally, in that first day the Coast Guard flies the entire area. They can see what's going on with the navigation, and we can work something out.

The Coast Guard in the Mobile sector rely heavily on us to provide them, and they have a alternate responsibility. A lot of times we'll negotiate on what can be open and what can't. But as a rule, they do make the decision. We divide the spreadsheet. It lists all our projects, and many of them, especially like Gulf intercoastal waterway, Port of Mobile. The spreadsheet is sent out to all PAET members. It says what's open, what's closed, what's being surveyed, if it's opened, and the condition it's being opened under. A lot of stuff gets "go and proceed with caution". A lot of stuff gets opened with some kind of draft restriction or another. But this sheet is updated daily. Sometimes, in the beginning,

twice a day and e-mailed to everybody.

Lessons Learned: It used to be people got a job, and they stay with it all their life. That's not the case anymore. You've got to have up-to-date POC list. Coast Guard, Corps of Engineers folks, we're all moving around. You would be surprised with new phones coming in, e-mails, address. They're changing all the time. You can't get this information out to each other if you can't get ahold of each other.

PAET: That's the biggest lesson learned here. It's important. Very important. If you're in the navigation industry, you rely on navigation. You or somebody who's representing you needs to be part of these PAET teams. You've got to coordinate with everybody up front. You've got to know what's out there. You've got to know who you can lean on and rely on. You've got to get these surveys out. It doesn't do any good to the Corps of Engineers if the Coast Guard has these surveys. Everybody's got to have them.

Define Open and Closed: They're very -- There's a lot of levels of opening something; with restrictions, without restrictions, proceed with caution; back to business as normal. The biggest thing we have here is the last couple of years is "Closed" means closed. We've got in the habit of -- When we

talk to the Coast Guard, we don't just send Inland Marine surveyors out there or Weeks Dredge Contract surveyors out there to the ferry boat; we tell the Coast Guard. You have to know what resources you've got available. You have to know them up front. You don't have to figure it out afterwards.

Fuel: Boy, did we find out what problems fuel does. We thought we fixed it. Man, I've got gas cans laying around like you wouldn't believe. Well, we really learned with Katrina. When that fuel shut down and we went and pulled up in our pickup, I had 20 gas cans in the back of it, and you have some little high school boy tell you that you can only have one can. Small service folks say, "I got 100 gallons of fuel a day."

We had part -- We couldn't get out there. We had -- All our friends were helping us. NOAA was giving us fuel, the Navy, the Coast Guard, Florida DOT, Mississippi DOT, Alabama DOT, if they had it. It's something we're going to have to really figure what out to do. I don't know what the answer is. You can buy big old gas cans or a big 355 gallon gas tanks, but how are you going to get the fuel down? Not just anybody can run up and down the road with fuel in the back of their truck. There's laws against that. So I don't

know what we're going to do. We're sure talking. We're not coming up with many answers.

What We're Doing Right: We're having a lesson-learned PAET meeting every May. I think the biggest thing we've accomplished with the last meeting or two ago since we started is just seeing everybody's face in there, getting everybody to write e-mails, who replaced Josh Rodes (phonetic), is Molly White still going to be here this year, stuff like that. That's really -- knowing these things is really important when you start working.

I think we've got some excellent partnerships right now. I think the Corps of Engineers, NOAA, and the Coast Guard are working together better than they ever have. I think they've always had, but I think the lines of communication are better than they've ever been. U.S. Navy, the Corps, the waterways. Everybody seems to know that this is not somebody else's problem. This is our problem. And they're -- I think, unfortunately, we had so much practice the last couple of years that people are now seeing we've got to work this together.

Our Coordination Meeting, our PAET meeting: I know people are getting tired of going to meetings, but it really pays off. The Mobile district is still

an old operation division. We manage our own money. We take our own surveys, we process them. We determine where we're going to dredge. We issue all these tasks with contractors, oversight. We do it all ourselves.

But the minute people come after us for money they're looking at a change in that, but I hope they don't. I've talked to my friends in Jacksonville, New Orleans, places like that, and they think we've got it made. So we're hoping we can avoid getting fragmented so we don't have to do that.

One of the biggest pluses we've had the last couple of years is the NOAA side scan. We've got one working side scan in the Mobile district. The truth of the matter is we can't afford having more. I keep our people trained on it. We just don't have the budget. And when I get -- when I get a list of anomalies in the channels, and I go out there with a survey or a diving contract, we send a man down, he comes back up, he tells me, "Yeah, it's a pile of mud, or a sailboat." It's great. I can pinpoint it.

Where We Need Improvement: Fuel; I think I said enough about that. We've got to identify fuel sources. Coordinating surveys; we're not Houston/Galveston. We don't have the sophistications like their PORTS system. I think what -- I would

advise a do-op (phonetic) from this meeting for Corps of Engineers and NOAA's engineers -- it's important to contact, "Let's coordinate this thing, and let's get down together and see if we can't coordinate it up front what kind of surveys we would like to have, and when this happens, and what format we would like to get the data in."

Tim was really good about sitting down with us after we figured out we had problem, and after we had the PAET people sit down with us and help us on how to process the data we were getting from NOAA. But, you know, we've got -- We're both using high-tech right now, and that will help us. But our people are used to working in a very small, refined area.

And we don't need to find out after a hurricane that we're having trouble processing each other's data. We got a lot of help from NOAA. They were out there helping us any way we could, but I think this is one area -- it's not a criticism, but I think we've got to work on it.

The last place we need improvement is we've got to figure out how we get this survey information to the ports. We can give them information on a form list, but it's not just like them looking at it. After this hurricane a lot of them have lost their phone

service, had lost electricity, so we can't e-mail them the survey. So we've got -- We're working right now. We're coming up with a system, but we just can't figure out how -- where we're get the PAET from. Maybe they can send somebody to us because we're too shorthanded.

That concludes my presentation. Does anybody have questions?

MR. OSWALD: You mentioned you got that dredging contractors, you have in-house staff, and also IDIQS. Could you categorize, like, how many survey launches, total, are available to your district?

MR. JANGULA: Okay. We have two survey boats out of my office that are fully manned at all times. We've got a third we can put in if we have to. I think we had three NOAA vessels. Our Irvington office has got the 13 -- and they've got probably four vessels. Then Kirby Marine trenching survey vessel. I'm trying to remember. I think we had four survey vessels out there. They were actually survey parties that belonged to our dredging contractors.

And this was during -- Well, this was during Katrina, I'm talking about right now. It varied somewhere between Ivan and Rita. When you look at a 400-mile-stretch coast -- Like I said, we talked to the Coast Guard, like I said, with Katrina. We just kept

part of it open. Ivan was another story because it hit closer to home, but we did not -- although, Ivan was devastated -- but Katrina -- Anybody seen pictures of the Mississippi Gulf Coast know what that is. We had a lot more debris, a lot more problems.

MR. OSWALD: Sort of a quick follow-up question: Do you rely on NOAA tide gauges exclusively or a combination of NOAA tide gauges and your tide gauges?

MR. JANGULA: A combination; NOAA tide gauges, our tide gauges. After Katrina, especially, west of Mobile, we had a lot of benchmarks out there in the ground that were able to go and run some control data. Choose someone where we could pick up. But we were pretty much devastated west of Mobile.

MR. SZABADOS: Mike Szabados. I just want to highlight that the Mobile district and NOAA have been working very close together for the past several years in exchanging standards, and the data exchanged between the two groups have been very good, and looking forward to continue working with you.

MR. JANGULA: Thank you.

MR. DASLER: Do you have survey contractors under contract right now?

MR. JANGULA: Yes, sir. We've got two

district-wide contracts going on right now.

MR. DASLER: And you do that under the Brooks Act (phonetic). So are you happy with that process?

MR. JANGULA: I prefer to have my own survey parties. That's -- don't let me -- Let me not stop there. The reason being, historical knowledge. If I hire a contract surveyor party, I have to pay him. Like, say, I tell him to go down and do a deep water point survey. I have to pay to find out where that is, where the boat ramps are, where the tide gauges are. It still takes some time. I have to pay him for this time.

Then I've got to put loss in efficiency, if I have a contractor. And time that takes -- Right now, my survey party, they just know, "Bring your suitcase." They're running down the road and they're -- It doesn't phase them at all. They're used to it. I'm not saying they don't bitch and gripe about it, but they're used to it. Pick up the form. "That meeting we had this morning, forget it. Go here." I can't do that with a contract surveyor.

Can they survey as good as us? Yes. But they're just something about your own people that have been with you for -- somebody in that party being with

you for 20 years and knowing you. Instead of having to go to your contracting officer, get their contractor, and that process. There's a big loss in efficiency. I don't think we need to have on hand any more survey parties than we do now. I'm too busy, but I don't think I need to rely on a contract party to do my routine stuff.

MS. BROHL: Thank you. Helen Brohl. Mr. Jangula, you mentioned a little bit about the different -- or there were standards or different information trying to coordinate the survey information and use the NOAA survey information with the Corps. I did hear from a vessel agent in New Orleans who had reported that one of the hurdles -- which was gotten over, by the way -- Was differences in depth information or obstruction information between the Corps.

I think it was more like the depth requirements between the Corps and NOAA, and that had to be sorted out. And at that time, the way it was sorted out -- of course, I'm second hand; not here to say -- was that NOAA decided to take one type, do one type of survey, and the Corps do another type of survey. Without elaborating on whether that was the case or not, how do you now plan to deal with that in

the future so you're not spending time tripping over each other to get your assets in place?

And, also, I assume that when that's -- that's the circumstances, where there is different information by a foot or two, which was what they were finding or being told. How does the Coast Guard respond to that with their regard to their need to open up waterways and getting it moving and move assets elsewhere? So what's the next step for you in trying to fix that?

MR. JANGULA: Basically, just talk to each other. You know, like, survey, for instance, let's go with a different scenario. A lot of -- At least three systems I know people use, UTM, Lags and Logs (phonetic), and States Lane Coordinates. Which one of those are you going to be dealing with? A lot of times -- I think what happens with us a lot is we got them survey data soon, instead of knowing what the -- and whether it's meters or feet. That's a big feet.

I know if my guy didn't -- that processed it -- His name also happens to be John Oswald -- You know, assume it was feet and assume it was state plane coordinates rather than looking and turning, which is UTM meters. There's just little things like that we talk with each other up front. If we find -- Like I

said, we have a tendency to run a profile on condition surveys.

For us, a single beam survey, if we're trying to do things quick and moving, it's better than a multiple. We can't process multiples in my office. To me, I don't think it's a big killer of time. I think we need to be talking about this stuff before we got the data instead of after we got the data.

MR. PARSONS: We appreciate your perspectives, and I think there will probably be some questions during lunch. Thank you. Our last presenter, before lunch -- and we will run until noon to give Don his complete time here. Don Jagoe is the general manager for marine science and technology division of SAIC. SAIC is Science Applications International Corporation.

SAIC has been a NOAA hydrographic services contractor since 1994. He'll be able to provide a unique perspective on contractor's role in response to impacts on the MTS, because he, in fact, his company and others, were out there in the Gulf and responded to the request from NOAA to participate. Don?

MR. JAGOE: Thank you very much, Captain Parsons. Maybe this is a minority report for this, but there's been a lot of talk about contractors this

morning, which is kind of a nice thing. I hope that I can continue that theme. I'm very pleased to be here. And as the captain said, we have been contracting since 1994 continuously for NOAA with the hydrographic services division, and I think quite successfully, and a variety of contract and contract vehicles.

But as the second bullet talks to -- what this showed us is Katrina showed us the ability to continue this partnership in an unusual circumstances can be equally important. This was not something that was written in our contract, it was not something particularly envisioned, and clearly the national meeting was preeminent, and we were very happy to be able to respond, when asked, to continue on to do some survey.

I'll add on a personal note that out of our survey party of 12 people, all of them were expecting to be home after having been at sea. Most of them, about six months out of the year, with one exception. They needed volunteers to stay on however long it took. So -- and one was in the middle of a nasty divorce, and she really needed to get back home.

So my bottom line here is -- the bottom word here is "partnership". We really believe that. And I think -- And I'm speaking for SCIC (phonetic),

but I think for my friends in Fugro and Tera (phonetic) surveys, and others, I think as a community, we all feel the same way. This is our life. This is what we do, and we take it very seriously.

I just want to give you a very quick background. Mostly -- And not to belabor what SCIC has done, but this sense of partnership. A partnership is not born up of getting a contract and suddenly you're a partner. It's built up over time. This just gives you -- and I'm follow going to -- you can read it. Every year we've had multiple contract people. We have surveyed in New England, we've surveyed in Long Island, we surveyed the Gulf of Mexico, New Jersey, Alaska. So -- And that's just the work we've done for NOAA. As a company, we've surveyed all over the world.

You have to, I think, establish, not over months, not over weeks, but over years understanding each other, understanding the culture, understanding the people. When you pick up the phone you know who you're talking to, and, whether or not you've been burned before. If the company or the fact the government agency is true to their words. Because some of this short-term business happens very short term, and the contracting and the ability to get out there and start under an undefinitize (phonetic) contract,

authority or something like that is based on a certain amount of trust.

For 2005, these are the things we were doing. We were surveying off the mid Atlantic corridor off New Jersey on a different vessel. And then the second bullet there is survey services of a different vessel that was actually used for post-Katrina response. We had done a number of sheets and JJs, GNE. Those were the folks in Alaska and the Gulf of Mexico. And then Katrina happened when we were supposed to actually go to Gulf Port to do the demobilization of the vessel that was used, the Davidson. And Gulf Port was not able to be used for obvious reasons.

We did this work. And the whole time that this work was going, as those of you who were down there know, Rita was bearing down and looking more and more imminent, and posing significant issues as to what was going to happen with the vessel.

We also did work on the Gulf of Maine mapping initiative, doing a significant amount of work up in the Gulf of Maine, and working with NOAA as the surveyor for the source (phonetic) and economics loss survey. Well, the Davidson -- while it appears to be a ghost here -- is actually a blue hull ship now that originally started life as a white hull NOAA ship, and

had a great -- I guess it's not going to show up. Go to the next slide.

A terrific ship that's owned by Ocean Services, Incorporated who is a good partner with us, and they were selected by the Military Sea of Command when this sign charter paradigm of survey contract was let out a year ago. And so we took, basically, a bare-bone ship that was provided by the Military Sea of Command. NOAA provided the leadership. They were the onboard hydrographers. It took typically two to four NOAA personnels that we were working for, and then SCIC provided all the equipment, and up to 12-person science crew on board that did the hydrography in these multiple areas. And I think, successfully, we all felt that on both sides that the system worked and worked well.

The vessel had no down time during the entire year. For those of you that are tekkies in hydrography, there's a pretty robust set of equipment out there. The vessel had two launches; R2 and D2. And they proved to be not only important in Alaska in particular when they were necessary to do any of these very shallow water inlets, but in the Katrina response, the launches were absolutely imperative to have because they really filtered their way up in Mississippi.

And there's no way to send a ship up without having something shallow draft ride ahead to ensure that there wasn't a barge or a sailboat up there. So that worked very well. It's a great reason on multibeams. 8101 and 8111. A very high resolution, 81.5. We used our own SCIC software for the realtime acquisition and for the post process.

This shows you where, in fact, the Davidson and the SCIC NOAA team surveyed, starting their passage, and went from the mouth to Mile Marker 80. So it's a significant amount of Mississippi. I think the longest stretch by any of these individual teams.

A real quick time line. I won't belabor this because we heard it from the Coast Guard and NOAA, but just to show that, in fact -- You know, this is the vessel and the team that was working from June 2004, and was getting ready to reach the end of its contract survey life, when it appeared that Katrina was really going to come in the worst possible scenario, where we were supposed to be demobilizing. So we got some heads up from our friends like Jeff Ferguson and Brian Greenwell from Roger's office that this is something we ought to think about as the hurricane bears down the coast.

And then on the 30th of August, we actually

provided a budgetary rate to give NOAA some idea whether to say, "Go." In fact, by that time, we already started surveying. On the 2nd of September, the actual mechanism for doing this contractually to a task score (phonetic) of six of the different contracts, that is the everywhere -- what we call the everywhere contract.

So this was a task score task that were six under the existing turner key survey contract that was enforced with NOAA, and under which we had been prepared to do for this coming year, but it was enforced. So we got that task score and task score authorized us to begin performance. It was an undefinitized contract authority, so we started on that premise.

And we had a proposal due to them, and we got a proposal back to NOAA, and then we completed by the time, the 17th and 18th. We completed the survey of those 80 miles of Mississippi. I think it was successful from our viewpoint, from NOAA, Army Corps and the Coast Guard. There's a very, very close relationship between those three entities.

And then we finally got the non -- the definitize contract on the 28th of September, and was actually definitized by NOAA on the 1st. So, in fact,

you all are somewhat hanging out there a little bit. But we have a relationship that gives us a great amount of comfort.

Pricing: We had, of course, a significant amount of experience on what the pricing is going to be. On the everywhere contract we established rates for people and put it in. And, of course, the time chart of the Davidson, we knew what it was costing us on a budgetary daily. The scope was essentially the same, the hydrographic survey current to the NOAA specs, with the caveat that there were many onboard decisions being made by the NOAA chief hydrography. You typically would have seen a sheet and expect some deliverable layouts. Further NOAA website, we would have gone ahead, plan a mission and execute it.

But there was much more to it. It was day-to-day -- actually, it was night-to-night decision making. As things were found in the river, we got something, the Coast Guard advisory information. And that did work well, but it was very much an ad hoc. It was certainly changing fast.

The second bullet there, I kind of threw it in. There are contractors everywhere because we are not the enemy. We, too, felt that this was a situation where you don't really go out and try to make money.

So when the Davidson went from being government-furnished equipment to a vessel that we contracted for under this different contract vehicle, it was a sub-contract. We did not charge a fee on that.

Some of the survey channel will be familiar to those who were either there or survey for a living all the time. There was a lot of stuff in the water. There was not only barges that we've seen, but there were sailboats. As vessels were steaming up the river -- or, actually, approaching the mouth of the river, they was passing the houses -- the roofs of houses coming by the ship and dead livestock and dead pets, and, luckily, no dead people. But a significant amount of stuff in the water. And no surveyor likes stuff in the water. That's really not good.

The other thing that will come up in a later slide is all of this pollution, and all of this oil, the silt. It was not the ideal place to be trying to do multibeam surveys. And it took probably more sand (phonetic) velocity than we typically would want.

The channel walls in the shallow reaches -- they didn't know where the channel wall was anymore, particular the navigations were extreme in a sense that not only it had things there that you wouldn't

ordinarily would have, but you didn't really know where you were because the aids to navigation, as I mentioned, were simply gone or moved or not functioning. Things that you take for granted, like range markers and buoys. All the things that mariners count on every day were just gone. You had launches out there inching ahead as the ship went in.

Also, a very rapid bottom transition from the normal channel depth of around 35 meters to the channel walls. We were only permitted to survey during daylight hours, so that cut down the amount of time we could get this done.

Here's some snapshots of the damaged navigation aids. There's buoys, and things sticking out. Some things were just not there that we needed. I think it's disheartening to hear that there's not a big slug of money coming down to build those and strengthen those, because that's money that ought to be there, whether it's funded by FEMA. It's a disservice to the nation not to fix those quickly and better.

On the data management side, as I mentioned, there was a lot of interest getting this data as rapidly as possible out. All people need to stay. It's not doing much good if you're doing the typical thing and spend two weeks looking at the data

and turning it around. This was very much realtime. So we were producing the data. We take the first cut, turn it over to the NOAA rep on board, and the NOAA rep would make the decision at to what's acceptable or not, and then pass on, literally, in realtime. And that became positional data for the Corps of Engineers.

We had this request for the six-meter curve definition along the channel walls. Obviously, that's launch work. But what we really found was there was a lot of noise in the sonar as you got closer. And the shallows were changing, and the walls were literally crumbling as the survey was going on, and there was, of course, people trying to move things out of their way. It was quite a challenge. And then as I mentioned, sound velocity profile. We update that frequently, but here it was pretty much a nightmare. Never great in the Gulf of Mexico, especially with the fluff found down there, particularly the bay.

Some Lessons Learned. Communication is a big one. I think we heard a lot of good things about communication, but I think you could probably get an equal number of horror stories about communications because we take for granted our cell phones and Blackberries. If all that fails, pick up a land line. Well, those who lived there know that that was largely

gone for quite a while. And cell phone coverage is still spotty in some spots.

We got lucky as to put together the time chart in Palacious (phonetic). We made a decision to buy satellite telephone for the launches, and base unit for the ship. And that proved to be invaluable. Because on that first day -- I mean, we came in the morning after the hurricane passed, and the Davidson got in. And the only way to talk to the launches was through the satellite phone. It wasn't until sort of the end we were getting regular communications. So I pose to you that that's something you might want to get funded if this is the kind of work you're going to do in the future. I don't know how the NRT is, but I highly recommend it. It's pretty inexpensive these days.

Communication was given a lot of attention by the gentleman in the corner. And I think he did a great job. In fact, the agencies are talking every day where it's absolutely necessary. For those people on the vessel there was a lot of ad hoc communications going on, trying to find out a way to pass message from this guy to this guy, and get information to the people. In the end, I think it worked extraordinarily well.

But like every -- everything that you do like this, just like my 30 years in the Navy, this is where training shows up. If you've trained it, you would -- If you haven't trained it at the time, you're way behind, and you want to know ahead of time. I guess I should make a pitch. Training includes contractors we partner on the Corps level.

I don't need to belabor the damage to the navigational aids, except where it affected pilots. And a decision was made to have river pilots on board the ships 24/7. That was a very good decision. I just -- actually, had some funding from NOAA to pay for that. Thank you very much. It proved to be a really, really good thing.

While I disagree with your desire to have your own surveyors, thinking that if you work long enough with the contract guys, we'll have all that knowledge that you want. So just keep us longer. It was really driven home that local knowledge is very important. In places where there was no longer a buoy, there was no longer mile markers, there was no longer a range to establish.

As you're coming around the corner, the pilot, the river pilots knew that. They knew it like the back of their hand. And they had enough human

knowledge, which is irreplaceable with computers, to be able to say, "come a little left, a little right. No, I think you're okay where you are." And that was a very good thing. So big hands to the pilots.

Survey Goals: The mission planning, as I said, was sort of ad hoc, but I think that that's probably not something you can change. I mean, it's just the nature of the kind of emergency. It's going to be -- probably ought to be responsive. The original input I got from my guy who is down on the ship was perhaps a little more candid than I wanted to put on the slide, so I toned it down a bit.

But you might consider having one agency, one person, one element as the -- as sort of the lead. At least at our level, that was not always apparent. It got better as time went on. And I thought at least within my group the NRT might have been a good operation for this kind of effort. They understood what we were doing. It's just proof of life.

Summary: I'm going to give you the pitch that you probably have heard, but contract line work is important and it needs to be -- it needs to have enough latitude where you can respond to things. The fact that we were under two simultaneous contracts as a corporation was a good thing, and it really allowed

Roger to do this by going to different contract vehicles. We did it very quickly and it worked very well. And Linda Braner (phonetic), and Mitch Ross did a great job. And so you have to think about it ahead of time.

I guess I would make a pitch making a contract language vague enough or inclusive enough that you can put in the unexpected. This is not expected. I don't think anybody expected this to happen, but the fact that we know is better now. So as we go to this next service season, it ought to be written.

The second bullet here is the partnership is all important in our view, and it takes experience. You've got to build it. It's people to people. Contractors, agencies, Navy. We work with everybody. We're all people. We all have the same needs and desires. And the chief among those is a desire to do a good job and to serve the nation.

I think we showed an employer the rest of the day how incredibly graphically impacted the nation on how -- you know, Peter Jennings and everybody else made sure that we knew what this meant to the nation as a whole. But the maritime infrastructure does not get the kind of national attention that maybe NASA gets or missions to the moon or Mars are getting. The

secretary does wrong. We need to get the message out there in a clear way. I totally echo. Gas price would have done it had we had another month like this. Gas prices would have had people thinking about us, but it did have a huge impact.

You know, this is self-serving because as you go, I go. All folks float on the same tide here, but the survey backlog line item of twenty, twenty-four million dollars a year is so far being the noise level on federal budget and it's embarrassing. So we have the present budget at 31 and it gets kicked back is not a good thing. We need to considerate that effort. I think that the -- whatever we can do to raise this in the public eye is a good thing. And as the Admiral said earlier, perhaps rolling things under. I certainly back that up. This is woefully underfunded. It's an important aspect to the country. I think it's just because the country doesn't understand the importance.

My last bullet here is as we strongly believe as a corporation -- and I know there are those in the Maps organization who may not agree with me -- but we strongly believe that NOAA needs to be kind of approach and over when it comes to hydrography. Somebody's got to set the standards. Somebody's got to

be the national expert. Some group has to be the people you turn to to make a definitive answer on, on data formats, and what's good enough and not, and who sets -- who sets what the first time right. That's important.

In the absence of that, you're going to have competing specifications. I don't think that's good for the country. So in order for NOAA to do that, NOAA has got to have good ships, they have to have career paths. While we certainly want to share in that, and we think there's a place for it, we would not in any way want to supplant NOAA going to sea having someone asleep. That's a bad idea. We ought to work as partners.

I think I have a fly-through. This is about ten seconds. This is data we collected from edge to edge of Mississippi at Mile Marker 55. We stuck that digital photo in there, but you can see the data that reflects that. A lot of great data came out of that, and I hope it gets used and not just used once and put on a show. But there's at least eight miles. That's all I have. Any questions?

MR. RAINEY: Sir, I'd like to follow up. We did discuss about the contracting things. Is there a particular contracting vehicle that you're aware of

that would facilitate sort of a contingency response by contractors? Is there something? I know you said they made use of two existing contracts that you had, but is there a particular vehicle that's in place that you're aware of, or there could be stood up that would allow for that capacity to basically eliminate any, you know, delay in the contracting process?

MR. JAGOE: Clearly, you've got to have a contract in process. The contracting NOAA was a challenge for good reasons. I think NOAA's contract offices is understaffed. But it's got to be in place. Obviously, the idea to keep contracts where you could turn a transporter (phonetic) on rapidly. We're big firm believers in the work staff. I think it's a requirement for this kind of work. I frankly don't think you necessarily need to have a new contract vehicle to establish to do this kind of work, you know, to be ready for emergency should it happen. The contracts that David Evans, Fugro -- the contracts we have are generally multi-year contracts. They're in place. As long as the basic language allows you to respond, which, you know, in this case, the everywhere contract, is sufficient. It's just being able to get it turned around very quickly. We were working off of New Jersey. Had this thing steered the other way up

the Atlantic coast, we may well have been coming in with the Atlantic surveyor the same time. I don't think you need something new, but I think you need to be cognizant.

MR. RAINEY: Thank you. Any other questions?

MR. PARSONS: Thank you very much, Don. Again, I appreciate your perspectives and those of the other federal agencies that spoke this morning.

(Lunch break was taken.)

MR. RAINEY: I want to mention before we jump into our afternoon speakers. Two things; I distributed -- I wrote out some proposed recommendations that are just some ideas that I had with the briefings that we've had so far yesterday and today. And as always, our meetings seem to be very limited for the amount of time that we have for deliberations, and it seems to be of some assistance to have things written down, at least as a point of departure for discussion.

So I jotted down some ideas just as kind of an opening discussion on some various topics that we've covered so far. We talked about it in our ORVEC (phonetic) meeting and our bylaws about, you know, we couldn't raise motions and have them second. And I

want to go over discussions. These seem to have some merit. What I suggest is not as a distraction now this afternoon. Let's give our full attention to the speakers, but it's a possible food for thought for discussion Thursday during our limited time, and try to come up with some recommendations.

Secondly and relatedly, as I mentioned, Mike Szabados requested some panel assistance, and half a dozen or so of us volunteered yesterday. The way things are looking with the agenda, either it works -- It looks like we have some time. At the end of the speakers, we're going to be able to move some things up. And we do not have anybody currently.

I just checked -- at least signed up from the public to do public comments. So I think that the hour will be reasonable, and maybe those folks who express some interests in getting with Mike Szabados on the port issues can do so immediately after the presentations this afternoon. Let me turn it over to Roger.

MR. PARSONS: Thank you. This afternoon, we'd like to concentrate on, essentially, NOAA's customers. Those organizations, those individuals that we hope benefit from the products and services produced by NOAA's Navigation Services programs.

The first speaker this afternoon is Captain Mike Morris. Captain Morris is with Houston Pilots. He has been with them for the past 11 years. The previous two years, he served as the Pilots Association's providing officer. As most of you, particularly those from this area, know that the Houston Ship Channel is perhaps one of the most challenging waterways in the United States, if not the world, due to its narrowness and its particular location.

Certainly, it services the second largest port by volume in the United States. And it's with that in mind that we invite the Houston Pilots to come and give their perspectives on the impact of port closures on their industry, particularly the Houston area, and sort of give us a report on how we did.

MR. MORRIS: Good afternoon everybody. It's always tough to talk right after lunch, so I'm going to start out with a little sea story I heard the other day. Actually, this was a story about one of Sherri's, my partner. But it's about a pilot, a big strong guy. And he was single and he went out and met this young lady, and things went pretty well.

And they went back to his home, and he took off his shirt. Again, he works out. He's a big strong guy. He says, "Honey, you're looking at 150 pounds of

dynamite right here." And he pulls down his pants and he flexes his leg muscles and he says, "That's another 150 pounds of dynamite." Well, he takes off his underwear. The lady bolts out of the room. He gets dressed and he catches up to her real fast and says, "What's wrong?" She says, "You know, 300 pounds of dynamite in that room and that short fuse, I got really scared."

I'm going to start by really -- kind of tuning through my talk because I'm a big believer, and one of the things that really makes NOAA work for the Houston Pilots are the regional managers. Allen, you can give me a check there later, if you will.

Allen, who is our regional representative here in Texas keeps the interesting users of NOAA's products in the loop on what's out there today and what's on the horizon, or tomorrow. He's always soliciting opinions on NOAA's products, as well as looking for creative ways that NOAA can get involved in helping us solve some of our navigation issues.

Having a point person to go to, like Allen, or the regional managers, does an awful lot, I believe, towards customer satisfaction. I guess I would refer to Allen as kind of a jack of all trades, master of none, but he always knows the right person to send us

to when we have a question about a particular information.

My relationship with NOAA as a pilot started about nine years ago as a HOGNSAC rep. We were starting to use ports. Had been using it about a year. And all of a sudden, "Boy, these readings on ports don't match our eyeballs. Something doesn't look right."

And Allen involved Captain McFarlet (phonetic), and within probably a month or two, Captain McFarlet and a rather large team of NOAA scientists visited us in their office and explained that we were right. That our eyeballs weren't fooling us. They had recently updated the local tidal data to reflect the changes in the mean sea level of our area.

But having this NOAA team explain to us in words that, as pilots, we understood, made a big difference, and was certainly a good start for me in working with NOAA. Today, ports is a great safety tool for pilots in our area. We use the system and monitor the data from both our dispatch office and our pilot boats continuously.

The Port of Houston -- port complex, made up of Houston, Galveston and Texas City have the most liberal, underkeel clearance policy in the country. It

reads simply, "A ship must remain afloat at all times." There is no allowance for underkeel clearance.

We're blessed with very soft silky mud. Having sailed on the west coast all of my career as a captain, that was quite a change to get used to these area about soft grounding and ship stopping. But we do run with very little appreciable underkeel clearance in this port.

So having realtime measurements enriched by forecast are critical requirements for safe navigation for us. Knowing when we're going to have low water is important. So accurate and timely water level and current information certainly results in safer and more efficient port operation for us.

Moving on, I guess, going five, six years ago, as print on the main charts were envisions, we heard about them in several HOGNSAC meetings from Allen. As they came online, people came down from oceanographic and displayed them and talked about them. And today, when a ship or even when -- as I was present, we need a new chart, it was certainly nice to know when I walk into the nautical supply house down the street and pick up a chart that may be 18 months old in edition, but was up to date with corrections.

I see the pocket charts at the back of the

room. I saw one on the boat yesterday. Again, four years or so ago when they were envisions, Allen brought them to us. "What do you think? How can we make them better?" The very first one we saw actually encompassed the entire Houston Ship Channel from the sea buoy up to the turney (phonetic). And we said, "Wow. Kind of neat, but you can't see anything."

Taking those ideas on future products to the customer that's going to use them, I think is -- has made it a better product for us. As we have recently -- in this last year, we opened up our new wider and deeper channel -- our channel and done the additional four miles. Allen put me in touch with the people of NOAA to -- for the next edition of the chart, 113.4, which is kind of the harbor chart of the Galveston area. With that extra four miles, we would find a way to put that on our chart.

There were a couple of options, whether we have an insert or change the scale a little bit. But, again, sharing that information between the interface -- between the user and NOAA, what a wonderful deal.

As we developed our map system over the years -- I was kind of also put in charge of that about eight or nine years ago. Allen would put me in touch with people in the NC group up there, Silver Springs.

Usually, it was just to answer my dumb questions as I was learning this technology.

But today, as you may have seen on yesterday's boat ride, our updated navigation systems are now using NOAA's ENCs. These charts support realtime navigation, and they allow us to put in the collision avoidance information that we get from the AIS. Eight years ago I probably would tell you 90 percent of the pilots never ever carried a navigation system. Today, 90 percent of them don't leave their house without them. So, again, through NOAA's products.

That brings me to my ENC story. Hopefully, you haven't heard this story. The Jones brothers. There was John and Joe, and they were twin brothers. John was married. Joe was single. But Joe was the proud owner of an old fishing boat. Well, coincidentally, and quite sadly, when John's wife passed away on the first same day as Joe's fishing boat sank. A few days later a kindly old lady said saw Joe.

She was looking for John and said how sorry she was for his loss. Well, Joe started right in. "Don't be sorry. She was getting old. Her bottom was all chewed up. She always smelled like dead fish. She had a crack that was just getting worse and worse. But

what really did her in was when four of my friends came down and wanted to have a good time, and they all jumped on her at once, and the boat sank right at the dock."

Before he could finish the story, this poor kindly old lady had fainted right there. Not quite sure why. And I know now you're saying, "Well, what the heck does that have to do with electronic ENCs?" See, but what Joe was really upset about was he had just bought an electronic navigation system. And what happened was he was actually using NOAA's ENC charts, and that's what he was more upset about than losing the boat.

Over the last three years I've had the opportunity to see NOAA come in with their survey team and do these snapshots, if you will, of our channel. What a wonderful tool. We still got a Bose (phonetic) series up in our office. They provide it in a format that had been much more user friendly, if you will, than what we get from the Army Corps of Engineers on station numbers and reference points. You know, they put all these numbers, all these datas right on the chart so we can actually see a little easier where the shoulder is.

Allen has organized work groups of coast

pilots. He's about to come out with a new release. Trying to get the publication that have the most up-to-date and user-friendly information available. And I guess it's certainly my opinion that without a regional representative, we would not be taking advantage of the services and tools that NOAA provides today.

Moving into Hurricane Rita, for us, this was a great lesson. I mean, we were very lucky in this port complex. We thought we were going to get hit with the big one. The storm veered to the north, and unfortunately for a lot of our friends in Sabine and Lake Charles. But as were preparing for this, it was certainly -- and we've got lots and lots of lessons to learn, and it will be better next time, but the communication and the cooperation in this port were phenominal.

Again, starting with Allen, the regional rep, with these phone calls as we're leading up to the storm, two significant things. We had the national -- NOAA's National Weather Service on each of these conference calls giving us the most up-to-date information, where that was a tremendous help for us in two areas. The first was where to send our pilot boats. We were pretty sure we were going to send them

over towards Sabine and Lake Charles, and we decided to hold off until near the end to see which way the storm went. Then we were very glad we did. We got the latest report. "No, that's going to be the wrong way to send them."

But also listening, as we got into the evacuation of the port, we moved about 60 ships out of here in 24 hours, there was one ship that didn't make the deadline. In fact, our boats had left. One of the primary reasons we decided to sail that vessel after the fact, and only because we were able to get off on a helicopter, was that she was fully loaded. She didn't think she could sail. She had some engine troubles. They got it fixed. She called it in after the hour, after our boats were gone.

But she had taken on this storm to thinking she would have to stay at the dock. She was loaded down to 36 feet, which was right on the bottom. And now instead of a 20-foot storm tidal surge that we were hearing about on Sunday, on Thursday they say, "Hey, you're going to have a seven-foot drop in water here." So rather than have that ship be that hard at ground and pressure on her hull, we decided to sail. Again, based on up-to-date weather reports from NOAA's National Weather Service.

As the storm passed, again, on these conference calls, once or twice a day, you know, NOAA's -- what I think the NRTs, survey boat teams, were out there. Just outside getting ready to come in. It was deemed in that priority to give the Houston Ship Cannel up and running as fast as possible. They did a survey to look for anything in the water or in unusually high amount of shoals.

Within 24 hours of that storm passing, NOAA's survey team were in the water. And we certainly -- we opened this port in record time. Again, getting that survey, that snapshot of our channel, what a -- what a -- what a great learning tool as a pilot to have. It's tremendous.

Of course -- and I'm not sure how much -- as we get into the -- One of the evacuation plans that I saw after the storm developed, though I'm not sure how much Allen had to do with this or not, but it was certainly posted on our pilot boat. I hadn't seen it, but I read this one day. "For the next hurricane, Cajuns will go I-10 East towards Lafayette. All Hispanics would go on I-10 West towards San Antonio. Longhorns and all their fans will go up 290. Republicans get the opportunity to fly up to D.C. on Continental Airlines. Democratics get to go I-45

South, right down to Galveston. All finally, there's" -- I don't know. Allen might have had a little hand on all the Aggies get to use the 610 Loop.

Looking beyond what do I see as a tool I really think are necessary or that I look forward to having NOAA. Certainly, as our shorelines are changing, satellite imageries and photogometry, I think are important tools in safe coastal navigation. One of the other areas is big for me, and I will say I'm not necessarily speaking for all the Houston Pilots, but more and more ports want these 24-hour all weather ports. There is pressure being put on pilot groups. Subtle, mind you, but it's still there.

Certainly, the conversations that I've had over the last couple of years with Nipos (phonetic) who had to leave early, there is no pressure, and certainly not from NOAA -- as our president, there was no pressure. I tried to get that passenger ship for 2000 passengers, all trying to get home over Christmas holiday in the port. What if you have fogs? So I think anything in this look-ahead technology, whether lasers or infrareds, any kind of technology can help us look out there, who else is out there.

I mean, we know, and certainly navigation systems today have gone way beyond where when I

started. We were trying to line up the hyperbolic line, but today with our system and high end DPS, using dual antennas, tenamatic (phonetic) differentials -- you know, we're looking at a foot or less accuracy. So we know where we are, but I don't necessarily where recreational boats that might have gotten stuck out there or fishermen.

So look-ahead technology. Both the surface is very important. And this technology I'm seeing and reading about today are below the surface. I also find it pretty amazing where you can insert this data survey data, maybe a week or two weeks old, and you see a TF3Ds (phonetic) dimensional view of the channel; where the shoaling is, where the pitfalls are. What a great navigational tool that could be. And I think that pretty much -- With all my bad jokes, I think I didn't use up my 30 minutes. I don't know if you want time for questions or not. Thank you very much.

MS. BROHL: Helen Brohl. I said this at lunch, but I'll say it again. We really appreciate the fact that you and Sherri set up your displays yesterday onboard the Sam Houston. It was really helpful and really interesting. I think the navigation technology is phenominal, and I loved finally seeing right there how you used the NOAA data.

I asked Sherri, "What does this mean to you? How does it" -- I mean, I see it. I mean, we can all go on the web and see this information, but it was really helpful for someone like me, a civilian like me. So I really appreciate that. Thank you very much.

You guys use -- For your navigation technology, right now, did I understand this correctly that you guys are using a CORS soundings for -- for your laptop? Is Corps data or Corps chart you're using, or is it a NOAA chart?

MR. MORRIS: It's NOAA's ENCs that we're on.

MS. BROHL: Oh, it is?

MR. MORRIS: Yes.

MS. BROHL: Okay. Thank you. I was thinking it had --

MR. MORRIS: We -- we actually have two choices. We can go back to what was the original system, which was an in-house built system by Razor (phonetic) or Starlett, which is a real basic chart, but highly accurate. Or we can go with the new ENC. My system, yesterday, was using the NOAA's ENC chart. And I decluttered it quite a bit by taking out the soundings and whatnot, but, of course, that's the advantage of the factorization.

MS. HICKMAN: Sherri Hickman. Helen, what you're thinking of is the Corps overly. Their shore outline list. We're able to put that on ours.

MS. BROHL: So what you do is you take the NOAA ENC, which you can manipulate and put in as much stuff or take out as much stuff that you want?

MR. MORRIS: Correct.

MS. BROHL: Okay. And so the ENCs that you're getting now are -- I assume that the sweet (phonetic) of the ENCs that NOAA has complete cover the entire ship channel in your area as a critical navigation area?

MR. MORRIS: Yes.

MS. BROHL: And the updates you're getting, you feel comfortable with or -- or --

MR. MORRIS: You know, I'm actually just back to being on the channel. But, yes, I think we do. I mean, I think the next step is probably somewhere another -- maybe taking Army Corps survey data and pushing that into our systems, somewhere or another. But, yeah, as pilots for what we need to know on changes, we have to stay very -- we're very limited on where we can go in the Galveston Bay area. A pretty narrow channel.

MS. BROHL: Another question real quickly.

Thank you. What confirmed yesterday and today that Congress did not give enough money for the administration of the PORTS program, meaning even if you pay for it locally, NOAA doesn't have enough money to provide the data to you.

We learned, also, yesterday, out in the field, that it's used so dynamically between Coast Guard and the Corps uses it, and you guys rely on it heavily. How will you get that data? I mean, if you're offline, you can call the Coast Guard and they'll just tell you what they read. But if it's not available, period, what kind of predicament does that put you in? How does that -- does it set you back?

MR. MORRIS: I think it does absolutely. Right now, we've got some severe shoaling in our channel. Every day we -- knowing that by limiting the draft, dropping the maximum draft a foot, it could be as much as, you know, $100,000 per vessel that we're cutting out in cargo. So we certainly don't take that lightly. We've had to limit the draft. We've gone from 45 down to 44 foot right now. And we only bring 44 in if it's somewhat in a favorable tide.

So just in the last month there's been a new procedure where we're actually getting a printout that we're getting on a deep boated vessel -- or just

in case I didn't have my computer, I couldn't get online, when I get on that ship, of the readout. If we did not have a good clear readout, I wouldn't want to go back in using our eyeballs.

MR. BUND: Allen Bund (phonetic) of NOAA. If I can interject with this briefly. In my interaction, both the shore side facilities as well as with some of the shipping companies as well, they have referred to the situation as time is money. Well, in the Houston Ship Channel, inches of water depth is big money. And so what they stressed to us is they love having that system that they can tie into to, and those tides may be predicted to be a certain depth.

With our weather, the way it is, we have something that holds more water in. Those vessels can add more cargo in a very short period of time to make use of that to get it out. Same situation in New Orleans. Blows the water out. They know in advance that there may be some concerns, of whatnot, in getting the heavily laden vessels in. So to them, it's an economical matter as well as a safety matter.

MR. PARSONS: If I can just state for the record, telephonic comment that Helen made. Whether it's a NOAA ENC or NOAA paper chart, keep in mind it's Corps of Engineers' data that defines the channel

limits and the soundings in the channel. We acquire that data that goes aboard our charts directly from the Corps of Engineers.

MR. OSWALD: I'd just like to ask one question. With respect to the maintenance of the surveys, which I assume would be the Corps of Engineers, what frequency? Is it yearly basis? How does that data get into your little laptops that pilots use?

MR. MORRIS: Right now, most of the Houston area is done twice a year, other than the hot -- what we refer to as the hot spot where we know we've got shoaling problems. But we are not using that data in our map systems today. We just -- we get it in a PDF file to look at.

MR. PARSONS: Mike, we appreciate it. Thank you very much for your perspectives, and we hope you be around this afternoon for any other questions that might come up.

The next speaker is Jim Robinson. Jim is the director of Navigation and Security for the Lake Charles Harbor an Terminal District. This is a perspective that we're very interested in that from the point of view of port of authorities. I think before Jim makes his presentation, I think Adam wants to say a

few words.

MR. MCBRIDE: Thank you very much, Roger. As Jim makes his way up to the front, I just want to point out to everybody, and many of you will know this. The Port of Lake Charles is located in southwest Louisiana, just alongside the Texas border. We're actually closer to Houston than New Orleans. It's the 12th largest port by volume in the United States handling nearly 60 million tons this year, predominantly LNG Petroleum and food products, some general cargos as well.

If you've been watching national news you might think there was only one hurricane in the Gulf this year. In fact, Katrina, it was certainly clearly the worst devastation we've seen, any of us have seen from hurricanes, I'm sure. But there were several others hurricanes. And Rita took a pretty much direct hit on us. There are still just -- although Jim is going to tell you some of the successes that were achieved in cooperation with your agencies.

There are still thousands of people homeless down in southwest Louisiana. There are blue tarps on most roofs. I actually just got mine off last week. Industries are having to limit services. Costs are high. We're still very much experiencing the

aftermath.

Our experience in the immediate aftermath of Hurricane Katrina, September 25th and onwards, was that the land site coordination of FEMA and the Corps of Engineers, and because they were an important part of the FEMA response, was dreadful, and that the water site response with Coast Guard USA and NOAA was excellent. And Jim is going to give you some details on that.

But I will tell you, the storm blew through on Saturday, 24th, of last year, which was -- well, Saturday, obviously. We lost one working day of work. Our management crew and folks on site cleared the roads, protected cargo on Sunday and Monday, and we began delivering cargo landside on Tuesday morning. And only very shortly after that, we had ships inbound in the channel again as well.

And that's why we have the shirts on. We're very proud of the response of Port of Lake Charles. Our shirts say, "Rita who?" And that's because our team, at the port, the management members and those who stayed on site got the job done very quickly because they had some excellent help from the water side agencies.

Jim, with that, let me turn this discussion

over to you and give us a little information on exactly what did happen on the water side. Thank you.

MR. ROBINSON: Thank you, Adam. And thank you for the opportunity. I, too, know some Aggies jokes, but I'm going to pass. This forum provides a welcomed avenue to publicly thank, particlarly NOAA, for professional, prompt and effective post-hurricane response. The Lake Charles Harbor and Terminal District or Port of Lake Charles and other Calcasieu River Waterway stakeholders appreciated the extraordinary service provided by the Office of Cost Survey, which enabled a quick Hurricane Rita rebound and to rebound to reconstitute deep draft navigation enjoyed by the Nation's 12th largest port.

One early success is involved encouraging deep draft vessels to sail pretty close after the hurricane-watch stage. Even though we are almost shocked to know NOAA was a little bit wrong, I come to rely on you and say, "Boy, these predictions are really great." And I was tickled to death going to Matagorda Bay. As it approached I said, "How could you be that wrong?" So I know you all are trying. That's a unique weather situation there, but some of us rely too much on that first prediction and think, in fact, we're happy over here just, like we were for Katrina.

I've got these two slides sort of backwards. You can see right there where -- just about to get hit in the mouth on the right-hand side of the hurricane there. Thanks to the moving of traffic, we only had one significant breakaway which occurred. And that was an ocean-going barge. About 2:00 in the morning, when I was trying to catch a wink, I got a phone call from a harbor police say, "There's an ocean-going barge right there, and it's broken away, and, in fact, it grounded right opposite Labears (phonetic)."

The radio got it wrong and indicated that it had hit the 210 Bridge. Not so. We rescued it the first thing in the morning, and that was our major navigation snafu. Thanks to some good planning.

The Lake Charles Harbor and Terminal District is the State of Louisiana's designated waterway sponsor and partner with the Corps of Engineers for ensuring operation and maintenance of the entire Calcasieu waterway. Our operational jurisdiction includes the entier 70-mile dredged ship channel.

The sea buoy of the longest dredged approach channel in the nation is 34 miles offshore. The offshore or bar channel is served by several

charted safety fairways, all of which were expected to have been impacted by a Category 4 hurricane. Calcasieu navigation supports refineries producing 4 percent or more of the nation's motor fuels and the nation's largest operating liquified natural gas, LNG, receiving terminal.

Some of these pictures are courtesy of Camp Coast Guard. Y'all have that one already, so I could have shortened my presentation a little bit. But the Coast Guard, when they came back from Corpus Christi, set up Camp Coast Guard on port property. I've seen some trailers there. There wasn't -- Greg's Coast Guard and my Coast Guard for the Homeland Security Coast Guard bought brand new trailers, and came in there, and they were welling on us port property and created a pretty good shout for the rest of us, too. But we enjoyed having Camp Coast Guard.

Right on time. President Bush personally observed the debris-clogged LNG terminal mooring and turning basin during recovery. His presence and follow-ups, some of you will attest to, prompted rapid effective action by several federal agencies, including NOAA, to clear the debris.

The Trunkline LNG terminal will soon double its capacity, and two. Additional LNG terminals will,

by 2011, add berths to offload LNG from a total of six ships simultaneously. Then Adam won't have to change his story about being No. 12. You will probably be about No. 7.

That and other projected navigation traffic increases will find deep draft vessel use of the Calcasieu swelling by 70 percent in the next several years. The Calcasieu now supports over 55 million tons of cargo annually. Adam alluded to this. Substantial self-reliance on the part of the port staff was necessary to trigger certain recovery efforts.

The port director initially attended the local office of Homeland Security and Emergency Preparedness meeting. And the nicest thing to say about that was that those meetings proved less than productive to help with port reconstitution efforts. We worked both ends toward the middle to get necessary support as we garnered labor and floating hotel and emergency power supply resources.

It turned out we didn't need to get the emergency power resources, but we were actively exploring that. Out power locally got up and running within about two weeks, and it had been projected it might be as long as eight. So we were scrambling with Marad. When I say "working both sides toward the

middle", we had the local action due to the good office of our staff and local OEP (phonetic). And we kind of worked top down toward the state.

After Rita's onslaught, NOAA and the Corps of Engineers and Navy resources were deployed to survey the Calcasieu and approaches.

NOAA's Navigation Response Team, the NRT 1, was the first survey asset to arrive in the Lake Charles vicinity. I would like to thank Tim Osborne, particularly for that. He has been our friend, along with Allen.

The NRT arrived on recovery day two -- we actually expected them a little bit earlier -- to conduct a side scan sonar survey Calcasieu River from the upper reach of the waterway at the I-10 bridge to the jetties. While NRT 1 was completing the side scan, the Corps conducted the bathymetric surveys of the channel. Navy resources surveyed the offshore safety fairway approaches, and provided security. Surveys provided available depth assurances and verified the absences of channel obstructions to help quickly restore deep draft navigation.

You heard earlier about some conference calls. I participated, personally, up to seven conference calls daily -- you should try that sometimes

-- to coordinate and monitor progress. You're off one, and you're on another.

The Calcasieu had been third in line behind the Houston Ship Channel and the Sabine-Neches Waterway for conducting NOAA's offshore side-scanning sonar surveys, relying on the availability of NOAA's hydrographic survey ship, the Thomas Jefferson. The methodology warrants for determining port recovery priorities, as it's been alluded to, in hindsight, warrants further discussion.

The Calcasieu may have been third in line because our channel might have appeared to have been in the worst shape. It actually wasn't, as surveys subsequently revealed. Minor miracle, I think. But although all bar channel buoys were offstation after Rita's onslaught. So it looked pretty bad. The Coast Guard Navigation Team performed admirably to quickly locate, restore aids to navigation.

NOAA, thanks in large part to good offices of Doug Baird, chief operations branch of the Hydrographic Services Division, expedited the offshore side scanning survey for the Calcasieu. I had set up a shop on the bridge the tractor took, the Hock, operated by Secal (phonetic). They provided pretty good hotel services for me and radios.

And I got pretty good at dialing 411. I had no computer. I didn't have all my good resources, or how to call Doug or Allen or anybody else. I used my trained initiative. I called 411, and they said, "What city, please?" I said, "Washington, D.C., Secretary of Commerce." One ring.

The Secretary of Commerce's secretary answered, and I said, "I'm sorry to bother you, but I need to talk to somebody pretty high up in the NOAA Operation Marine Division." She hooked me up with Doug Baird. And inside of a five-minute telephone conversation, we had some good actions.

Doug expedited that side scanning-survey. NOAA contracted with Fugro Pelagos, Incorporated from Morgan City, Louisiana, to perform the offshore survey. Results of Fugro's survey were in hand five days after commencing recovery, and, actually, about the time they were midway in surveying the Houston Ship Channel.

Our prompting the NOAA-initiated contract with Fugro has been recognized by many as the best move we've made. Doug isn't here, but we owe him one, big time. I personally thank him on behalf of the port. I'd like to read excerpts of that thank you.

"On behalf of all who enjoy navigational use of the Calcasieu River Waterway, The Lake Charles

Harbor and Terminal District extends appreciation to NOAA for expediting the ship channel surveys, which proved instrumental, to rapidly reconstitute navigation serving the nation's 12th largest port in the wake of Hurricane Rita.

Our survival and rapid reconstitution of Calcasieu River Waterway navigation were enabled thanks to valued contributions and professional NOAA and NOAA-contracted support.

Calcasieu River Waterway users and customers in the southwest Louisiana region enjoyed navigation resumption in unprecedented record time due to cooperative efforts of all involved. We especially thank you for valued and appreciated NOAA services. Your having contracted with Fugro Pelagos, Incorporated to avoid bar channel surveys delays significantly enhanced the navigation reconstitution operation."

Thanks, Doug. Thanks to all the rest who had something to do with that.

We just couldn't wait, what would have been almost two weeks, to have our survey done. Then when we started surveying the Sabine-Neches it, again, poured itself out because they had some problems with the survey efforts, which would have furthered delay.

The Calcasieu fully supported deep draft

navigation within a week of Hurricane Rita's landfall. Limited deep draft traffic was enabled sooner. We actually moved one of those vessels that hadn't left the port, probably should have. But it had about 25-foot draft. And I think after about day three, the captain of the port allowed us to sail that one as sort of as the test piece before we brought in a couple of loaded tankers. That, too, was a good movement.

Pilots of the Lake Charles Pilots Association were more than reasonable in restarting pilotage with their raven (phonetic) systems, and with only a few bar channel buoys reset, which the pilots had determined were essential at offshore channel turning points. They actually told the Coast Guard, it may help if we had each turned on the right-hand side of the channel. "Well, we're not sure if we can find the right one." They said, "Do you have any spray paint? We don't care what it looks like. Put a buoy up, turn to the right-hand side of the channel, we'll rock and roll." Might not have done that had they not had their radar system.

This real drill is generating numerous significant improvements to Hurricane Preparation, Response and Recovery Plans. Sharing lessons learned is an undertaking of the Lake Charles Harbor and

Terminal District through efforts of our Board of Commissioners' Security and Risk Management Committee, and the Calcasieu Waterway's Harbor and Safety Committee.

The Board of Commissioners' Security and Risk Management Committee recently met on January 12th, having garnered good participation of port tenants, labor, customers and other stakeholders, to conduct maybe the first real outreach toward thoroughly reviewing and improving the Hurricane Plan. You probably know how that works. We're all supposed to generate a plan by June 1st. And usually it's, "Uh-huh", June 1st is getting very close. Let's put a plan out. "Boom." This exercise, if you will, has prompted us to do it a little more conscientiously and do it right, do it sooner. So that's proven to be a good thing.

We've learned valuable lessons regarding where to place and protect harbor tugs and pilot boats. Our pilot boats actually went too far north. They went above the railroad bridge, and then some things came our of the blue. And then Lake Charles, itself, went up against I-10 and the railroad bridge, precluding rapid recovering, if you will, of the pilot boats and a couple of tugs. We've learned to better protect

bridges by clearing certain nearby ship and barge berths during hurricane preparation efforts, and we're getting better at generating good checklists.

While throwing bouquets at NOAA and other agencies, organizations, and individuals, suggestions for hurricane response and recovery improvement will hopefully also be well received. I know that's why you're here, in large part. As I previously alluded to -- I don't like to talk about Tim and his answers, but I think he was following orders. Prompt arrival of NOAA's NRT resources was appreciated, but the arrival was a little later than initially promised. We heard he was actually in route to Houston after he promised to come see us.

He still arrived in decent time. He did the job. Fuel arrangements, those had to be arranged. It was almost in a near-panic mode, but it got done. Possibly those units can arrive in the future on schedule and with fuel trucks or something close behind.

U.S. Navy resources provided necessary security and verified that the safety fairways were clear of obstructions. But while appreciated, those services were rendered in almost a secret. Absent routine progress reports which might have made some of

us, including the harbor master, to feel a little more warm and fuzzy about the offshore approach.

Subsequently to receiving assurances that the inland or shoreward channel was free of obstructions, numerous potential obstructions in the form of small containers were observed at low water on or near the slope channel. So future side scanning sonar surveys should, therefore, extend for some reasonable distance outside channel boundaries.

The Lake Charles Pilots desired that the U.S. Corps of Engineers produce timely electronic or hardcopy results of channel depth surveys so pilots can reasonably lay hands on those prior to recommending to the U.S. Coast Guard captains of the port relax draft restrictions.

Acquiring the desired reports in a timely fashion proved to be too much a challenge, in my opinion. They had to take that data off the vessels, send it to New Orleans to massage the data, which took the better part of two days. We need to explore the prospect of a direct feed from survey vessels to pilots and other stakeholders to avoid or streamline time-consuming data processing, primarily by the Corps.

After just a little tweaking, the and vital surveying services provided by NOAA, Corps of

Engineers, and the Navy, we'll be even better prepared to recover from future hurricanes. The Lake Charles Harbor and Terminal District, cooperating with the Calcasieu harbor's Harbor Safety Committee and participating federal, state and local agencies and stakeholders looks forward to continuing to help enhance navigation safety and efficiency in general, and especially in response to emergency contingencies. And we thank you for the opportunity to address you today. Not much criticism. Thank you very much. I know next time to call Roger instead of the Secretary of Commerce.

MR. PARSONS: Although I'm surprised you got the number that quick. We thank the Secretary's secretary. Let me ask you a question, Jim, and I wish the Coast Guard was here. Maybe they could bring some of the message back. It's been alluded several times about the process that Coast Guard uses to allocate federal surveying resources and prioritize port openings.

Do you have any thoughts or ideas of what should be factored into that? I know you, as a port authority, stood on the sideline, if you will, probably wishing you could provide input to that process. I think you know NOAA, once National Response Plan is

stood up, is governing and works for the Coast Guard as do a lot of federal agencies have done. I'm interested in seeing what kind of input you think should be factored in.

MR. ROBINSON: I think as much as we can possibly simultaneously do more rapid cursory surveys to initially see who might be impacted the most, where the work needs to be done, or say, "Whoa, they're so wiped out." They might have assumed we were wiped out. All our buoys are gone. They might have thought that the channel was non-existence, offshore or something like that, that major dredging was going to be required and, therefore, you go to the channel that hadn't been damaged.

We still need to be -- Before we make those kind of decisions, we need to do some kind of cursory, quick, simultaneous survey, if possible. NOAA normally has more resources than just the Thomas Jefferson because in previous hurricanes we see their fleet 34 miles inland at our port facilities, alongside those other vessels. And we welcome you do that, because then you can survey on your way out and do it quick.

MR. JANGULA: That's where this PAET Team we've got comes in real handy. We're all in on this meeting, and in our group, the Corps of Engineers

doesn't decide the priority in surveying. Everybody is in that meeting. Everybody gets on that teleconference. And that's where decisions are made. Maybe we need to talk a little more about what we do because there -- you know, you'll have like a say-all. Ivan is a good example.

The Port of Pensacola got so wiped out. That was the last place we surveyed. We surveyed all the channels around it. And then the Port of Pensacola put out the word. It doesn't matter whether our channel is open or not. We can't handle even you coming. So if you can get a system together where everybody is talking together from day one, it really does help.

MR. ROBINSON: And avoiding duplicate surveys, too. Roger and I talked a little bit about that. The Corps and NOAA need to do that first survey. So if somebody can get in there and do the first one, then do some rapid decision making on how we proceed on in there. And it does, in fact, depend on how ready we are to handle these ships, and the labor situation.

And in this particular case, Adam had encouraged some of us to stay behind. We were ready to go to work, and we didn't know what the channel looked like, but we knew we could quickly garnish some labor

resources, make a path to the port. So we already had trucks coming in there. We knew we had ships. We knew what was offshore. And we were rocking and rolling. Had we been in Atlanta, we had to have evacuated far away. Might not have happened.

MR. JANGULA: See, that's what we do. We divvy up. Kirby Marine is going to do this. The Corps is going to do that. NOAA is going to do this. So we don't have -- The Coast Guard with us takes -- We agreed from the beginning the Coast Guard takes the information and get it to wherever that person is we decide to do that survey, and then a decision is made to open or not open.

MR. ROBINSON: You just encouraged more thought along those line before we just automatically take away these bigger ports, although we could be the bigger port one day.

MR. MCBRIDE: And I would add to that, that our experience was -- And we could probably learn from the Mobile example. But did not have any input on the criteria that were used to determine the prioritization of channels. There were three principal channels affected.

We did have some information from NOAA, just before onslaught, that they would be over to see

us the next day. The next time we heard from them, they were going somewhere else. So something had happened. Some decision had been taken, based on some criteria which we did not know. So I think for us, as an organization, we want to have more input to that. Similarly, I think the Coast Guard who organizes that needs to share with us how we're making these choices.

MR. ROBINSON: And you don't need all three ports in there debating on a conference call. I tried that, and got shot down in short order. So that's not the time to be doing that. Thank you very much.

MR. PARSONS: Thank you. Our next speaker brings this form a little bit different perspective. John Weust has been with Marathon Oil for the past 27 years. His current position is he manages Marathon Oil's emergency preparedness and response activities. Although John is with Marathon, he is, in fact, speaking with his American Petroleum Institute hat on, ABI.

When John and I talked, we talked perhaps -- He had some ideas on how NOAA might be able to assist the offshore petroleum industry, based on the products and the services that we bring to the table. And this is a particular area that hasn't been focused on. John, I welcome you and thank you for your input.

MR. WEUST: Thank you, Roger. One apology, before I get started. Since I found out about this talk last Friday, most of what I'm talking about is slanted towards how Marathon Oil Company responded. I do know most of the people who run oil companies and some of the issues they dealt with, but what I'm going to talk about -- because I know more than that. I learned from everybody else. This is how we responded.

What I'm going to do is kind of give an update how we prepared, and then the obstacles we had in response afterwards, and maybe suggest some of the tools that NOAA has. Some of the things we might be able to work together to help get this critical infrastructure back up and running. I think everybody will agree fuel and gas is critical in this country.

First of all, for preparation for any hurricane, what we do first is we use Coast Guard guidelines, and shut off the production platforms, and get our noncritical people onshore. In Marathon's case, most of our production was centered in part of the Gulf of Mexico. So for Rita and Katrina, all of our platforms were evacuated and shut down.

Then we'll opt to evacuate to operate onshore terminals as long as we possibly can so that we have plenty of fuel, we have tanks full. Then as far

as our refineries go, even though we shut them down, we try to increase all the stockpiles.

It turned out, in the case of Katrina, this helped pretty significantly because our caryco (phonetic) refineries, even though it doesn't market in the New Orleans area, we were able to get some of that to the local gasoline stations. So we did participate in some of that.

As far as our -- What we do is we get our corporate emergency response team prepared and ready, our business recovery teams ready. We get our crisis centers up and running. We monitor the storm. We monitor the local movements of -- For instance, in Houston, the Houston area, Galveston basically left the island a day early than typically would. So we had to modify our plans based on the local economy -- local infrastructure.

We get our employee plans in place. We relocate people who is considered critical to the business. We got groups go different places. We continue to operate during the storm. We also evacuate all of our non-essentials. And we have an executive relocation plan so we can make corporate decisions for the corporation once the hurricane goes through, because they should know all communications go down.

Then we put together a humanitarian response effort. We've got a pretty extensive system in place. When the hurricane hits in the Louisiana area or the Houston area, we've got a plan in place to put centers together for distribution for employees to assist our employees getting back to work. It's something we've been doing about three years now.

A hurricane hit Lafayette a few years ago. We actually set up a response team. Use the ICS system. We were actually one of the first companies that got up and running. So we took that learning and brought it forward to this past year. And as a result, our refineries, our production, our pipelines got back up running pretty quickly. But I will say this: We didn't suffer nearly a direct hit as some of our family did. We fared pretty well in the refinery. Our Texas City refinery was hit hard.

Seventy-two hours before landfall, we modified all of our operations. We protected all the assets and people. We started evacuating the non-essentials. Then 28, 24 hours before landfall, we really started shutting things down. Again, this year we shut down a little bit earlier. I think the Houston office was shut down almost 70 hours before the storm hit, because of the Galveston area filling the highway

system up.

Critical Response Navigation: This is something that we realized. Helicopters and fixed wings aren't going to be there when hurricanes go through. The survey boats will be moved out of harm's way. Any response vehicles left in these areas are going to be damaged or not available. So this is an issue that we recognized pretty early on it's going to cost us major problems. We don't have that worked out, but it's something we had to deal with.

This just puts it in perspective (indicating). You'll know these are the two hurricanes. I believe roughly 75, 80 percent of the platforms of the gulf. In the aftermath -- I'm not going to go into too much detail here because everyone know the devastation. Access was extremely limited to get to our facilities. In some cases, we had access denied by federal and state agencies. And highway access routes were jammed.

A significant thing here is it was almost impossible to get to some of these locations. This is another significant piece of information (indicating). Ninety-two percent of the production in the Gulf of Mexico. The oil production was shut in. Any channel for natural gas was shut in. There were nine

refineries shut down, representing 45 percent of U.S. capacity. Another 15 refineries were curtailed because lack of feedstock. Most of the pipelines went down because of the lack of electricity.

The Louisiana offshore port was shut down, which I believe is 10 percent of the U.S. crude oil. As on January 6th, there's still 27 percent of the U.S. production shut down. 19 percent -- I'm sorry -- of offshore production. 19 percent of offshore gas is shut down, and 90 percent of the refinery capacity is still shut in.

This is just another piece of information we got from MMS (indicating). It shows a little bit different fashion. About one million and a half barrels of oil per day. Two months after the storm, which was basically 350,000 barrels of oil per day. Ten million cubic feet of natural gas was down about three and half million cubic feet of natural gas. That represents about 65 percent of the oil, and 52 percent of natural gas which remained shut in. We're backed up significantly since then. This doesn't show you as far as critical infrastructure goes. If we can't get this area of the Gulf back up running, we've got problems.

Again, this is just another diagram (indicating). This shows, also, the onshore facility,

the platforms affected in the affected area. These are the statistics that we got from MMS. 112 fixed platforms and well caissons (phonetic) were destroyed, one deep water retention platform, 61 deep water platform was damaged, 46 drilling rigs damaged, and 64 pipelines damaged. So all of those, I believe, was roughly 4000 platforms in the Gulf. This doesn't seem like a big number, but some of these were pretty significant platforms. Pretty high production.

In addition to this, we're expected to bring this back up and running with these same statistics going. 2.7 million customers without power, people are evacuated. Getting assets was extremely difficult. What we had to do as a company, what other companies did was we pulled resources from outside the industry.

In fact, we had private contractors. We brought in some military aircrafts and put around the area. If Houston had been hit, we would have had two cargo aircrafts and a couple of helicopters. But they are not within the area, not within the oil and gas industry, but they are available.

The employee humanitarian response is where Marathon has decided and some of the major oil companies had decided this is the way to operate. In

the past for hurricane responses, we felt we could bring in employees from throughout the country from different operations come in and run our facilities while the U.S. government or state government helped employees get back to work. As we saw from Katrina, the resources get overwhelmed very quickly.

So we decided, for our company, what we do we actually respond to humanitarian, the humanitarian needs of our employees. We get them back to work, and we found that was significantly better. We do a good job preparing our facilities. We don't have to worry about damage. We get our employees back and we get started back up again.

Another issue to consider that we had to deal with, the OSRO, the Oil Spill Response Organization, the MSRC, NRC for the Caribbean. All these organizations took a pretty hard hit. Their vessels were not available. The resources themselves tend to be very stretched, and without a good -- a good job of identifying what the major spills are -- this is what, I think, we need NOAA's help -- to identify where the major spills are, and the resources that are available to the biggest spills first. They'd do a much better job of prioritizing.

This is where we feel like you guys need to

fill the gas, and you've got the tools to do this. We've got to work out ways to make this happen. But if we had a good aerial surveillance satellite imagery and aircraft, both for and after the storm, document where these things are at.

Directly after the storm we had to do a much better job of identifying which platforms were damaged. It took weeks instead of days. But also the drilling rigs were pulled out and uprooted. Damaged refineries. Pipeline terminals where they come onshore. As I just indicated, oil spill severity. Along with excessive damages in the area.

I know your satellite systems were used pretty extensively for infrastructure. We feel like in the oil industry we use the same resources to do a much better job to understand where the problems are.

Additional Benefits: With the platforms missing, you need be able to identify hazardous in the shipping industry much more quickly. Assist transportation sector of the bridge and road construction, assist FEMA with development and locating humanitarian response sites. I think a lot of this is being done. I'm just trying to re-emphasize it. And then provide industry and response agencies with routes to get to our facilities.

In many cases, the facility may not have been hurt, but getting to the facility is pretty difficult because of the access problem. These are areas we feel like the imagery could be used a little bit more to our advantage.

To do this we realize we're going to have to develop a database where all these equipments are located. We're going to have to have imagery before the event so we know where it's at, so that afterwards we have a much better understanding of what's missing. It's going to take work here. API has started talking about this. I don't know what format it's going to take. Acok (phonetic) oil spill work crew have some discussions on this, but these are some areas to look at.

The key to success, everybody knows, is communication. During these hurricanes, we had -- Marathon had about 300 response team members down in the area. Found out very quickly that the only things worked were Blackberries and satellite phones. The communication for the response in this area has to be drastically improved. Sharing information; that's an area we've heard talked about with several speakers today. If the agencies or industries share information, it will be a lot faster, and I think we

would get a lot of the information more quickly.

A question I've got for NOAA is communication right now appropriate? Is there more communication needed? Is there a better system needed? Just a question. This is what I prepared today. Is there any questions at this point?

MS. BROHL: Wasn't satellite imagery previously available such that you might have inventoried your rigs by using aerial photography or satellite photography, or was it now after the fact you realize that, "Well, before-and-after pictures would have saved a lot of time and energy?"

MR. WEUST: Before-and-after pictures would have saved a lot of effort. Offshore -- They were using it pretty extensively for our refinery evaluation, but offshore there's very imagery available to the platforms. It's going to need to be accessed. We're going to have work out some kind of project to get this taken care. There's nothing available on a regular basis right now.

MS. BROHL: Is that the case, Mike?

MR. ASLAKSEN: We were the ones who did the overflights. And there are technologies available. Again, open ocean areas aren't usually imaged because there's not a high need for that type of data, but

there are some things that we could do. Again, the director of National Geo Survey recognize that positioning might be an answer to look at these offshore platforms.

I guess one of the questions I could lead into is aren't these positioned anyway because who actually gets the tax -- or the revenue from the offshore platforms. So I would assume there were positions associated with these platforms beforehand. But something we can definitely look into, in addition to the positioning, is looking at available remote set (phonetic) technologies, whether they're radar based, image based system. These platforms are usually typically large.

They can use, you know, low red (phonetic) systems to identify, and come up with a plan as Parpar(phonetic), our preparation and response plan for the hurricane. Also, considering the navigation issue, these missing rigs have become as well. So I'd like to offer that on the table right now for NTS to help look at.

MR. DASLER: Mike, is it possible taking imagery, similar to what they do on Q-route (phonetic) surveys, the side scan where you do an A minus B and you're looking for something that was -- In the case of

Q-route, you're looking for something that wasn't there before and all of a sudden it showed up. This could be the opposite where you're analyzing imagery even maybe to an automated process where you're looking at what was there and is now gone?

MR. ASLAKSEN: Yes, it's pretty well standard in the industry for changing text use pre-impose imagery. I think what else NOAA could bring to the table -- Captain Parsons might be able to talk more about this -- is actually using -- for platforms gone, where did it go? Do some projectory model within NOAA use, especially with the nill (phonetic) on our group that can look at where the platform might be, and probably circling in on surveying. I know Captain Parsons is more involved in that kind of aspect.

MR. PARSONS: Yes, let me comment. Do I take from your comment that there is not a central database that identifies locations of all offshore infrastructure?

MR. WEUST: That's correct.

MR. PARSONS: That is not the responsibility of MMS nor industry?

MR. WEUST: It's under discussion. I couldn't give you an answer. That's something we're discussion.

MR. PARSONS: Is there any discussion about the benefits of AIS, Automated Information -- Identification Systems put aboard these rigs? The reason I ask is NOAA, in discussion with the Coast Guard, we had the same concerns that when rigs go missing or any of the structure go missing, we're concerned about whether they pose a hazard in navigation.

Without knowing what was there beforehand, and certainly NOAA's nautical charting program, has a fairly good idea, but it's only as accurate as that information reported to us by MMS and by Coast Guard. But in the absence of a centralized database, I believe the owner is responsible for located his rig afterwards. Is that correct, also?

MR. WEUST: Right.

MR. PARSONS: Right. There are two rigs currently still missing in the Gulf. I can tell you that the Coast Guard consulted with NOAA, and NOAA consulted with the owners to determine where the most likely trajectory of those mobile offshore drilling units was. It turns out that the owners were, in fact, surveying in a sector that was not likely to locate the rig. But there's a lot -- there's a lot of guessing involved. How long did the rigs stay afloat? Was

water tight integrity, compromise. There's still a lot of "ifs" and "whats" in there. But anything the industry can do and certainly NOAA is interested in partnering any way we can, and helping with this database, and helping afterwards in locating those hazards.

MR. WEUST: Nothing like one large hurricane to change your thinking pattern. Any other questions?

MR. RAINEY: I have one. I think it's a fair assumption -- and an excellent presentation -- that there's a tremendous impact, as you pointed out, with your industry and to the country's commerce. And I was wondering if you could just elaborate on the points.

You showed that you had the pipeline. You talked a number of times about the feeder resources having to shut down refineries. But the critical importance to your industry and, thereby, the nation's commerce, these NOAA's navigation services to come in and be able to recover the navigable waterways in a timely fashion so that we can resume operations.

MR. WEUST: I'm sorry. Can you say that again, please?

MR. RAINEY: Okay. The statistics that you

put up were pretty significant. I'm trying to gauge the magnitude, the importance of getting these channels reopened quickly to the refineries, and for the industry to be able to resume commerce. Is there proportionally, I guess, versus the pipelines or the offshore production facilities? How important are the navigable channels, getting those re-opened to the industry?

MR. WEUST: They're very important. I don't have the numbers as far as how much product and who all goes up and down the river. I think the primary route is the Gulf of Mexico and to the midwest. There's quite a few product barge headed that direction, but I think getting the pipelines and the refineries and the coast up and running is probably the biggest priority. As I said, that's 65 percent of the U.S. supply capacity. That's the most significant issue. I don't have the numbers, as far as how much of it actually goes up the barges in the river system

MR. RAINEY: Okay. Thanks. And you had mentioned. I know you're representing Marathon, but also API. Our charter is to advice NOAA on their hydrographic services, but you mentioned a working group, it sounded like, that API has stood up. Is there -- you know, in our recommendations to NOAA,

possibly. Would you recommend a certain working group for API or the oil and gas industry that might be interested in further discussions with the NOAA navigation service's capabilities.

MR. WEUST: At this point the API group that handles emergency response would be Acok (phonetic) Oil Spill Working Group. In this case, the people who are involved in that do all hazardous response in the industry. So that is the proper group at this point. We talked about other issues other than oil spills. That's just the name of the group.

MS. BROHL: The refineries that you shut down -- I think you called them "shut in" -- that you shut down as you saw the hurricane approaching, the landslide ones or those that were closer to shore, because, I'm sorry, I don't know much about platforms and how far out they are.

Do you know whether your operations people, the plant managers, were constantly referring to the NOAA data to determine how the surges were changing or increasing to help them accommodate? I don't know what kind of intake systems you have, you know, your connection on the water site there, and whether that made a difference, or it was just a matter of shutting down because of high winds?

MR. WEUST: No. We have a group of people that are in our response organization who keep tabs on that. And that's where we make the decision. For instance, the Texas City refinery, if Rita kept going to path with us, we'd be significantly under water. So we use that to determine to get people out or shut down. That data is very, very useful.

MR. PARSONS: John, I appreciate your involvement and perspective on this. If we could take about a 20-minute break, and return to the meeting room no later than 10 minutes until the hour.

(Break was taken.)

MR. PARSONS: We've got two more speakers this afternoon. The next speaker is Ray Butler. Ray is the executive director of the Gulf Intracoastal Canal Association. Directly from the association's mission statement -- let me read that to you, and I think you'll see the perspective that Ray brings to this proceeding this afternoon.

Their mission is to "ensure that gulf intracoastal waterway is maintained, operated and improved to provide the safest, most efficient, economical and environmentally sound water transportation route in the nation. The Intracoastal Canal Association has well over 200 members who have a

vested interest in this particular vital waterway."

And this afternoon, John, I would like to hear your perspectives on the impact of, particularly, hurricanes on this waterway, on the economy, of the nation, on the businesses that you represent, and how NOAA's Navigation Services might assist in keeping this vital waterway open.

MR. BUTLER: Thanks, Roger. Before I get into a lot of this, let me give you just a little more background so you'll understand where I'm coming from. The Gulf Intracoastal Canal Association represents port authorities, barge carriers, chemical manufacturers, and essentially anybody who has an economic or recreational interest in intracoastal waterway.

We do a lot of work with the Corps of Engineers and Coast Guard. I work very closely with Terry Jangula, and all the folks over in Mobile, New Orleans, Galveston, every one of the captain of the ports. Just try to make sure that we work together as partners to help them get money from projects, and also help them understand what our priorities are and where we're going.

About two years ago, we expanded our mission just a little bit. Hurricane Ivan came on the scene over in the central Gulf Coast, and opened up an

opportunity for us to go in and help both the Corps and Coast Guard get the waterway back in shape. The reason I got myself involved in that is mainly because of the intracoastal waterway and our barge carrier in the ports.

That whole effort was -- turned out to be a tremendous experience for every one of us; Corps, Coast Guard and myself, all of the stakeholders participated in that. During the course of my little discussion here, I'll share some of those spots with you.

Backing up just a little bit. I'll tell you some of the things that NOAA does for us that are a particular value to us in the barge industry. About three or four years ago we just opened up a new route in the Houston Ship Channel. Kind of like a freeway on-and-off ramp out at the Boliver Road intersection. It's a very, very high traffic area, and we worked with the Corps to designate a little cut-off channel for inbound barges that were coming from the east, and need to turn up the east ship channel.

This little cut-off was to let them get in the channel before they have to get out there in the middle of the intersection and interact with a lot of other ships. The problem we had was nobody knew where it was. None of the tow boat operators really knew

about it, even though we had buoys out there and we kept telling them where it was. We tried to encourage them to use it so we could get out of Sherri's way when she's coming in with her ship. We wouldn't be interacting with her in the deep draft coastal, but maybe make both of our lives a little easier.

We struggled with that almost a year. Still weren't getting the thing used very much, and we're still not where we want to be. But Allen, back there, Allen Bunn (phonetic), helped us by getting that little route put on NOAA's chart for us. A special chart.

It was a visual aid that we could put out to all of our members, and it helped them prevent it. The guys in the wheel (phonetic) house is supposed to be able to visualize where that channel was. That's helped us increase awareness and get that thing used more. Allen, thanks for that. An example of one areas where you guys really helped us.

Some of the more specific hurricane-related efforts where you guys helped us is after Ivan -- Tim Osborne was over in Mobile with us supporting the crew in the Ivan recovery. Then we had paper charts almost the whole length of this wall over here (indicating), trying to cover from St. Marks all the way over past

New Orleans, which is Mobile AOR. We had stuff scattered all over the place. We tried to keep track of where we were going, what channel assessments to make, surveys and that sort of thing.

Well, Tim saw us struggling with that, and he put together a special one piece chart for that whole AOR, which now helps us tremendously keep track of what's going on in that AOR. We used that during Katrina. Thanks for your help. That was very helpful.

And all during the storm season last year, Tim was giving us updates on all the tropical storms when they developed and rolled up and sent off of NOAA's website. And I started forwarding that to all of our members. There's some 200 of them that our barge carriers and dispatchers, and people back in the corporate offices to do scheduling and planning. But it was tremendously valuable to them. We got all kinds of thank you mails. "We really appreciate this. Keep it coming. Keep us informed." That kind of thing was super helpful, and I hope Tim keeps that up. Although, it's not as very frequently he'd do that. But it was just super helpful to us.

So those kinds of weather information updates coming from you guys to us -- And I know it's easier we go out there and pull it up, but I really

didn't realize it, and probably 90 percent of our members didn't realize it either. But once we started getting it, it became tremendously valuable to us to where we almost depended upon it now. Very, very helpful.

I'll mention, too. Allen asked me to mention the PORTS system. I understand we may be struggling to keep that system going in some parts of our country. And that is tremendously helpful to us in the barge industry and its specific location along the intracoastal waterway. We depend upon current feedback information and tidal information for making safe transit for things like bridges.

Our houses in the Galveston Bay where we're using the ship channel and we've got negotiate that turn at the Boliver coming in. And NOAA has helped us when we come up or down the ship channel. Oftentimes, we're pushing over 1,000 feet of -- sometimes pretty hazardous chemicals, petroleum products. All sorts of stuff. That information is tremendously helpful.

I will tell you, it's a major safety factor, too. We depend upon current information for transit in yachts and cruise out at the San Jack River. Although that's not a port instrument, but with regard to that, it's super helpful to us. We would really

like to have something like. We were all sad about the incident that happened back in September of 2001. Had we had current information at that time and been using it, it could have been a major factor and maybe preventing an incident like that.

Galveston Railroad Bridge is another one. Right now, I will tell you that it is probably the most hazardous structure on the 1,300 mile piece of the intracoastal waterway. Every year we do over a million dollars worth of damage to that bridge, and we hold up traffic, and probably twice that in delay in damage cost to our customers. The current information at that location would be tremendously helpful to us.

At any rate. The PORTS system is something we value, and we certainly don't want to lose what we already have. And we would be happy to help however we can to at least keep what we've got and maybe try to get some more.

Now, let me get to where my real passion is, and a heartfelt part of this talk, and that is hurricane response. During the Ivan, Katrina and Rita responses, I was fortunate enough to be right in the middle of the Coast Guard, Corps response. Mobile, during Ivan, during Katrina, and with both sectors of Corpus Christi and sector of Houston, and sector New

Orleans in the Rita response.

For Ivan, I sat in on every conference call Admiral Dunn (phonetic) had with Admiral Krite (phonetic), and was privy to a lot of discussions, a lot of information sharing with response and restoration of our deep and shallow draft channels, as well as rescue efforts the Coast Guard down in New Orleans. Just all about what our Coast Guard did during Katrina.

Having seen it first hand and been right there with the ATC (phonetic) coast in Mobile for several days -- Captain Dosie (phonetic) actually let us stay on the ATC with those folks. And we ate breakfast and dinner with him, and we heard the pilot's stories when they came back. What the Coast Guard did was just absolutely awesome, and way beyond what I think their historical scope and duty is. Super group. And, also, they asked us to come in and help them with their response, which I thought was a tremendous barrier. It turned out we learned a whole lot from the process.

Before and after those storms, in Mobile, in Houston, several of the other ports across the coast, we have these CORS Emergency Committee, our Harbor Safety Committee. Here in Houston, we have a

HOGNSAC group. What it is is it's just a gathering of all the local industry, stakeholders, along with the Corps of Engineers and the Coast Guard. We'd meet and talk about various navigation issues and safety issues on the channel ports.

But when we have something like a hurricane coming, we get together and we talk about pre-storm planning efforts. "Here's what we're going to do to get ready for this sucker." How we're going to shut down. What the timing is. The pilots are deeply involved in that effort. We know what the deep draft traffic is going to be doing. We do the same thing after the storm. In fact, at our last meeting before the storm, we all agreed on here's what time we're going to call and get back together and start planning our response, our recovery efforts for the storm. That is always done by conference call.

It includes the Corps, the Coast Guard, the key stakeholders from around the port area. NOAA was involved in every one since I've been involved with, and the deep draft pilots are always there. Port directors are there. It's only a group of maybe 15, 20. To me, that is the most critical piece of restoring the waterways after one of these major storms.

Excuse me, that group of people together on a conference call and have somebody -- in the case of Mobile, that's the Corps of Engineers -- who lease the thing. They kind of get everybody together on the same page with a map. And that map is a list of all the projects that have to be surveyed and verified throughout and safety, and then a time, place. That's also fits in the picture.

During Ivan, we stumped around a little bit in Mobile. But Nelson Sanchez with the Corps kind of got us going, and developed this little map of projects. Basically, what we did was use that map as a guide. Every day we would have our conference call, a pre-determined time. All the stakeholders would be there, the captain of the carrier and the port would be there. NOAA was always sitting in on it. We would go through our plan for how we were surveying our deep draft channels. And I think the Mobile AOR is like five deep draft channels that we had to deal with, along with intracoastal waterway.

Each day we would go through that. Right off the bat, though, we started out with a plan for who was going to do what on each one of those projects. And I'll tell you this. Terry, no offense to you, but one of the most important thing to us -- and I can

probably speak for the deep draft industry, too -- is but to get the waterway back as quickly as possible because we've got a tremendous economic transportation.

What weigh on whether we get these ships in, get them out, the transfer products made, in our case, all of our petroleum chemical customer had about 72 hours worth of light before they got to totally shut down and change the operations. And if we're not there in 72 hours, if something is going down or they got a major unless we get there.

In the case of Ivan, we also learned that fuel, gasoline and diesel were going to the state of Florida and coal was going to the state of Florida, which was tremendously important, combing by barge. A lot of times we don't realize how important something is until you lose it. But when they lost that barge full of gasoline and coal going to Florida, man, the red lights started going off everywhere. The governor over there was calling about it.

So it became tremendously important to the economic infrastructure, the whole southern part of this country. Having this group of people get down together and take some time and prioritize how we were going to go about rescue, soaring the waterway with the input from the interested parties, on this conference

call, every day, I will tell you it was a key factor in us getting things back together again after Ivan.

After Ivan -- In fact, I think it was about five days from the day the storm hit until the time the intracoastal waterway was fully opened for service for barge transit. We had fuel going to Florida, coals going to Florida. People were satisfied things were getting back to normal. The deep draft channel took a little bit longer, but there was a plan in place and everybody knew what it was and were getting there.

Katrina -- in Mobile, we worked like a clock. I would hope the Mobile AOR -- Mobile Corps of Engineers as a model for to the rest of us to look at and how we might want to structure our -- our storm response efforts. Nelson was leading us all. He had a project list every day. NOAA was there. They knew what our priorities were for surveying. We need those resources.

What I forgot to say earlier is the Corps just cannot respond quick enough by themselves. And maybe it's because the barge industry was so strapped in the back pocket that it took longer than we thought. We went ahead and got our own equipment. The Coast Guard and the Corps were gracious enough to accept our help and our expert with the waterway and let us come

in and use our equipment.

It relieved them of having to worry with the GIWW, and allowed us to focus on GIWW while NOAA and the Corps focus on deep draft channels. But it was still part of a workable plan where everybody knew what their priorities was for getting things back and knowing what we had to deal with.

The extreme urgency of getting the equipment in the water, I can't emphasize that enough. There's one area where NOAA might consider helping or improving, it would be there. Trying to get your stuff, you know, and spacing as close to the storm center as you can without jeopardizing the people. That is super critical.

In both Ivan, Katrina and Rita, we had boats in the water within hours after the storm passed. It was still safe. We didn't do anything that was going to jeopardize anybody's out there, but as soon as the conditions allowed, we had boats in the water. We would survey the channel's condition. If we saw a shoaling problem, then we would come back and do a more detailed study. Do Akon at the same time. Aids to navigation. We had the Coast Guard down in the port with us. We were able to do that very quickly.

The Corps just can't respond that fast, at

least they haven't been able to. Galveston is no different. But that's a real critical aspect for us to get out there real quickly and being able to do that. I thank the Corps and Coast Guard for allowing us to help them doing that.

NOAA was particularly helpful to us after Katrina with some side scanning capabilities. We had -- I remember we had a barge that disappeared on us. Cooper Marine lost one from a fleet just above the -- I can't think of the name of the bridge, but one where the oil rig was stuck up underneath it. We had some barges in a fleet right there, and one of them slipped off and sank. We couldn't find it. We were about to start -- We were passing barge traffic, but we needed to get some deep draft to do that. We needed a side scan quickly done to understand where that barge was and what kind of obstruction. NOAA was able to help us do that very quickly, I recall.

Those kinds of capabilities are super helpful to us when we have obstructions in the waterway and we don't know where they are and what they are. I guess that's probably the bulk of the items I wanted to convey to you. Having that conference call and pre-determine planning ahead of time, to me that's a home run.

We didn't have it in the Katrina over in New Orleans, and we struggled around there for two or three days trying to figure out who was doing what with surveying the channels? Who is surveying the river? How about the GIWW? Who is handling all of that? It never really worked until we got that conference call put together that got us started. In my view, that got us rolling up much quickly. Do y'all have any questions?

MS. BROHL: Thank you. When you said that "we had boats in the water within an hour", could you elaborate what that means? It sounds like you used membership boats? And how does that work?

MR. BUTLER: We did. We were fortunate enough to have one of our companies bring their boat, their survey boat over to Mobile, and bring one of their experienced port captains, too. We actually drove the boat up the -- He drove, and we stayed right there in Mobile the Saturday before Katrina hit. So we were already sitting there, ready to go. As soon as the storm passed, he went and put the boat in the water -- Let me back up. We worked with Captain Beosted (phonetic). So he knew what the plan was. He accepted us coming in and helping.

MS. BROHL: Captain who?

MR. BUTLER: Beosted (phonetic) Captain of the port. U.S. Coast Guard captain of the port.

MS. BROHL: Where?

MR. BUTLER: In Mobile.

MR. JANGULA: That's the Kirby boat I was telling you about this morning.

MR. BUTLER: Yes. That was the Kirby vessel. In fact, that Kirby vessel right now, as we speak, is over in the intracoastal waterway. We had a really difficult time getting that information, communicating and assessing options for the barge industry.

MS. BROHL: And the only thing, Kirby is a tow boat company, correct? Not a surveying company?

MR. BUTLER: Yes, that's correct.

MS. BROHL: So then did Kirby take on professionals on board? I'm sorry. I don't recall, Mr. Jangula. They took on professionals, hydrographers that could interpret the information and work with it?

MR. BUTLER: No. We didn't have professionals on board that are expert surveys and data interpreters. What we're looking for in the intracoastal waterways is the quick centerline depth survey. If we got 10 foot of water down the center of that channel, and no obvious humps or anything, then

we're going to probably run with a test tow or something. So we don't really want to take the time to go very slowly, get a very detailed survey unless there's something to indicate we need to. That's the way we've been doing it.

MR. JANGULA: When we open up the channel right after a hurricane, that's basically all we do. What we do is we run the centerline of the channel. We do not do a detailed survey. And we put out a notice to mariners and say, "It is open with caution." And then the whole thing is get the fuel and the coal moving.

And we say, "Proceed with caution." And then we'll come along, as we can, and get the detailed surveys and get our charts up on our website back in order again. And, basically, they were going what we were doing. You don't have time, when somebody's got three days' of fuel in the ground or a weeks' coal in the ground, to do a nice, pretty detailed survey and publish it.

MR. BUTLER: That's a true statement.

MS. BROHL: I understand what you're saying, and I appreciate the point because you do need something cursory to get moving. And I guess if the Coast Guard is okay with that, okay. But it does

make -- I think it would make anybody nervous for the long term, certainly, only because we know from experiences in other areas that just, you know -- The whole reason that NOAA got into the side scan and the three dimensional is because you miss so much when you're just running a line. But if your experience with that is it worked out well and that the information -- It wasn't quality controlled in any way? It was considered okay information the way you did it?

MR. BUTLER: That's all we did. We just ran the centerline. Now, we do have good, top-line equipment on the boat. And I think some of the Corps boats had looked at it. We just feel like that's the most prudent way to get the waterway back going again. The intracoastal waterway, the max depth was 12 feet. And we're -- We routinely deal with shallow spots every day. We've got some in Matagorda right now where we've run barge and it won't turn around 48 hours, trying to get off.

But we learned a lesson from that. We'll deviate around that until we can get the Corps out there. I guess the dangers that we see are not something that we think overrides what we're doing. Just try to get rolling again. Now, we did see -- After Ivan, we did see some shoaling. And we went

back, and we looked at the river close for that and we determined where the deep water was. We actually had to go back and remark the intracoastal waterway by probably 75, somewhere along in there. We remarked.

The Coast Guard came out with us, and we helped them position the buoys until Terry could get in and re-dredge for us. So far it's worked well. I'll tell you, we've been really fortunate somehow, that in all three of these storms, the intracoastal waterway really hasn't sustained any serious damage at all.

MR. LARRABEE: Ray, is part of your confidence is the fact you know the waterway so well, and the fact you have predominantly soft bottoms?

MR. BUTLER: Yes, that's got a lot to do with it. It's the folks we've got out there assessing with us. The captains that have run it for several years. They're very familiar with it. We were up in the sands over there in Florida, and a lot of mud underneath. You know, that's just part -- It's just -- We don't feel like there's a tremendous risk there that.

MR. DASLER: On the fallowance (phonetic) surveys, was there much debris that was located? Because I think the bigger danger wouldn't be the soft bottom, but the obstructions and debris that could be

in the channel.

MR. BUTLER: Yes. In cases where we see an indication of that on the surface or we've lost a lot of structures that we knew was there before, we'll take some extra things looking for it. So far we haven't found any obstructions in the intracoastal waterway.

MR. PARSONS: Ray, I presume that most of your members operate within the confines of maintaining channels, but do they also operate at times outside these channels? And sort of following it up with John's question, is there a concern in the industry about what obstructions or debris might be lying and waiting outside of those established waterways?

MR. BUTLER: That's a good question. There are some shortcuts that we take. I think some of them are Mobile Bay, where we run across the bay and out of the project channel. There's one in Port O'Conner where we'll run outside the project channel. In those cases, I will tell you we'll probably be concerned about. You know, what may be laying out there that we didn't know about.

But, really, what we look for, Roger, is we'll do a flyover first. And the last two has been with the Coast Guard. If we see a lot of stuff missing, a lot of markers down, gone, then we may have

some concerns for that. But unless there's an obvious indication of something in the waterway, we normally don't spend a lot of time looking.

MS. HICKMAN: I have a comment. I don't -- And, Helen, I think your major concern is that it's not Corps people doing it. Raymond is saying they get out there as fast as they can, whereas the Corps isn't, for whatever reason, is not able to be there as quickly as the Kirby Vessel can. But as Terry said, that's exactly what he would do. It's not like Raymond is doing anything less than the Corps would provide. He's just doing it sooner.

MR. JANGULA: Well, we're all out there at the same time. The GIWW is 350 miles long. You can only survey so fast. So Raymond -- the Kirby is coming from one direction. We've got Kirby can go in another direction. We're going in two directions out of my office. The whole thing is you've got 350 miles of waterway.

And we've had a couple of captains of the port that -- if we have an overblown thunderstorm, they'll shut the whole thing down. I mean, we've had some storms that were a lot less than Ivan that they shut the whole port down. The last couple of captains of the port we had been a little bit more reasonable.

But, you know, we're all out there at the same time, but just a limited number of resources. And it might be 250 miles I'm talking about, but that's just one waterway. That's got nothing to do with all the ports.

MR. BUTLER: That is very true. I'm sorry I missed that. But it is kind of a partnership effort. They're working alone. We're working alone with the port in trying to cover as much ground as we can and as quickly as we can.

MR. DASLER: I think probably just a distinction for the Panel is, it's more -- and the Corps does this, too, what they call a recognizance level. So it's not to charting standards, and you wouldn't put that information on a chart. It's strictly a recognizance line.

MR. BUTLER: That's probably the right word to use. We're looking for major things that are going to hang us up or get us in a real safety bind. And so, after all of these -- there have been four storms I've been involved with so far, and we have not found anything in the subsequent four surveys that showed where we were off in our original assessments. We found some shoalings that we pointed out to the Corps before they got there.

MR. LARRABEE: Ray, one of the things the

Coast Guard uses pretty effectively is doctrined, and they intend to capture most of the things they do in a plan someplace so that it is a personality base and it becomes more of a process. Have you documented this process in any way, and is it institutionalized so that the next captain of the port doesn't start all over again?

MR. BUTLER: Well, thanks for that question. The answer to that right now today is "no". About two months from now, I hope the answer is an emphatic "yes". We're meeting next week in Jacksonville, Indiana with AWO. Tim Close (phonetic) from Admiral Duncan's (phonetic) office will be there. We're going to be talking about doing exactly that.

My hope at that time is to hold Mobile as the model for the rest of us to look very closely at trying to emulate that as much as we can. But it works so well. We were back running in five days after the worst hurricane our country has ever experienced. The waterway is back in shape. Deep draft channel has a plan. And everyone knows what's going on. We were moving ships before that, I believe.

So we're trying to capture all of this. And it's been sort of a new strap process beginning last year. I would like to thank Allen Bunn, Tim

Osborne, Roger. You guys have been tremendous partners for us in the barge industry for a long time. Thanks for asking us here today. And, Terry, thanks for letting us be partners with you guys in Mobile. That's been the landmark. Thanks for having us. I can't tell you how much it's helped the barge industry in the country.

MR. LAPINE: I'd like to ask one final question or another question. You mentioned the use of PORTS. I'm kind of curious how you use that. I mean, you're in a maintained channel, so I don't understand how you use the information to your advantage. Maybe you can elaborate on that a little bit.

MR. BUTLER: Certainly. The next time you see a barge tow, and the wind is blowing, that guy is never going straight down the channel. He's usually going like this (indicating). Sometimes like this (indicating). And many times he's got a thousand feet out in front of him. As he's coming across the Houston Ship Channel, going east and west in the intracoastal waterway.

When he hits that tide that's going in or out, it's going to throw that 1000-foot tow one way or the other, and he's going to have to react pretty darn quick, especially if Sherri is coming down on him.

With the deep and wide -- and she can't slow down -- it's just -- it helps them to know how to set up, what to expect. And when they're coming up on a bridge down here and the wind, and you've got one of these 1000-foot boat and 600-foot tow is empty, you've got 11 or 12 foot surface there, it's a huge sail, man it just -- because the wind, it acts on it.

MR. LAPINE: Did you actually have the realtime display in the tug? Are you calling somebody?

MR. BUTLER: Some of the boats have a few capabilities to do that. A lot of times they'll call, get it on the telephone, or they'll get it from the dispatchers. They get it off the ports.

MS. HICKMAN: Let me help Raymond out here, too, as well. If they don't have the capability on board, as I had mentioned yesterday, VTS, they can call on that radio just as easy as I can. VTS will inform them. But I can't tell you how many times we've had close-calls. I called Raymond one morning and told him the whole incident, and very, very upset about it all, and he took care of it about ten minutes later.

But they -- I hear them all the time talking about, "Anybody know what the current is doing?" Either somebody is on board looking it up on their computer or somebody is calling VTS to find out

because if they're -- if the current is coming in and they're inbound, they can't turn. They're going to come right across the channel in front of me. And that's where they use that PORTS system so much.

MR. SZABADOS: I'd like to add to that. The basic design of the PORTS system is based on the requirements to local users. An example, the Houston/Galveston Boulevard Roads where the intracoastal waterways does intersect the Galveston Bay was highlighted by the pilots and the barge operators, and that's why we have a current meter and a tide gauge and meteorological sensor there.

MR. BUTLER: That's probably the most used one in the whole waterway.

MS. HICKMAN: And I believe -- I think the amount of traffic that crosses that one intersection -- barges, ships, tows -- it's about 300 a day?

MR. BUTLER: Yes. 300 from this channel every day.

UNIDENTIFIED SPEAKER: You need a traffic light up.

MS. HICKMAN: No, that's not going to work. I need brakes for a traffic light.

UNIDENTIFIED SPEAKER: Like the auto mechanic told the guy when he brought his car in to fix

the brakes. "Couldn't fix the brakes, but I sure got you a real big horn."

MR. ARMSTRONG: Could I ask one more questions? We just saw that the Coast Guard released the final report on the Athos (phonetic) incident in the Delaware River, where a huge oil spill was created when a vessel struck an object. Apparently, it had been down there a long time. I just ask -- I just wonder maybe between you and the Corps, has there ever been a comprehensive sort of obstruction survey of the entire waterway for those kind of hazards?

MR. BUTLER: Only by virtue of the fact that we run and drag at the bottom every day.

MR. ARMSTRONG: I just wonder, do you think that's advisable, or if you think that's probably the fact that you drag along the bottom has pretty much cleared the waterway?

MR. BUTLER: Interesting, because I know there's a lot of rudders down there.

MR. JANGULA: We hit stuff periodically. There are stuff down there. I mean, if nothing else, you've got to realize that there are scrap metal barges floating down the water. Stuff falls off of them.

MR. PARSONS: Any other comments, questions?

MR. DASLER: I'm just going to make one other comment. Again, I think this is the first we heard - Everybody's been talking about PORTS before. It's all be in relation to water levels. So I think this has been a really good case; the importance of both, water levels and current and wind information. And I think that's really what distinguishes the PORTS system from a new line structure is that current capability.

MR. BUTLER: There's a couple of places we sure would like to see current meters now. Allen and I talk about it a lot. It's funding that -- where we start to stumble. Where do we get the money to do it with?

MR. ARMSTRONG: $1,000,000 a year on one bridge.

MR. BUTLER: Yeah, that's right. And we pointed that out to Allen, but he doesn't come up with the money.

MR. PARSONS: Ray, I sure appreciate your comments and your inputs this afternoon. Thank you for participating.

MR. BUTLER: Thanks for asking.

MR. PARSONS: Our last presenter this afternoon is -- will give a unique perspective. It's

not so much from a marine transportation sector point of view, but from a user of information. You've heard a lot about the NGS imagery that was provided along the shoreline. Dr. John Pine is the chair of the Department of Geography and Anthropology at the Louisiana State University. He also has two other hats. He is the director of Disaster Science and Management Program, and also the director of the Computer-Aided Design in Geographic Information System Research Lab. He has a story to tell, if you will, on how LSU got involved with the NGS imagery, and how they shared that information with customers and how, perhaps, the customer use that kind of information.

MR. PINE: Thank you very much. I do wear several hats, and my colleagues in the department wonder sometimes which way I'm going. When Katrina hit LSU, I had been chair of this department about nine months. I've been a faculty member at LSU for 26 years. And the story, well after the eating hours off the plane, is how I got into geography and anthropology.

I led a team of 35 faculties and students managing the mapping at our state Emergency Operation Center in Baton Rouge. And still having to be chair, my dean felt pity on me and gave me associate chair,

and there are -- no other department has an associate chair on our campus, and they can't remember the last time that was the case, because we are still in an emergency situation, unfortunately, in Baton Rouge.

What I want to share with you is having led a team for about 10 days in the response to Katrina, in trying to supply information needs to emergency response officials, many of them supporting the Coast Guard and supporting the Corps of Engineers in dealing with the rescue option.

I also wear a research hat. And there are many of my colleagues on the campus use this type of information that I want to share with you that come from many, many sources on an ongoing research and long-term recovery, and maybe the biggest value that the NOAA imagery has in our long-term recovery effort at LSU.

When FEMA came on, it was about 10 days into the operation. They set up a field office in Baton Rouge, and their GIS was up and running. They had asked us the day after the storm hit if we would collect data, any kind of a data and create a clearinghouse because we would provide a data storage for their field office once they got up and running.

We set up a website plus a 20-terabytes

server on our campus that our chancellor made available to us. A private donor provided $200,000 to support the acquisition of this 20 terabytes -- I'm not sure if any of you know how much 20 terabytes is. That is enormous storage space. And so what we found available -- We set up this web page which became a portal for many of our partners at the federal, state and local and private sector basis.

We were not able to deal with the enormous task of supporting emergency operation as well as to provide data resources at the same time. So we were making maps, and at the same time trying to sort data. Our response was here, on the left side (indicating). It was an enormous group of people on our own campus. "Downloads". You select here (indicating), and you get access to the data. Enormous library. We try to coordinate people who want information so they can call the experts, not only on our own campus. And then finally over on the far right (indicating), just our photo gallery. And y'all can explore that at katrina.lsu.edu

Basically, we provide these kind of services. We provide data storage, a lot of NOAA imagery, and I'll show you how you get access, Internet access to the data so you can download it. And you-all

probably have gone to the NOAA's website to download navigational maps. Same concept.

Download capabilities or documents, images, vector data used in map, spreadsheets, software. We have provided training particularly for people on our campus of how to access this enormous volume of information. And then we set aside a huge research lab as we had people coming in, and as we cranked up even additional one.

For one of the selection, you can find out more information. And these are just -- oftentimes we find the most frequent queries for information. Once we get it, we add it to this list so that we don't go and generate the report again and again and again. Sometimes we provide the data analysis, but we will use other people's, including NOAA's analysis, which were a part of it. And that list is selectable from the entry web page.

The photo library is just rather amazing. We've talked about Lake Charles today. There is from Lake Charles. There's some boats that you were talking about (indicating). But we have thousands of images that I'm sure that many people have shown you.

We have several portals to get data. This has been our customary one (indicating). This one is

atlas.lsu.edu We have, for over ten years, provided a portal for images for Louisiana from many, many different sources, and there are many different shapes and sizes.

Now, this is the one that we could not have done without our private partner. Now, these are the NOAA data that was eventually acquired over a period of time following Hurricane Katrina. We're talking thousands and thousands of images.

Intergraph Corporation brought our campus, and unlimited licensing capability of tera share, they brought in four of their staff members, and indexed these thousands of images so that if I wanted to find an image in this part of the state, or I want to find one here (indicating), I want one over here, I can zoom in and work, and it's all done automatically, and I can actually -- And then using this, it kind of almost looks like a file data share concept. One is like a file manager concept. It allows us to actually view the sample and see if that's the one that we want.

One of the things -- This took about two weeks to do (indicating). So it was really well after the fact, by the time we were organized well enough to really use this on an ongoing basis. I'm going to show you -- I'm not sure if I have a slide on it. But you

can take this from our campus. And if I'm using a GIS system, I can immediately go and bring a particular panel into my map and software so it enables me to find the right -- I mean, we're talking thousands of images here. So how do you find the one that you want and be able to use this utility?

For those off our campus, we have something similar. Tera share will work on a broader network beyond their own campus, but because of security issues that no university or no government agency would ever allow opened, we could not allow off-campus users to us tera share off our campus.

So we offered a different kind of downloader. And, basically, if you were in Lake Charles and you say, "I want to see some NOAA imagery over here," this is available from the web. And you zoom in using this little utility (indicating) to the area you want. Then you can get this screen and you say, "All right. I want everything that I've just zoomed into", and you can see that this is -- this is really the NOAA imagery.

This was not actually the 3001. You can select different formats, different projections on the slide and download it to your computer from that. So this is open access to the public, available. Again,

we were able to crank this up months after the incident.

One thing, there are limitations on us. It took four months for FEMA to contract with us to be able to do this. Even though we had all the data on our campus, I couldn't reallocate staff members to do the kind of work that provide these kinds of downloads. That is something that impacted, I think, in the response, typically because we couldn't find the specific images that were most useful because we're still providing emergency response services in the Emergency Operation Center. So we're trying to wear several hats at the same time.

For users anywhere in the world who want access to our database, this is the 20 terabytes server. And when we receive information, we put it in a folder temporarily until we check it, make sure we have all the information about it; whether it's licensed and restricted, whether there is security issues. When we're satisfied that it's available to the public, we put it in a separate folder that's available to anyone. This looks like your file server. You use a ETN (phonetic) client. You have to go through a password to get entry into it, and basically you have access to the complete data.

It requires some coordination between the user and LSU, but basically we've been licensing users, government, federal, state and local, contractors and non-profit organizations. As long as they have a need for it, we allow them into it. It's a very secured kind of process, but it gives them unlimited access. They can put things on here, as well as they can copy things.

Most of these folders are set so that you can't -- the user can't erase something, but they can put something on there. There's some security issues that nobody, but the university, would be crazy enough to do. We have just about filled up this -- with 20 terabytes worth of image. And what you see on the right are some images. Some of those are satellite images. Some of them are products using remote sensing data. This is a live art image that was created prior to -- And there are many, many products like this on the server.

And if you want to come back, I would suggest that y'all want to take some of these slide shows and make a PDF file out of them because it's a reducible size. This is kind of the architecture that Intergraph helped us think through of how we would receive information, how we would sort it, how we would

move it around, and then how do we make it available to the end user. From a research perspective, this took us a while to do but, actually, this design was available after about two weeks into the storm. It took us longer to fully implement.

I want to give you a couple of examples of how we use some of the imageries. You've seen some of these. In fact, I think the Rita imagery -- the folks from Lake Charles used it also. This would be the MODIS imagery. It really provides for emergency planners some real good information of direction. It shows you the scope of the storm. It's useful for evacuation and getting the point across to people.

As difficult the Katrina response was in New Orleans, more people left than we thought would. In the case of Rita, people really did leave. I don't think there were too many people in Cameron Parish when that storm hit. There was just no one around.

The next one, this is Radarsat. About in July, NOAA held a meeting in the Sense Space (phonetic), and like many of our federal, state and local partners to come, and they explained that a lot of remote sensing information would be made available if you had an incident.

Brenda Jones was one of the contractors.

She worked for SCI (phonetic). Brenda knew who I was the weekend before the storm. Brenda is calling me saying, "John, I need your data from Atlas. Get it to me." So we made that available to her.

Radarsat was one of pre-arranged sets of data that would be made available to not only the federal government, but to state and local users and the contractors, and there were no copyright issues. You have a 30-day window where we had access to much of the satellite and other kinds of data. And this was -- Go ahead. Go back one slide. I want to show you.

Here's one of your oil spills that they had to deal with. It was very obvious. A lot of times some of this other remote sensing data that you see much broader, you can see some of the spills. It was valuable to the emergency response crew. Again, the GOES satellite. Apart of our department, we have a regional condemn center for NOAA. And they go to the state Emergency Operation Center. And prior to the storm, they're providing consultation to the public official.

Again, the GOES satellite imagery is very, very useful. This is a pre-enclosed landsat (phonetic) image. It doesn't have a resolution as you see in some of the other satellite photographs, but you can do

different things with this long term to look at the impacts of the storm.

A similar one, looking at a little bit different view a pre and post using landsat. Looking at long-term environmental restoration and issues. MODIS is a much higher resolution. Remote sensing imagery that you can see like this (indicating). LSU had the same capacity, and we're using that more for long-term environmental restoration.

Now, what you'll see is a lot of the satellite companies were providing us with remote sensing data. And this was -- this shows the -- the impact of the flooding -- and NOAA, you'll see one slide similar to the one we have at the back of the room. Many of us were taking these images, identifying the flooded areas. And we had people on our own campus doing it. And I'm going to show you examples of how they did this. But, basically, NOAA and our faculty from LSU did the same thing.

Here, this is almost identical to the slide you see in the back of the room (indicating). So there were many groups. It certainly raises the question of they both use the same kind of technology; identifying flood in non-flooded areas, developing an overlay, and then putting Lidar high resolution elevation data

underneath to do this.

This was something -- This was done by two faculties at LSU, Rick Rella (phonetic) and Ralph Cunningham. And this is a similar one (indicating). A little bit closer in. And then we have a NOAA one coming out. This would be similar (indicating).

So in a sense, we were all -- realized this is very, very powerful technology where we can use the satellite imagery to pinpoint dry and wet images, and then take this and actually determine flood depths from it. At least initial estimates until you could get grounds from being there to do some elevation shots there in New Orleans.

This is a similar kind of Lidar. Helping people understand topography in New Orleans. This is Lidar, again. And I believe is doing some coastal Lidar to better help us understand changes in coastal elevations in areas that were impacted by both Katrina and Rita. I'm using this as an example. But we're really able to use the remote sensing data in marvelous ways to show changes in landscape.

A lot of the imagery that we have stored at LSU -- And we are providing a permanent storage. Much of it is satellite. What you see in the upper right is infrared. It clearly shows the areas that were

affected and those that were dry. And the image in the lower right -- Now, I'm not sure whose that is, but that's one of the satellite ones. I've seen such good imagery on the slides here, now I'm questioning whether it is.

But we were able to acquire and store, for both storms, all of the imagery that was collected by the federal government. Now, you saw the image on the right in an earlier slide. And on the left, you see a 1998 vertical shot of the same area with the houses and the camps and that kind of things. So this is kind of a before, and then after. It shows -- The image on the right is one that was provided by someone locally -- let's go back up one -- provided locally. You see the complete devastation.

And the image on the left is one of NOAA's images. A very high resolution. You not only can see very, very clearly the enormous damage, but then you begin to see some of the changes in the landscape, the physical landscape. And our researchers on the campus and our students are using this type of information so when we study it. We have Lidar in the same area just a few years ago. It clearly shows the landscape before and with the imagery that will be coming, the Lidar coming out of the same neighborhood, and we'll be able

to chart some of the changes in the landscape.

We can provide links to other data, such as yours. And yours is just one of many that we provide these links to. Again, the Lidar -- And this is in a Cameron Parish, just below our folks from Lake Charles. And what you can see here -- This is the high ground. And unfortunately, this is the coastal area.

And so some of the uses of the images, the powerful high resolution images, and the powerful information that's associated with elevation, is to help local officials determine land use and restrictions, and possibly -- and don't quote me in the paper on this one -- the possible relocation of Cameron to a much higher ground. This is actually outside of flood zone.

And, really, in conclusion, this is Cameron before and after. This is the high school there in Cameron. It just kind of shows you our group and our clearinghouse is providing this data storage, and help the people, both research community, government users at the state and local entities, helping them find the right kind of data. And where they need some kind of analysis, we can do some analysis with the support that we have from FEMA. But, also, we can relay that question on to other partners that we know have the

capacity to answer many of the questions that they have. So LSU has been a partner with the federal, state and local response in storing and providing information access to both imagery, but also other kind of use. And we welcome any kind of questions or comments.

MR. PARSONS: John, from your discussions with those that you know who have utilized the data that you have provided, is there any additional data that emergency responders, emergency managers would like to see, perhaps even have NOAA provided?

MR. PINE: I think that this happened afterwards. NOAA was getting a respond. The large image files that we had often times broken up, simply because that's the way you collect the data. And merging that into some appropriate format that's not too large for the user. Providing them easier access -- If we had gotten it early on and merged files, it would have been much easier.

Those kinds of questions came up early on and NOAA responded. And I think your contractor went back and merged many of those photos so it would be much easier to work with. In fact, one of the files I showed you, Holly Beach, was a merged set that I noticed was much easier for me to find and work with.

So merging the data. Having it in a format.

It wasn't a problem with NOAA information, but it was a particularly a problem with much of the satellite information. It came down in many different forms and file sizes that were not appropriate for the user community. And so we had to reformat it, and then put it on the web for users. For us to understand more of those kinds of questions up front, it would make providing information by NOAA much better for the emergency response community.

MR. ASLAKSEN: John, quick question. You use 41st Responders and specifically in Louisiana. Could you speak to some of the uses or some of the requests you saw early on for high resolution imagery or other remote sensory data?

MR. PINE: In fact, I'm not sure if someone mentioned it, but Google Earth -- If you haven't seen Google Earth, you have to see it. There's a free ware that comes with it that allows you to do some. Google Earth provided us unlimited licensing in the Emergency Operation Center and to our campus. You could zoom in to an area, and people were looking to see if their homes were flooded was one of the usage. But the responders were using in our Emergency Operation Center, that in a sense -- Almost everyone in the

Emergency Operation Center there at the state was using Google Earth because it was so easy to use. And I think Google Earth got your images before we got them so we could work with them, because it took us time to index them and that kind of thing.

And so, in a sense, they were using the high resolution images from you and the satellite images to be able to direct the emergency responders in the rescue effort. It was absolutely invaluable. And I'm sure that with our waterways and our ports, there will be similar kind of stories. The ones that we here more in the newspaper are the ones which are much more dynamic in terms of rescuing people off rooftops. So state police needed coordinates because they had GPS units in boats going and finding these people.

The same thing with helicopters. They landed and using this kind of imagery. They were using your images, which I thought was really amazing to have that high resolution type of imagery available to them. I think in the future, we'll probably get that high resolution imagery quicker into the Emergency Operation Center, both at the state level and at the local level. And we're seeing some lessons learned in that capacity about how to transfer large, large files.

MR. DASLER: The innodation (phonetic)

models, were those done with pre-Lidar topography, and then using the wetted surfaced from the aerial images to --

MR. PINE: Well, actually, we got that running at LSU using our super-computer hurricane model in New Orleans. A simulated storm. And none of us ever modelled bridges of the levees (phonetic). We model overtopping, and many of the areas overtopping. What you saw in the image in the back and the image that I showed you was Lidar, where they would compare the Lidar to the estimated heights of the water using the imagery. So getting the outlining boundaries is right here. That's an estimate. That proved to be the initial estimates on how deep the water was.

MR. DASLER: So you had Lidar before the storm that we're using?

MR. PINE: Yes, yes. It's outstanding data.

MR. PARSONS: Dr. Pine, I appreciate you coming down on such short notice in participating. This was certainly eye opening. Thank you.

MR. PARSONS: Thank y'all so much. Again, I think both the long-term recovery of your imageries will be invaluable to these local communities. They need to be able to see it as much as -- It's

disheartening to see that.

MS. BROHL: Sir, we just go to lsu.edu to get to you?

MR. PINE: To get to the Katrina website is www.katrina.lsu.edu and you would be able to get access to the imagery.

MR. RAINEY: Thank you very much. That concludes our program of presentations. This will be our time for public comments. And earlier I had not noticed any requested comment, but let me ask our public members if they have any.

MR. RICHARDS: My name is Bob Richards. I'm with Fugro Pelagos. And we did the emergency survey of the Calcasieu channel coming in. And I just want to reiterate what they said. I was really watching the news and watching what was going on on land. I was not expecting a good scene when I got there, and when I got there I was amazed that the Coast Guard, the Corps, the port and NOAA were all on the same page with one set of priorities, and it was a neat thing to see and participate in.

Also, what we did -- I know you were on the first round, but for our communication, what we did is we just acted like another NOAA NRT. And I reported through Rick Fletcher, and he then reported like I was

one of his team. So all the NOAA work was very funneled through one guy who kept the communication going with all the Corps and those guys, and it worked real well. We got out there quick.

We work with NOAA all the time, so we all speak the same language and NOAA contractors, and the NOAA field crew. So it was a very easy, quick fit under our normal contract, just like they did with their survey anywhere. So I think from listening to the ports that it's real important that they don't care who does it, but that it gets down and they get back to work as soon as possible. So I think it was a real constructive effort on everybody's part.

MR. RAINEY: Thank you very much. The constraints that we have -- As I said, that concludes our program for today. It says at 5:30 we need to muster for the gather out in the lobby for the transportation for the evening meal. At this time -- I don't know -- It has been a long day. Tomorrow we will have some time to do some deliberations. And, again, a lot of information passed today, and if you have some thoughts on that for deliberations, if you can take the time to jot down some ideas, and we can maybe disseminate that and that will facilitate our discussions on potential recommendations tomorrow.

And, again, seconding, Mike had asked if folks could meet just initially with him to discuss his request for the HSRP support on the PORTS and possible this time would allow at least an initial discussion of that. I realize there's not a tremendous amount of time before the 5:30 bell for the evening. Are there any administrative announcements?

MS. HESS: No.

MR. RAINEY: Okay. Well, let's adjourn the meeting at this time. Thank you.

(Meeting adjourned at 4:08 p.m.)

THE STATE OF TEXAS :
COUNTY OF HARRIS :

REPORTER'S CERTIFICATION
TO THE HYDROGRAPHIC SERVICES
REVIEW PANEL PROCEEDING
TAKEN ON JANUARY 25, 2006

I, An Nhu Chau, a Certified Shorthand Reporter in and for the State of Texas, hereby certify that this transcript is a true record of the proceeding given by the witnesses named herein.

I further certify that I am neither attorney nor counsel for, related to, nor employed by any of the parties to the action in which this testimony was taken. Further, I am not a relative or employee of any attorney of record in this case, nor do I have a financial interest in the action.

Subscribed and sworn to on this, the 24th day of February, 2006.

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