

Meeting Summary
Hydrographic Services Review Panel (HSRP)
November 27-29, 2012
New Orleans, LA

Tuesday, November 27, 2012

On the call of the Designated Federal Official (DFO), Rear Admiral Gerd F. Glang, NOAA, Director of the Office of Coast Survey, the Hydrographic Services Review Panel (HSRP), a NOAA Federal Advisory Committee meeting was convened on November 27, 2012 at the Astor Crowne Plaza Hotel, 739 Canal Street, in New Orleans, Louisiana. Rear Admiral Gerd F. Glang presented to the HSRP that this meeting was his first as the recently appointed DFO. The following report summarizes the deliberations of this meeting. Presentations and documents are available for public inspection online at <http://www.nauticalcharts.noaa.gov/ocs/hsrp/meetings.htm>. Copies can be requested by writing to the Director, Office of Coast Survey (OCS), 1315 East West Highway, SSMC3, N/CS, Silver Spring, Maryland, 20910.

Opening Remarks and Introductions
Matt Wellslager, HSRP Chair

The meeting was called to order at 8:43 a.m. Chair Wellslager outlined the statutory role of the HSRP and introduced the distinguished NOAA administration members present. He announced that, sadly, the HSRP had lost this year one of its members to cancer, Dr. Michele Dionne. He stated that Michele's expertise serving on the panel was very productive and will be missed.

The DFO, Rear Admiral Gerd F. Glang, then invited the panel members to introduce themselves. Ms. Margaret Spring, Principal Deputy Under Secretary for Oceans and Atmosphere, then swore in Carol Lockhart as a new panel member. Ms. Lockhart is experienced in multi-beam and LiDAR hydrographic surveying.

Welcoming Remarks from NOAA Leadership
Margaret Spring, Principal Deputy Under Secretary for Oceans and Atmosphere, NOAA

Ms. Spring said that in today's economically challenging climate, a safe, efficient and environmentally sound U.S. marine transportation system is more important than ever, and NOAA plays a key role. NOAA provides unique and essential navigation products and services in the areas of safe navigation, weather and water observations and forecasts, and emergency response to environmental threats.

Following its Anchorage meeting, the HSRP presented NOAA with four recommendations:

- 1) Develop a frontier mapping strategy using an IOCM (Integrated Ocean & Coastal Mapping) approach to multi-purpose data acquisition.

- NOAA Response: NOAA is highlighting the IOCM approach in its Arctic strategy document and advocating for IOCM nationwide. The newly completed IOCM sea floor mapping standard will be used by NOAA in the Arctic for charting, while data that do not meet that standard can still be used for other purposes. NOAA is also working on a project which will allow vessels of opportunity in Arctic waters to contribute useful survey data. This year, the NOAA ship Fairweather spent a month in Arctic waters to update nautical charts, establish new tidal data, and support scientific research on essential fish habitat.
- 2) Prioritize and support collection of geodetic data for the Alaska region.
- NOAA Response: The NGS (National Geodetic Survey) is collecting airborne gravity data in Alaska as part of the ongoing GRAV-D initiative to redefine the vertical reference system of the United States. NGS resumed aerogravity surveying in Alaska this fall, partnering with the Department of Interior's Bureau of Land Management to fly aboard their aircraft to survey areas northwest of Fairbanks and New Anchorage. NGS also plans to return to Alaska in the spring of 2013 to survey a region southeast of Juneau aboard a Navy aircraft. Moreover, NGS's efforts to densify the CORS network in Alaska have continued, with 13 new sites added in 2012. A lack of station coverage is an issue, especially in Alaska and the Arctic, and NOAA will continue efforts to increase this information network.
- 3) NOAA work with the United States Coast Guard (USCG) and the U.S. Army Corps of Engineers (USACE) at the local and national levels to coordinate mapping and data collection and sharing of mapping data.
- NOAA Response: The Office of Coast Survey has several coordinated programs in place and will continue to increase these efforts. For example, in 2012 a NOAA Corps officer from OCS deployed to a USCG cutter to train USCG personnel in hydrographic operations. If successful, cross-pollination of NOAA Corps personnel aboard USCG vessels may be added in future years. Also, NOAA's Center for Operational Oceanographic Products & Services (CO-OPS) works closely with the USACE under their Comprehensive Evaluation of Project Datums program to ensure all USACE coastal projects are utilizing NOAA title datums as prescribed by their engineering policies.
- 4) NOAA should hire a state geodetic advisor for Alaska.
- NOAA Response: In the past, NGS supported the state geodetic advisory program, but is currently transitioning to a regional geodetic advisor program. The Alaska regional geodetic advisor position is currently under NGS review. Once this person is in place, he/she will work with state, local and federal officials to provide guidance on geodetic issues, assist with the state's geodesy and surveying programs, and coordinate workshops on the use of NOAA's navigation products and tools.

Ms. Spring went on to discuss federal interagency work. The Committee on the Marine Transportation System (CMTS) is an interagency committee established by executive order and chaired by the Secretary of Transportation. Ms. Spring served for 18 months as Chair of the CMTS Coordinating Board, working with 24 different agencies on marine transportation issues. Arctic issues are one of the current priorities for CMTS. Some of CMTS's recent accomplishments are:

- Developing best practices to reduce damage caused by breakaway vessels;
- Improving delivery and accuracy of navigation information, including integration of e-navigation; and
- Supporting the White House Ports Task Force to develop a national strategy for future investment in physical and informational infrastructure.

Ms. Spring invited the panel's input on how NOAA can continually improve and advance its navigation services. HSRP Panel members should also consider themselves ambassadors for NOAA in their respective professional circles.

NOAA's missions remain essential, but creative, innovative solutions and novel partnerships are now necessary because of budgetary constraints. The data-sharing agreement between NOAA and three oil companies active in the Arctic is an example of such innovation.

Application & Use of NOAA's Navigation Data, Products & Services for the Port of New Orleans

Gary P. LaGrange, President, Port of New Orleans

Mr. LaGrange discussed the importance of the maritime industry for New Orleans. This 290-mile stretch of the lower Mississippi River constitutes the largest port system in the world and moves 500 million tons of cargo per year. New Orleans is also the fastest-growing cruise port in the United States.

Mr. LaGrange stated that the White House Ports Task Force is a response to a recent Army Corps study on the substandard nature of U.S. maritime infrastructure. \$13 billion is needed by 2020 to develop and maintain this infrastructure, according to the study, while only \$7 billion is currently funded. In particular, the opening of the Panama Canal in early 2015 will bring about an influx of new traffic. The DREDGE Act of 2012, if passed, would call for the appropriation of funding needed to expand the Mississippi's navigable width to 50 feet. The importance of this effort is shown by a recent Port of New Orleans study: for every one foot of draft lost or gained, \$1 million is lost or gained per ship.

The Harbor Maintenance Trust Fund (HMTF) was created in 1986 for the purpose of maintaining America's ports and harbors at their project depths. However, Fund monies are not all used for this purpose, and thirty percent of ports and harbors are not being maintained today. The Fund should be used for only its intended purpose, Mr. LaGrange said.

Intermodal connectivity is another strength of the Port of New Orleans. All six major rail lines are connected to the Port. Although the Port of New Orleans is a state entity, it is operated in a

private enterprise mode, with no dedicated tax funding. Mr. LaGrange said he is exploring opportunities for public/private partnerships to take the Port's capacity up to 1.5 million TEUs.

Mr. LaGrange concluded by emphasizing the importance of getting Congressional support for the two priorities of dredging channels and of lock and dam maintenance in the inland waterway system of the Mississippi river.

Questions from the HSRP

Dr. Gary Jeffress asked whether the Port gets political support from the upriver states which feed the export industry. Mr. LaGrange replied that it does. The Big River Coalition, created two years ago, is a coalition of states involved with Mississippi maritime trade and working for marine infrastructure.

In response to Chair Wellslager's question, Mr. LaGrange said that the 50-foot deepening project will go up to Baton Rouge. The typical under keel clearance of ships coming into port is now about two feet.

Keynote Address: Welcome to New Orleans: The Importance of NOAA Navigation Services for the Gulf of Mexico Region

Kelly Schulz, Vice President, New Orleans Convention & Visitors Bureau

Kelly Schulz welcomed the panel to New Orleans. Tourism is the city's number one industry, and one in every 12 jobs in Louisiana is related to the tourism industry. Without tourism, the city would never have recovered from Hurricane Katrina or the Deepwater Horizon spill. Tourism revenue funds the Superdome, public transportation, schools, and many other programs which are crucial to New Orleans. Ms. Schulz added that NOAA's work on hurricane preparedness and coastal restoration is very important to the city.

Questions from the HSRP

Chair Wellslager asked about how the tourism industry has been rebuilt after Katrina. Ms. Schulz said that the French Quarter, which is the heart of the tourist district, was less damaged than some outlying suburban neighborhoods. However, three of the most iconic New Orleans buildings, the Superdome, Convention Center, and the Hyatt Hotel, became associated in the minds of the public with a lot of human suffering. The Convention & Visitors Bureau received a federal grant which allowed it to rebuild the city's image and market New Orleans as a tourist destination. This marketing campaign helped to bring the number of visitors up from an all-time low of 3 million in 2006 to 7.1 million in 2007. After the Deepwater Horizon spill, Ms. Schulz added, her organization used NOAA data on the safety of seafood to educate potential visitors.

Admiral Barbor asked about charter fishing or recreational boating in New Orleans. Ms. Schulz replied that charter fishing is indeed part of the city's appeal, particularly for international visitors.

National Ocean Service Update

David M. Kennedy, Assistant Administrator, National Ocean Service

Positioning America for the Future, the new National Ocean Service (NOS) tagline, was an attempt to send a coherent message about what NOS is and does, Mr. Kennedy said.

Navigation services are an integral part of any emergency response, yet in the past, they have gone unnoticed. That seems to be changing, and Superstorm Sandy may provide an opportunity to build public awareness of NOAA navigation services. Mr. Kennedy plans to meet with Congressional delegations from affected states to pursue this goal. He seconded the idea that HSRP members can be ambassadors to the public and to Congress, promoting recognition of NOAA's work. A short four-page document detailing NOS's role is available.

The Marine Technology Society has offered to put together a brief study with statistics showing the benefits in money saved and lives preserved of navigation services involvement during Sandy. The study will be done quickly to benefit from current media interest in Sandy stories.

Mr. Kennedy outlined a few other items of NOS news:

- Illinois, the last state eligible to participate in the coastal zone management program, has now joined.
- A recent NGS study showed that every dollar invested in coastal mapping gets a \$35 return.
- 82% of survey work in the New York and New Jersey harbors was done by NOS.
- NOS, NGS and CO-OPS are all actively working in the Arctic.

Preparation, response, and resilience is another theme in NOS's work. Together with the National Weather Service, NOS developed advance predictions of the impact of Sandy. Mr. Kennedy said he was surprised to read stories about people who declined to believe storm surge predictions. NOAA's Navigation Response Teams were almost immediately in action after the storm. FEMA has now for the first time invited NOS to be part of the post-disaster response and recovery team.

Mr. Kennedy noted that an IOOS (Integrated Ocean Observing System) Federal Advisory Committee has recently been created. He suggested that the HSRP work with the new committee on issues of common concern.

Questions from the HSRP

Ms. Miller stated she was concerned to learn that funding for Navigation Response Teams (NRTs) was dropped from the President's proposed 2013 budget. Maybe it could be determined how much NRTs cost compared to what ports lose for lack of NRTs. One possibility is that user fees could fund NRTs. Mr. Kennedy agreed that could be part of the Marine Technology Society document.

Vice Chair Perkins asked whether it might be possible to come up with a mechanism for using private sector vessels and other resources to help collect data needed to reopen ports. Mr. Kennedy replied that FEMA is concerned with preserving the confidentiality of data, but Vice Chair Perkins pointed out that in a post-disaster situation, data will be published online hours after its acquisition. Ms. Blackwell stated the NOAA is not working alone; other public entities such as FEMA are also involved. Vice Chair Perkins said that, if a way can be found to engage the private sector, it can be of great help with NOAA's mission, especially in times of national disaster. An engaged private sector could also help lobby Congress for needed infrastructure.

Capt. Swallow stated that NRTs are most useful in the first two to three days of a disaster response, since they can mobilize quickly and cheaply. Private sector involvement has sometimes been used and is considered when appropriate.

Dr. Kudrna commented that it is appropriate for NOAA to be part of the post-disaster response team. Perhaps the panel should recommend that FEMA routinely involve NOAA in such teams.

Mr. Hanson suggested that NOS could have a higher profile within NOAA: maybe it should be on the front page of the website. He agreed that Sandy, because it affected a region which gets few hurricanes, is a unique opportunity to sell navigation services. Going to Capitol Hill with other agencies and governors' offices could amplify NOAA's voice. Dr. Jeffress suggested NOS could work with DHS in its natural disaster modeling work, in particular using NOS expertise in GIS. Ms. Spring added that a joint Coast Guard-NOAA strategic approach is under discussion.

Dr. Brigham went back to the issue of private sector involvement in disaster response. He suggested this question should be kept alive and perhaps embedded in a working group.

Chair Wellslager suggested that NOS use social media such as Twitter and Facebook to market itself; for instance, in a natural disaster situation where web users are seeking out timely news. Ms. Spring said that, as an agency, NOAA has embraced social media, and offered to send the panel Twitter links. Ms. Miller added that the hurricane blog members saw was very effective.

Public Comment Period

Ken Graham, of the National Weather Service's New Orleans-Baton Rouge Office, commented that his office works with the Department of Energy's Strategic Petroleum Reserve and does joint exercises several times a year.

Application & Use of NOAA's Navigation Data, Products & Services for the Port of Mobile **Terry Gilbreath, Harbormaster, Port of Mobile**

Mr. Gilbreath began by describing the Port of Mobile's economic import and size. The Port has excellent intermodal connectivity, and a new intermodal facility is planned. Three new terminals and a turning basin have all been added in the last three years, and work is underway to get them added to charts as soon as possible.

The NOAA PORTS® program is supported principally by the Alabama State Port Authority. Fourteen sensors are located within the bay. Pilots and tugs use this system on a real-time basis every day to check tides, currents and visibility. Commercial fishermen and recreational boaters also use the NOAA PORTS® information.

The Port has a close working relationship with NOAA during hurricane response. A Port representative is invited to NOAA's disaster response center in Mobile. Daily phone conferences are held involving diverse groups of waterway users. Moreover, the private-sector Gulf Intercoastal Canal Association sponsors private surveying companies to survey along the intercoastal waterway after a natural disaster.

Mr. Gilbreath went on to discuss the Port's fog sensors. Data from these sensors helps bar pilots decide whether to bring in ships. Visibility can sometimes decrease rapidly.

Questions from the HSRP

Ms. Miller asked how PORTS is funded. Mr. Gilbreath said that a harbor entrance fee is charged for every foreign-flagged vessel in the Port of Mobile. This money funds PORTS®, which costs over \$100,000 a year.

Mr. Armstrong commented that the visibility and water level data show some abrupt changes. Are there any predictive models available? Some predictive modeling has been used, Mr. Gilbreath said. Dr. Jeffress offered to share his university's work on predictive software using artificial neural network technology. Mr. Edwing added that, in about a year, users will be able to access operational forecast system models which predict water levels, current, and wind, although not visibility. Mr. Gilbreath said that the Port would like to have another fog sensor further offshore, either at the mouth of the bay or in the water on a rig.

Mr. Graham stated that the Weather Service is experimenting with Mr. Osborn and with pilots to create a program for mile marker forecasts on the Mississippi River, including visibility data. Since it would be infeasible to have a sensor at every mile, pilots will be able to tweet information on what they see to the Weather Service to inform its forecasts.

Capt. Dempsey and Mr. Gilbreath discussed under keel clearance. There is no required under keel clearance in the Port of Mobile, which is part of the reason good tide data is important. Mr. Gilbreath said that the Port is not currently planning to deepen the channel from 45 to 50 feet. Widening the channel from 400 to 550 feet is the next project; this will allow a passing lane five miles long so that two-way traffic is possible.

Mr. Carothers asked whether other ports have a tax on foreign-flagged vessels to fund PORTS®. Mr. Edwing said that some are, although many different funding sources have been used for PORTS®. Mr. Gilbreath added that stakeholders love having PORTS® and he considers it a wise use of the money. Mr. Osborn described some other regional PORTS® funding mechanisms: the Port of Pascagoula has a port fee system, while the lower Mississippi River PORTS®, Port of New Orleans PORTS® and Lake Charles PORTS® are funded by pilot fees. Chair Wellslager recessed the meeting for a group visit to the Port of New Orleans.

NOAA/NOS Congressional & Budget Update
Craig Woolcott, NOS Policy, Planning & Analysis Division

Mr. Woolcott gave a brief overview of the importance of NOAA navigation services, and then moved on to discuss the fiscal year 2013 budget. He reminded the group that the federal government is currently operating under a continuing resolution, which will expire March 27, 2013. The continuing resolution allows NOS to maintain its operations, although major grants and contract awards will have to wait until a full year appropriation is made. However, NOS is seeking immediate additional funds for hurricane response and repairs.

The President's FY 2013 budget request gives NOS \$458 million, while the Senate mark is \$497 million, and the House mark is \$429 million. The number decided on will depend on the President and the new Congress.

As of January 1, 2013, the Budget Control Act of 2012 dictates drastic cuts in discretionary spending (sometimes referred to as the "fiscal cliff.") It is not yet known whether agencies will have discretion over how those cuts are made. Mr. Woolcott said it is likely that some compromise will be reached before then to avert those cuts.

As for the FY 2014 budget, NOS's request budget is under review by OMB (the Office of Management and Budget). This request aims to restore balance in many areas of concern compared to the President's 2013 budget, but the details are embargoed until the President's request is released in January 2013. NOAA will start drafting its FY 2015 budget early in 2013.

Budgets for the three navigation services have remained somewhat level in the past five years, compared to the rest of NOAA. Appropriations for NOS as a whole, however, have been on a downward trend since the early 2000's.

Mr. Woolcott described several relevant legislative actions. First, the COASTAL (Consumer Option for an Alternate System to Allocate Losses) Act is intended to lower costs to FEMA's National Flood Insurance Program (NFIP) by better distinguishing wind damage from storm surge damage in the case of "clean slab" properties. The COASTAL Act therefore would require NOAA to provide post-storm analyses of named tropical cyclones to drive the FEMA COASTAL Formula, which determines how best to assess claims. NOAA would be required to provide these analyses within 90 days and make data publicly available in an online database. The Act does not provide funding to support this function.

The RESTORE Act is a response to the Deepwater Horizon oil spill. The Act would dedicate 80 percent of all Clean Water Act penalties paid in connection with Deepwater Horizon to a Gulf Restoration Trust Fund. This trust fund will support programs aimed at restoration of coastal ecosystems and local economic development in the Gulf of Mexico. This 80% of penalty monies will be split unevenly among the five Gulf states and other organizations. The remaining 20% of penalty monies will go to the Oil Spill Liability Trust Fund.

There is a possibility of supplemental funding for post-Sandy recovery, which could support NOAA's work. The reauthorization of the Hydrographic Services Improvement Act (HSIA) is another upcoming legislative issue.

In the area of policy, Mr. Woolcott said, NOS needs to be on the cutting edge to support maritime commerce. Container ships are getting bigger, and the value of each additional inch of under keel clearance is growing.

The White House Ports Task Force is intended to develop a federal strategy on prioritizing funding for dredging and port infrastructure throughout the nation. This group has struggled with its direction and the scope of its mandate. The CMTS is another federal coordinating effort at the Cabinet level. The upcoming Coast Guard reauthorization bill is planned to have language supporting CMTS, which would give it more implementation power. The first Arctic marine transportation policy is now under interagency review. This will allow more proactive marine planning in a rapidly changing area.

NOS's new Port Tomorrow initiative is being developed. Port Tomorrow focuses on providing planning and decision support tools and resiliency capabilities to local ports, harbors, and coastal communities.

NOAA is planning a major Congressional outreach effort in the next legislative session. The goal is to educate members of Congress about what NOAA does, so that it's not just a line in the budget for them.

Questions from the HSRP

Dr. Kudrna clarified that if, after six months of operating under a continuing resolution, a reduced budget is passed, all the budget cuts would have to be taken in the last six months.

Dr. Jeffress and Mr. Woolcott discussed the challenge of coming up with urgent funding to replace weather satellites.

Mr. Hanson suggested NOS should have survey-ready and study-ready projects ready to propose when RESTORE Act funding becomes available.

In response to another question from Mr. Hanson, Mr. Woolcott said that coastal zone planners were the original customer of NOS's port resilience tool. Port Tomorrow has expanded to serve port and harbor managers as well. Mr. Hanson noted that NOAA should ensure that products address a specific user need.

HSRP Working Group Updates: Legislative & Policy Initiatives **Susan Shingledecker, HSRP Member**

Ms. Shingledecker touched on the issues her working group has been studying. First, what is the role of the tri-offices in the new Centers of Excellence created by the RESTORE Act? Second, the working group is concerned that the resources NOAA will have to put into meeting its

COASTAL Act obligations may take away from other needed work. Navigation services scramble to respond to a natural disaster or whatever is the highest priority at the time, but do they ever get reimbursed for that work? Third, the working group will consider opportunities for the panel to provide input to the White House Ports Task Force. Now that the Presidential election is over, the working group will also consider recommendations for the HSIA reauthorization.

In general, Ms. Shingledecker said, the opportunity to provide input to legislative initiatives comes up quickly, and seizing the right moment is crucial. She asked other panel members to inform the working group as soon as they hear of such opportunities.

HSRP Working Group Updates: Strategic Effectiveness **David Jay, HSRP Member**

Dr. Jay said that unfortunately, this working group has not been active in the past six months, but will do better in the future. He presented NOAA's storm surge predictions for New York City during Sandy. NOAA's tide data, collected continuously at The Battery starting in 1844, allows a hindcasts of tide data from past hurricanes. New York City has been almost directly hit by hurricanes in 1788, 1821 and 1893, with the 1821 hurricane causing a 13-foot storm surge in less than an hour. Sandy is the biggest event in 400 years, but worse storms are possible and have occurred to the north and south of New York. Future planning should consider the range of historic and pre-historic storms, possible changes associated with climate change, and a variety of mitigation measures.

HSRP Working Group Updates: Emerging Arctic Priorities **Lawson Brigham, HSRP Member**

Dr. Brigham began by mentioning that NOAA Corps officers are fully integrated into the Coast Guard Academy program. The Coast Guard and NOAA have probably never been closer than they are today.

Dr. Brigham reviewed the driving forces in the U.S. maritime Arctic: oil, gas and minerals development, increased international traffic, and exploration of the outer continental shelf. This August, sea ice was observed to be at a new record minimum. For several weeks of the summer, most of the Arctic Ocean is nearly ice-free, and by 2025, models predict that it will be completely ice-free for at least a short time.

With regard to CMTS, Dr. Brigham suggested that panel members should have a chance to review their work before it is published. Some of their work on the Arctic could benefit from HSRP help, since it misses the international aspect of Arctic maritime commerce.

Dr. Brigham reviewed recent studies relevant to Arctic affairs. Some of the working group's recent actions were:

- Explore agreement between UNOLS (University-National Oceanographic Laboratory System) and NOAA on using data gathered by the *Sikuliaq* once it becomes operational in 2014.

- Extend data-sharing partnership with Shell's *Aiviq*.
- Consider using increased data on Arctic traffic from shore-based AIS receivers and satellite AIS coverage.
- Take advantage of stakeholder surveys done by the National Academy of Science and others.

Work on data sharing between Arctic states is in progress. Dr. Brigham reminded the group of the *Costa Concordia* accident off the coast of Italy. Although only 50 passengers were lost, the situation could be much more serious if an Arctic cruise ship had a similar accident. This highlights the importance of Arctic marine infrastructure.

Dr. Brigham asked for volunteers to join the Arctic working group.

Questions from the HSRP

Ms. Miller asked about the possibility of using data from the *Sikuliaq*. There have been discussions on this topic, but nothing definite yet. Admiral Glang said that NOAA and UNOLS are working to implement the R2R (rolling deck to repository) concept on the *Sikuliaq*. Ms. Miller emphasized the importance of making every effort to coordinate data-gathering.

Dr. Jeffress and Ms. Miller asked about the possibility of accessing oceanographic data collected by Navy vessels. Admiral Glang replied that OCS does have a close relationship with the Naval Oceanographic Office, and surveying plans are shared. Data from 2010 Navy surveys is expected to be available soon.

Dr. Brigham stated that, contrary to some pessimistic reports, the United States still plays a leading role in the Arctic, because of its military strength, large research budget, and icebreaker fleet, as well as its lead role on the Arctic Council.

Vice Chair Perkins went to the LightSquared issue, which has been discussed in previous meetings. LightSquared is headed towards bankruptcy, but its owner has now purchased another company with a different piece of the spectrum. One of the working groups should make sure to monitor this situation.

HSRP Panel Discussion

Dr. Kudrna commented that the Ten Most Wanted list was a very effective way to communicate the importance of and impact the level of funding for some of NOAA's activities. He was concerned that, in tough budget times, navigation services could receive an inordinate amount of cuts. Chair Wellslager suggested creating a short, accessible executive summary of the Ten Most Wanted. Ms. Miller commented that the document should be conscious of budget constraints, focusing on how to do more with less, rather than simply asking for more. Vice Chair Perkins suggested a paper with five best practices or five good examples of interagency cooperation, as a funding preservation strategy. However, Dr. Brigham said, for the emerging Arctic, static funding is not adequate.

Vice Chair Perkins suggested inviting Congressional staff to observe the next HSRP meeting in the Washington area. Dr. Brigham suggested having a briefing from CMTS and from the White House Ports Task Force, groups which don't get much stakeholder input. Mr. Edwing noted that the new bipartisan House PORTS Caucus could be involved.

Vice Chair Perkins mentioned the possibility of forming an HSRP Executive Committee or Planning working group of three or four members. Not all members may be able to keep up with panel work between meetings, but a more dedicated working group could preserve the continuity of its work and keep up momentum between the twice-yearly meetings. This group could create the outline of an agenda for each meeting, and then pass it on to local navigation managers to do the footwork. Dr. Kudrna offered to head the Planning group, along with Chair Wellslager.

Following up on Dr. Brigham's suggestion, the panel decided to embed the issue of commercial response to natural disasters in the Strategic Effectiveness working group. Capt. Dempsey, Admiral Fields and Mr. Carothers volunteered to join that group, along with Dr. Jay, Dr. Jeffress and Mr. Hanson. The Legislative and Policy working group consists of Ms. Shingledecker, Chair Wellslager, Vice Chair Perkins, Ms. Miller, and Admiral Barbor. Dr. Brigham, Mr. Carmel, Mr. Armstrong and Ms. Lockhart form the Arctic working group, with technical help from Lt. Matt Forney, NOAA's navigation manager for the Alaska region.

Public Comment Period

Jon Dasler, a former HSRP member, noted that surveying of critical navigation areas is at a 50-year backlog. How can hydrographic surveying needs be met with limited budgets? Mr. Dasler warned that small business set-aside for hydrographic contracts could undermine NOAA's larger effort to make its work sustainable. Mr. Dasler also encouraged the panel to reach out to other Advisory Committees, such as CMTS and the NOAA Science Advisory Board.

With regard to the question of budget efficiency, Mr. Hanson challenged NOAA to look at whether it is doing everything it can with the money it has.

Application & Use of NOAA's Navigation Data, Products & Services in the Gulf **Tim Osborn, NOAA Navigation Manager, Gulf of Mexico Region**

Mr. Osborn highlighted the value of PORTS® in the region. Its real-time data allows pilots to better assess whether they can transit a ship into a port, which has a big economic impact. Many pilots in the region use electronic navigation software overlaid with AIS (Automatic Identification System) on their laptops.

NOAA's information on rates of subsidence and of sea level rise is also important in the moving landscape of the Gulf. By the end of the century, three or four feet of relative sea level rise is predicted across coastal Louisiana, meaning the potential inundation of 50 percent of the state's economic base. There is a fundamental need to educate the public about what is realistically going to happen to the Gulf Coast in the next 50 to 80 years. Residents of coastal communities largely don't yet understand how their low elevation increases the risk of flooding.

In coastal Louisiana, static benchmarks can no longer be relied upon, so NGS's support for the CORS network will be crucial to GPS technology in Louisiana. There are some gaps in the hydrographic survey coverage of the Gulf of Mexico region. The age of hydrographic data is often a problem; for instance, soundings of Lake Pontchartrain that date from the 1890s are still on the chart today.

Gulf Coast ports reach more of the United States than any other port area, and many are growing to meet increased demand. Ports in the future will have to interact with local flood protection authorities with authority over navigation, as well as the Coast Guard and U.S. Army Corps of Engineers. Mr. Osborn urged the panel to recommend that NOAA make collecting new data in the Gulf region a priority.

Adjournment

The meeting was adjourned at 5:45 p.m.

Wednesday, November 28, 2012

The meeting was called to order at 8:36 a.m. Chair Wellslager invited panel members and members of the public to sign up for the stakeholder breakout sessions to be held on Thursday.

Navigation Services Stakeholder Panel

Current Practices & Future Needs for e-Navigation

Capt. Douglas J. Grubbs, Crescent River Port Pilots Association

Capt. Grubbs showed the panel an example of how Vessel Traffic Service (VTS) works using NOAA electronic charts in real time when navigating the Mississippi River. NOAA's S57 database is very accurate; quick real-time updates from AIS would help make timely navigation decisions. VTS in New Orleans is working well and has been widely accepted. The Coast Guard has done a good job, Capt. Grubbs said, of managing traffic instead of stopping it altogether. Capt. Gautier added that the New Orleans VTS is the only one in the country which has pilot advisors helping the Coast Guard monitor traffic.

More outreach is needed from NOAA, the Coast Guard and others who are developing e-navigation do outreach so that local users will know how to work with it. The need to buy new equipment and retrain staff may be a problem for some users. It is crucial to make sure that users are trained for the charting systems they use; equipment set on automatic which the user didn't understand was part of the cause of the *Cosco Busan* spill.

Capt. Grubbs suggested placing virtual buoys in the approach to the Port of New Orleans to mitigate risk from fog. PORTS® data should be available through AIS so that pilots can quickly get bridge vertical clearances, instead of having to look on the internet, which may not always be accessible. Even after Hurricane Katrina, AIS was still transmitting ship-to-ship.

Integration of Navigation & Waterways Vessel Traffic Data: Highlighting Storm & Flood Protection Concerns

Capt. Peter W. Gautier, Captain of the Port, U.S. Coast Guard Sector New Orleans

Capt. Gautier's role as Captain of the Port, he said, is basically that of a coordinator between river pilots and federal, state and local agencies. To illustrate that role, Capt. Gautier gave an overview of the Coast Guard's response to Hurricane Isaac. NOAA's data products inform key decision makers on how best to prepare for and respond to bad weather in the Port.

In New Orleans, the Maritime Hurricane Contingency Port Plan governs how the Port is prepared for impending storm activity. Weather Service predictions are used to set one of several port conditions. Then, vessels are moved and secured, and the Coast Guard collects information about where vessels are located before the storm. Often, the Port of New Orleans will close because of heavy weather in the Gulf, typically well in advance of when that weather hits the port complex.

In order to reduce risk from Isaac, as many deep draft vessels as possible were moved upriver, away from lower Mississippi River areas which are more prone to high winds. Other ships which are in terminals in safer locations were prevented from coming downriver. All barge fleets were moved upriver before Isaac to reduce the risk that barges would break away. Canals in New Orleans in what it called the regulated navigation area were cleared of all vessel traffic to eliminate the risk that a vessel could strike and collapse a canal wall. Vessels can get a waiver from this requirement if they can demonstrate they can implement severe weather moorings.

During Isaac, communities were flooded that had never been flooded before. It would be helpful, Capt. Gautier said, to get forecasts integrated with levee and wall heights so that disaster response agencies can better understand which communities will be flooded and pre-position their rescue resources appropriately.

Safety of life is the Coast Guard's first priority, but restoring the waterway traffic as quickly as possible at an acceptable safety level comes second. Every day the Mississippi River is closed, \$280 million in revenue is lost. After Isaac, the Coast Guard was joined by the Army Corps, NOAA and the New Orleans and Crescent River Pilots to do quick safety surveys. The river was reopened in a slow, controlled fashion over 24 hours, compared to five days after Katrina.

Capt. Gautier expressed his interest in exploring possible use of NOAA's remote sensing aerial capability to compare pictures of vessels at anchor before and after storms. This could help determine if and where vessels have moved. Aerial survey data and NOAA's Emergency Response Management Application (ERMA) also help with hazardous material spills.

Capt. Gautier concluded by thanking NOAA for its superb customer service attitude. He also stated that a full-time scientific support coordinator is needed.

Impacts to the Port of New Orleans from Panama Canal Expansion and Industry Growth
Chris D. Bonura, Director of Industrial Development, Port of New Orleans

Mr. Bonura addressed the topic of how NOAA's products can respond to changes in the industry. One such change is the Panama Canal expansion project. Ports have to balance between the need to prepare for this expansion and the need to avoid giving in to irrational exuberance and creating excess capacity

Breakbulk and containerized cargo account for most of the Port of New Orleans' revenue, while the cruise industry is of growing importance. Both container and cruise ships are getting bigger, and their increased size means that being able to safely navigate is even more important. Mr. Bonura described the Port's current expansions plans, including the new intermodal terminal.

Mr. Bonura stated that all of the Harbor Maintenance Trust Fund revenue should be spent on harbor maintenance, its intended purpose. Congressman Boustany has sponsored legislation that would lock down that money. Another proposed piece of legislation is the DREDGE Act, which would appropriate funds to increase the Mississippi River channel to 55 feet.

Challenges for Safe Navigation & Operations for the Lower Mississippi River
Capt. Michael R. Lorino, Jr., President, Associated Branch Pilots (Bar Pilots)

Capt. Lorino began by praising NOAA for its active approach to storm preparedness. Mr. Osborn and the Weather Service work with branch pilots to make projections which allow industry to plan its ship's movement days in advance before severe weather, and to get ships moving again as soon as possible after the weather clears. However, NOAA and the U. S. Army Corps of Engineers need more money, and Capt. Lorino said he would be glad to support a push for increased funding.

The Mississippi river system is a unique river system. Every year, shoaling will occur, and when the Army Corps is underfunded, dredging is reduced and the channel loses draft and width. The result is a reduction in safe passing distances for ships, increased hazards to navigation, and reduced cargo capacity as a result of having to reduce draft.

Capt. Lorino illustrated the danger of underfunding maintenance dredging with an example. In the existing 650-foot channel at Southwest Pass, ships pass at about 300 feet. If the channel becomes narrowed to 500 feet because of lack of maintenance, only 100 feet of passing distance remain, and there is no safe passing distance at all in a 400-foot channel. Wind can narrow the passing distance even further.

Hurricane Response Efforts: Culmination of NOAA Data Products for Accurate Modeling & Prediction Models
Kenneth Graham, NOAA/NWS Meteorologist in Charge, Weather Forecast Office, New Orleans-Baton Rouge

For the New Orleans Office, Mr. Graham said, the "Weather-Ready Nation" initiative represents the opportunity for a paradigm shift. The vision is to move from describing the meteorological phenomenon to describing its impact on people and communities. Mr. Graham's office is working on an "impact catalog", to document the impacts from specific weather events in different localities. The same sea level, for example, might have a different impact depending on

what people are trying to do. To understand these impacts, Weather Service staff must spend time out of the office working with the Coast Guard, City of New Orleans, local community members, or other decision-makers.

More refined weather forecasts can make a big difference. For instance, instead of predicting a chance of rain, the forecast might specify a chance of rain between 3:00pm and 7:00pm along I-12 between Slidell and Baton Rouge. This level of subtlety could help the State Police position their cars and prepare for wrecks.

The Weather Service conducts pre-storm training in the New Orleans area to educate people that there may not be much notice time when a hurricane is coming. Briefing federal, state and local officials is also important. Communicating meteorology to the public is a challenge, since very small changes in the weather can have exponential impacts on the ground. Many people compare the category of a coming hurricane with previous storms to guess at its impact, but in fact a large, slow-moving storm like Isaac can lead to a big storm surge regardless of its category.

With modern mobile technology, weather updates need to be mobile as well. The Weather Service now has a mobile-enabled website, and plans to bring college students in to guide its social media strategy.

Coastal Observation Systems: Water Levels & PORTS® Information

Capt. David B. Trent, President, Port of Lake Charles Pilots

Keeping a line of communications open is essential, Capt. Trent said, in the good working relationship between NOAA and Lake Charles pilots.

PORTS® is particularly important in the Port of Lake Charles because of its tight under keel clearance. Boarding windows have been expanded because of the better water level information available through PORTS®.

Capt. Trent described how he convinced users to fund harbor maintenance by telling them about the delays and lost money that would ensue if maintenance is not done. At this point, Capt. Trent said, NOAA's work helps to make up for the dredging that the Army Corps is not able to do.

Questions from the HSRP

Mr. Kennedy noted that the speakers seemed to be in agreement that federal services are valuable but underfunded. Mr. Hanson added that this potential coalition of local users can act as ambassadors for navigation services to Congress. Capt. Dempsey suggested bringing stakeholders to Congress to make that case. Capt. Lorino said he would be glad to come.

Capt. Grubbs commented that the moment when Congressmembers are interested in navigation services may be fleeting. Success comes to those who know how to seize the moment. Not just industry, but the passenger and cruise ship industry get economic benefit from these services.

Ms. Spring added that there is an e-navigation initiative done through CMTS, in which NOAA and the Coast Guard are working together on integration of their informational infrastructure. This meeting shows that there is a user need, and the project needs to go forward.

Dr. Kudrna asked Capt. Gautier whether the current safeguards are expected to prevent barges from breaching canal walls in New Orleans, or will the levees need to be armored? Capt. Gautier said that the current system allows essentially no margin for error; everything needs to be properly executed. Large objects on land, not under Coast Guard jurisdiction, also might float up and strike canal walls. Increasing the robustness of levees so they can withstand some strikes might therefore be called for.

Dr. Jeffress asked why barge captains don't have the VTS system Capt. Grubbs showed the panel. The answer was that they can't afford it, but NOAA's basic electronic charting database is available to everyone. Towing vessels have AIS, and the Coast Guard plans to require more vessels to have it.

Dr. Jay asked what additions to PORTS® would be useful in the Gulf area.

- Capt. Grubbs said he would like to see PORTS® data transmitted through AIS, so that users don't have to rely on a phone line. It would also be useful to have access to weather radar.
- Capt. Lorino suggested a fog sensor at the head and jetty end of Southwest Pass.

Mr. Edwing replied that CO-OPS and the Coast Guard have been working together for several years to integrate PORTS® into AIS. That integration has been developed and tested, but funding for its implementation is lacking. Funding it through PORTS® has been discussed.

In response to a question from Mr. Carothers, Capt. Grubbs explained that Raven software is made by a private company. It's a valuable integration of NOAA products with privately made value-adding software.

Ms. Lockhart suggested that, if paper and raster charts are no longer used, NOAA could stop making them as a way to save money. However, Admiral Glang said that the transition to electronic charts is moving slowly. Around eight million raster charts are still downloaded each year, and paper charts are still used too. Ms. Shingledecker stated that recreational users value the paper charts. Capt. Dempsey added that some ships are still required to have paper charts.

Sean Duffy, the Executive Director of the Big River Coalition, said that educating policymakers about the importance of the Mississippi River is the Coalition's greatest challenge. No less than 31 states depend on Mississippi River commerce, but too often, maintenance dredging is not done until a real problem arises. A disaster is obvious to the public, but when everything goes well and disaster is averted, no one notices.

Geospatial & Water Level Stakeholder Panel

Use of Geospatial Reference Frame, CORS & Geoids for Positioning and Collaboration

Clifford J. Mugnier and Randy L. Osborne, Center for Geoinformatics, LSU

Louisiana, Mr. Mugnier said, is a deltaic region which has always been subject to significant subsidence. New Orleans is subsiding at a rate of ten millimeters a year, and some coastal areas subsidence more than 27 millimeters a year. This means that benchmarks on land do subside, and since these benchmarks are used to determine dredging depths, that subsidence affects the accuracy of dredging.

Mr. Mugnier gave an overview of the history of geodetic surveying in the Louisiana region. At the time initial geodetic surveys were done, subsidence was not yet recognized, which led to inaccurate elevation data. Underfunding has consistently prevented the National Geodetic Survey from meeting all South Louisiana's needs for elevation references and flood control.

Mr. Mugnier explained the use of absolute gravity measurement, which can be used to determine rates of subsidence by checking vertical movement with respect to the earth's center of mass. An A-10 portable absolute gravity meter, Global Positioning System (GPS) receiver and zenith camera are the basic equipment needed to make observations in Louisiana, and it is hoped these observations will lead to a more reliable local geoid.

Mr. Randy Osborne introduced the BRS network, a CORS network used to monitor subsidence and crustal motion in Louisiana. Users can get positioning information from BRS in real time which saves them time and effort. However, a reliable geoid is necessary for real-time positioning to work. By Louisiana law, NAVD88 must be used as a vertical control. However, discrepancies of as much as 70 centimeters have been found between the current geoid and the previous one, which concerns some users and makes them reluctant to use the current geoid.

Exclusive Usage of Global Positioning System (GPS) Based CORS for Levee Flood Protection

Robert A. Turner, Jr., Regional Director, Southeast Louisiana Flood Protection Authority-East

Mr. Turner discussed how elevation issues tie into flood protection in Louisiana. After Hurricane Katrina, it became apparent that spreading responsibility for the levee system over many small local jurisdictions was inadequate; an agency capable of looking at the system as a whole was needed. The Southeast Louisiana Flood Protection Authority was therefore created in 2007. Most of the funding for the levee system is provided by the federal government, but the Flood Protection Authority is responsible for operating and maintaining it. Real-time and forecast water surface elevations determine certain actions such as moving ships, closing flood gates and navigation gates and increased monitoring.

The increased complexity of the flood protection system means that data accuracy and accessibility is more important than ever. Any work done in the system must be done on the NAVD88 datum, to ensure that all gauges in the system have the same zero point. Data should

also be related to the elevation of the flood protection system itself. During Isaac, some gauges ceased to function and others were found to be inaccurate. Hardening gauges in strategic locations will be a future project.

Rectifying Louisiana CORS Networks with Vertical Datum Requirements
Stephen V. Estopinal, Southeast Louisiana Flood Protection Authority-East

Mr. Estopinal addressed the topic of non-conformity of vertical datums. GPS technology has not eliminated this problem, since revisions to the geoid confuse attempts to track vertical movement.

Flood protection and coastal restoration projects in Louisiana depend on correctly determining vertical values for finished project surfaces, which are directly determined by gravity. Therefore, if GPS-derived heights are to have any value for these projects, the geoid must be purely gravitational in origin.

One example of the perils of unreliable vertical values is the Great Wall of St. Bernard, a 23-mile long levee, was all based on one controlled benchmark. When a four-and-a-half inch differential was observed between this wall and the surge barrier, it was noticed that the benchmark's values had a standard deviation of plus or minus one decimeter, or about four inches.

A geoid model that approximates an equipotential gravitational surface and a vertical datum defined in terms of this surface are the gold standard. Since so much of Louisiana is flat and near mean low water elevation of the Gulf, measuring elevations in terms of this equipotential surface, not just a hybrid of assumed surface marks and a sprinkling of absolute gravity readings, is vital. A project to develop a series of deep rod marks to support gravity observations, differential level lines and GPS data collection could be used to develop a gravity-based geoid for Louisiana.

Utilization of Resiliency Programs to Determine Sea Level Trends & Subsidence Impacting Southern Louisiana and Port Fourchon
Henri Boulet, Executive Director, LA-1 Coalition

Mr. Boulet described the risky situation of Louisiana Highway 1 (LA-1). This highway follows Bayou Lafourche down to Port Fourchon on the Gulf Coast, a port which supports 16 to 18 percent of the nation's energy needs and serves LOOP (the Louisiana Offshore Oil Port.) LA-1 is also the only road to Grand Isle and its only evacuation route. The problem is that the southernmost 19 miles of LA-1 are only about two feet above sea level, meaning that during a hurricane, the highway is one to four feet under water. Moreover, a slow storm surge could erode the road bed and wash out the entire highway, which could have a very serious economic impact on the state and national energy markets.

LA-1 is also subject to nine millimeters of subsidence a year, meaning that road closures due to storms are lasting longer. A study from the DHS National Infrastructure Simulation Analysis Center estimates that a 90-day outage of LA-1 could lead to up to \$7.8 billion in lost GDP. And a

NOAA inundation study predicts that by 2027, the highway will be inundated 6% of the time, even if relative sea level rise remains constant. By 2050, 55% of the highway will be inundated.

For these reasons, the LA-1 Coalition has called for the construction of an elevated highway built to withstand 100-year storm surges over those 19 miles. Over half is already built, but \$320 million is needed to build the last eight miles. Local tolls, as well as state and federal funding, have been used.

Mr. Boulet concluded by noting that Bayou Lafourche is between two of the nation's most quickly disappearing basins, the Barataria and Atchafalaya basins. These basins have suffered from saltwater intrusion and freshwater diversion could help to restore them. NMFS is concerned that freshwater diversion could damage saltwater fisheries, but the long-term sustainability of local communities depends on those wetlands.

Best Practices & Lessons Learned from Hurricane Evacuation Efforts

James E. Mitchell, Ph.D., Louisiana Department of Transportation & Development

Dr. Mitchell's presentation centered on how elevation data is used to assess risk and make decisions in emergency operations.

When it comes to elevation data, the basic questions are: what is zero, and where did it come from? Without knowing where zero is, practical questions such as when a road will flood and how far under water it will be can't be answered. For instance, the road elevation of a series of points on LA-1, along with tide and stream gauges, wave height forecasts, and information on storm speed, determine whether the road can stay open for evacuation or needs to be closed.

However, all of these data points have to be in the same reference frame to be usable. Some tide gauges are still in the 1929 vertical datum (NGVD29), which can confuse and delay risk assessments. In an emergency situation, the amount of processing required by forecast data determines how fast flood risk can be assessed, interpreted, and communicated to decisionmakers.

Dr. Mitchell added that flood risk can't be determined from flood depth or above ground level data, since those data have no datum.

Maps of the Gulf coastline are not updated frequently enough to keep up with the dynamic landscape of Louisiana's deltaic system. GIS data is often derived from old maps and not kept current, while aerial imagery may be current but requires extensive interpretation before it can be used as geospatial data.

Emergency drills are important, Dr. Mitchell said, to develop confidence in data processing workflows. Drills should include participants from different agencies to ensure they learn how to work together, and should include "live" data elements that test accessibility of data. During an emergency, there is a wide gap between data sources and decisionmakers. People who understand how to use the data can be overwhelmed by its volume--and those responsible for the ultimate decisions want answers, not data.

Understanding the amount of precision and accuracy that can be expected from data is crucial. Dr. Mitchell outlined his 5A data standard: data should be accurate, authoritative, actionable, accessible, and affordable. Inadequate data, even if it's the best available, can lead to bad decisions. Sometimes decisionmakers must be told their goals can't be met with the data at hand.

Questions from the HSRP

Ms. Blackwell responded to concerns about the vertical datums. NGS's GRAV-D initiative is intended to address problems with the current vertical datum, NAVD88. GRAV-D will collect airborne gravity data to use as the basis for a new vertical datum and to better define zero uniformly across the country. Terrestrial ground-truthing of airborne gravity data will also be needed.

With the current funding, GRAV-D is scheduled to be completed in 2022. However, NGS plans to release interim products that can help users in the near term. Data for GRAV-D has already been collected in some areas, including coastal Louisiana. Those data sets are available on the NGS website, and NGS plans to create beta geoid models that users can apply to their areas. NGS does believe that vertical datum accuracy at the two centimeter level in coastal areas is achievable.

Chair Wellslager asked whether NGS is exploring partnerships with other groups to accelerate work on GRAV-D. Ms. Blackwell said that her agency has location-specific agreements with the U.S. Geological Survey, the Bureau of Land Management, and other federal agencies, but there is not currently a broad nationwide partnership. NGS is also open to state-level partnerships.

HSRP Panel Discussion & Deliberation

Dr. Kudrna suggested that NGS could prioritize development of GRAV-D, perhaps by partnering with FEMA. Ms. Blackwell explained that the pace of development is limited by the funding and assets available. There will be regional beta geoid models released as they become available, starting in 2013 for the Gulf, although the complete new national vertical datum will not be released until 2022.

Mr. Carothers asked how CO-OPS adjusts its tide gauges for subsidence. Mr. Edwing said that in Louisiana, tidal datums are updated every five years, instead of every 25 years.

Chair Wellslager asked how, in the absence of height modernization surveys, users can check the beta geoid models of coastal Louisiana, since the rate of subsidence means that passive control networks quickly lose accuracy. Ms. Blackwell replied that height modernization surveys are being done. The subsidence region is approximately the lowest third of the state, and within that region, subsidence rates vary. Benchmarks in the subsidence region do need to be re-surveyed periodically using GPS.

Dr. Brigham brought up the possibility of adding a fog/visibility sensor at Southwest Pass, and Mr. Edwing said that a sensor could be provided through PORTS®. Dr. Jay asked why air gap

sensors don't display archived data the way tide gauges do. Mr. Edwing said that that data is available, but it is not online since it was not thought users would need it.

Discussions for the HSRP Spring 2013 Meeting

Chair Wellslager announced that some of the stakeholders who presented today will join the panel at its next spring meeting in Washington, D.C., and Mr. Hanson added that stakeholders from other parts of the country could also come to support the panel.

Dr. Brigham proposed that one day of the spring meeting should take place on Capitol Hill, where panel members could meet with Congressional staffers and representatives from CMTS and the House PORTS Caucus. Mr. Dasler commented that there is precedent for panel members meeting on the Hill, although it might be best for a select group to talk to staffers, rather than the whole HSRP.

Chair Wellslager proposed coming up with a short list of panel priorities, perhaps five topics. The concept should be, instead of asking for more money, ways of improving current NOAA and NOS functions.

Dr. Kudrna suggested a theme for this priorities document: the focus could be on the jobs and economic benefit which the country will gain from new maritime commerce as a result of the Panama Canal expansion and the opening of the Northwest Passage. Charting, mapping, and dredging are necessary to accommodate these activities, and that investment can be expected to have a positive return. Mr. Carothers added that private companies using NOAA products to create value-added applications, such as the Raven software, also create jobs.

Admiral Glang suggested creating an ad hoc planning group to prepare for the spring meeting and come up with a top priorities document. Dr. Kudrna, Admiral Fields, Capt. Dempsey and Mr. Carothers will form this group, while the Chair or Vice Chair may also participate.

A second ad hoc drafting group will draft the recommendation letter to the Administrator of NOAA. The drafting group will consist of Chair Wellslager, Vice Chair Perkins, Dr. Jeffress, and Admiral Barbor.

Mr. Armstrong and Admiral Barbor made the point that Harbor Maintenance Trust Fund issues and the need for more dredging are properly the concern of the U.S. Army Corps rather than NOAA. Admiral Fields pointed out that stakeholders also mentioned the value of NOAA cooperation with the Army Corps.

Chair Wellslager and Mr. Edwing discussed how a PORTS® system is created. First, local needs are identified, then CO-OPS provides cost estimates and local stakeholders provide whatever level of funding they can. The cost ranges from about \$100,000 to \$1 million. Chair Wellslager suggested that the panel could recommend the use of PORTS® and further recommend that a pilot or ship fee be used to fund PORTS® maintenance. Vice Chair Perkins mentioned the possibility of a broader GPS user fee, similar to a fishing license fee, to address the larger challenge of lack of funding for marine infrastructure.

Dr. Kudrna suggested a future meeting in the Great Lakes area, perhaps taking a cruise on the Great Lakes. This would allow the panel to learn about issues with recreational boating and low water levels. Chair Wellslager asked him to investigate the possibility, although Ms. Watson said that government funds would probably not be available to pay for the cruise.

Public Comment Period

Mr. Dasler stated that there needs to be a more stable way to fund maintenance of PORTS®. If users are no longer able to maintain it, PORTS® can do more harm than good, since people think they can rely on the system when in fact they cannot. The *Cosco Busan* incident in San Francisco drew attention to this problem.

Adjournment

The meeting was adjourned at 5:27 p.m.

Thursday, November 29, 2012

The meeting was called to order at 8:30 a.m.

USACE Presentation: Mississippi River Levees, Issues with Flooding, Lessons Learned from Katrina & Isaac, and Electronic Charting for the Mississippi River **Colonel Edward R. Fleming. USACE New Orleans District Commander**

Col. Fleming began by discussing the impact of recent flood and drought conditions in the Mississippi River Valley. In response to the huge 1927 flood, Congress directed the Army Corps to create the Mississippi River and Tributaries Program, which enabled the creation of levees and other anti-flooding infrastructure along the Mississippi River from Cairo, Illinois to the Gulf of Mexico.

Col. Fleming explained that, when water flow goes above the level the levees are designated to withstand, that is, 1.25 million cubic feet per second, the Corps can open the Bonnet Carré Spillway and the Morganza Floodway to take off some of the water. There are a few privately owned structures in the floodway, but the Corps has a flowage easement, meaning that it retains the right to send water over the property.

In 2012, drought has been a bigger problem. One result of low river flow levels is that saltwater from the Gulf moves upstream in the shape of a wedge underneath less dense fresh river water. The enlargement of the Mississippi deep-draft channel from 40 to 45 feet has increased this saltwater intrusion. The practical consequence is that the salinity of river water may increase above allowable levels.

A sand sill, which is essentially a levee built along the natural river bottom, can artificially arrest the saltwater wedge and protect upstream freshwater intake. One sill was recently constructed,

and it is estimated that a new one will be needed about every five years, depending on measured water salinity.

Every hurricane is unique, Col. Fleming said. A place may flood during Isaac and not during Katrina. The track, speed and time of a hurricane are its three main characteristics, while its Saffir-Simpson Category, based on wind speed, is less useful when determining how much damage it will do. In the case of Hurricane Isaac, the storm's slow movement and the fact that most of the New Orleans metropolitan area was to the east of the storm path led to increased storm surge.

The Hurricane Storm Damage Risk Reduction System performed as designed during Isaac, although Col. Fleming emphasized that, although there are many ways to reduce the risk someone faces during a hurricane, there is no way to eliminate risk. The incremental funding of the Risk Reduction System made it difficult to complete, but, as of summer 2011, new funding, along with alternate NEPA arrangements, allowed its completion.

Questions from the HSRP

Ms. Miller asked about removal of the sill. Col. Fleming said that the sill will be deconstructed in about a year through natural processes, and the Corps will be ready to rebuild it when necessary.

In response to Admiral Barbor's question, Col. Fleming said that electronic nautical charting works, but more effort needs to be put into it so that it's in the right format.

Chair Wellslager recessed the meeting so that stakeholder breakout sessions could be held.

Luncheon Keynote Speech:

Louisiana State Efforts & Coastal Community Protection of Natural Resources

Garrett Graves, Coastal Protection & Restoration Authority of Louisiana

Louisiana, Mr. Graves said, has about five of the top fifteen ports in the nation. Its importance can be seen in the areas of maritime commerce, commercial seafood production, oil and natural gas production and recreational fishing and tourism, and it provides the largest winter habitat for migratory waterfowl in the U.S.

Unfortunately, Louisiana experiences high rates of land loss: from 11 to about 200 square miles per year since the 1930s, for a total of 1,900 square miles of land loss in the last 80 years. Moreover, the rate of land loss is increasing. In about 100 years, if no action is taken, New Orleans could be an island or peninsula. This land loss could massively increase damage from flooding. In response to this potential crisis, the Coastal Protection & Restoration Authority has created a Coastal Master Plan intended to balance the various concerns involved in coastal protection. The Master Plan was passed unanimously by the Louisiana legislature.

The Mississippi River Tributaries program, although successful from the perspective of preventing riverine flooding and facilitating navigation, has caused wetlands loss and other serious ecological consequences. One of the goals of the Master Plan is to avoid such potential

adverse consequences. Reconnecting the river by borrowing sediment from one site to be used in marsh creation in another site is part of the plan. Fish habitat will be pushed further out under this process.

Mr. Graves went on to show that the annual volume of oil spills has been going down over time. He outlined the settlements reached under the Clean Water Act and Natural Resource Damage Assessment (NRDA) processes. Preliminary plans for coastal restoration associated with the impact of the Deepwater Horizon spill are being developed.

Questions from the HSRP

Mr. Hanson asked how science and research can help with the coastal restoration effort. Mr. Graves replied that the Water Institute of the Gulf, an independent, nonprofit entity, has recently been created to provide research backing.

Chair Wellslager asked how the Coastal Master Plan will affect the Bonnet Carré Spillway and the levee systems around New Orleans. Mr. Graves said that the levees will not be modified, except that their current 100-year level of protection would be increased to 500 years. The plan is to cut a hole in the Bonnet Carré Spillway to allow water and sediment to be diverted out into swamp areas.

Stakeholder Session Debriefing & Discussion

Chair Wellslager asked the panel for its opinion on whether the breakout sessions had been productive and stimulating. Admiral Barbor stated that the smaller groups in breakout sessions allow less outspoken people to make their points. Dr. Jeffress added that the breakouts allow more focus on a specific topic, and Capt. Dempsey concluded that the more formats are provided to receive people's input, the more useful feedback will be received.

Hydrographic Surveying and Charting

Bill Hanson, HSRP Member

Mr. Hanson outlined the conclusions of the hydrographic surveying group.

- The need for shallow water data is critical in this region.
- NOAA should try to tap into shallow water data gathered by commercial parties.
- Data sharing might help with NOAA and state budgetary constraints.
- There is no central data depository.
- We need planning for pre-surveying: for instance, federal agencies could piggyback on state surveying.
- Let state or commercial entities know what NOAA needs before surveying is done.
- Crowdsourcing & using vessels of opportunity.
- Reexamining data standards.
- Arrange regional meeting re: data centralization.
- Baseline work in Gulf needed.

- Be “study-ready” to do research when the opportunity comes along: for instance, ready to collaborate with Louisiana when it has funding.
- Make NOAA products more easily accessible & understood.
- Listen to users and build NOAA’s brand.

Ms. Miller pointed out that some state representatives said they had difficulty finding out what NOAA data is there and how to get it. Consider having a NOAA data coordinator, analogous to a navigation manager.

Chair Wellslager asked about NOAA’s hydrographic surveying work in the area, and Admiral Glang stated that NOAA considers how heavily a navigation area is used and how that use is changing in determining when to resurvey. In the Gulf area, contractors are often used for surveying. Dr. Kudrna pointed out that, while deep-draft channels are the priority, shallow water areas, where subsidence is taking place and oil pipelines are being exposed, could become a problem. Mr. Hanson added that shallow water projects are important in New York, California and Florida, not just along the Gulf.

Geospatial Positioning

Gary Jeffress, HSRP Member

Dr. Jeffress stated that NGS’s GRAV-D project addresses the need to use GPS to transfer elevations across the country from the National Geospatial Reference System. Unfortunately, under the current funding levels, no substantial results will be seen from GRAV-D before 2022. This problem is highlighted in Louisiana, where historical benchmarks were put in using traditional terrestrial leveling, whose accuracy is now compromised by high rates of subsidence. The ’09 and ’12 geoids differ by up to one or two feet in some places. NGS is encouraged to continue to make regional beta versions of updated geoid models available to local users.

Stakeholder organizations, such as ASPRS, MAPS, and the National Society of Professional Surveyors may not be fully versed in the value of GRAV-D. If these users were educated about GRAV-D, they might be able to use their influence on Congress to push for more funding.

Dr. Jeffress suggested several formal recommendations:

- HSRP recommends accelerated completion of the GRAV-D project. GRAV-D affects accurate elevation measurements, which in turn affect inundation models, storm impact and emergency response. This issue should be reviewed in collaboration with SeaGrant, the IOOS FACA, and potentially the NGAC (National Geospatial Advisory Committee).
- The HSRP letter should be copied to the Chairs of NGAC and the IOOS FACA.
- A public campaign should be created to increase Congress’s awareness of the importance of height accuracy and GRAV-D as a foundation for height accuracy. In addition, reach out to flood plain managers and reinsurance companies so that they understand the risks of inaccuracies in height measurements.
- Maintain outreach to the survey community to increase awareness of and confidence in the geoid models and NGS products.

Mr. Carothers commented that some surveyors may believe that, if one geoid model gives a different result than another, the geoid must be in error. Some treat GPS as a black box, Dr. Jeffress said, without true understanding of it. Ms. Lockhart commented that NGS has a good grasp of its priorities, even though lack of funding prevents it from doing everything. Chair Wellslager agreed that educating the public is a definite need.

Tides, Currents & Water Levels

Ken Barbor, HSRP Member

Admiral Barbor presented his group's conclusions:

- The integration of PORTS® into AIS could be of great importance to pilots. HSRP should use its influence with CMTS to push the Coast Guard to make this a priority, especially where VTS is available.
- Work with state leadership to address data needs/gaps resulting from the rapidly changing environment that could be addressed through RESTORE Act funds.
- Make CO-OPS tide and water levels training available to interested parties: this could educate people as to how CO-OPS wishes tide data to be obtained.
- Evaluate impediments NMFS is placing on restoration, specifically the designation of essential fish habitat.

Chair Wellslager asked whether the recommendation regarding NMFS is within the remit of the panel. Admiral Glang said that the panel can pass back what it has heard from stakeholders, but it should try to make the points in its letter to the Administrator high-level and easily digestible.

Mr. Hanson asked whether the HSRP letter could be sent to state officials to encourage their partnership in these efforts, and Chair Wellslager said that it could.

HSRP Discussion of Input from Stakeholder Panels and Breakout Sessions and Development of Recommendations

Chair Wellslager invited the group to identify which points need to be made in the HSRP letter. Admiral Barbor replied that IOCM (integrated ocean & coastal mapping) ties together all three sets of recommendations. Ms. Miller agreed, and added that data centralization and accessibility is crucial. Maybe NOAA should consider regional data managers. There is a National Coastal Data Development Center, Admiral Barbor pointed out, but it is national rather than regional.

Admiral Glang suggested the group be more specific about how IOCM applies here. NOAA's IOCM work is currently a communications effort geared towards developing interagency relationships. Admiral Barbor stated that federal agencies should be ready to engage with the five Gulf coastal states which are expecting to receive two to five million dollars a year from the RESTORE Act to be used for coastal mapping and observation. NOAA help could ensure that the data which is collected is useable and of good quality.

Carol Parsons Richards of the Coastal Protection & Restoration Authority commented that the Gulf of Mexico Alliance has been very helpful in allowing the Gulf states to communicate with each other and leverage their efforts. NOAA is also involved in that group.

Admiral Glang stated that the IOCM program covers a wide range of issues. He suggested a recommendation that NOAA's IOCM program should work with the Gulf of Mexico Alliance to understand regional shallow water mapping requirements.

Dr. Jay commented that there is a disconnect between different data sets. For instance, some users don't understand how Doppler profiler data relates to currents in the channel. Users also ask for more air gap sensors and fog sensors. Mr. Edwing said that air gap sensors are always made part of PORTS®. Users of PORTS® can choose the sensors they need in different local conditions, but the funding to establish and maintain those sensors must be present. Dr. Jay said that PORTS® and IOOS need to coordinate better to meet the needs of all their users.

Admiral Glang suggested that, at the next meeting, the panel could be briefed on OCS's modeling efforts, many of which are coordinated through the Coastal Storm Surge Modeling Effort. Vice Chair Perkins suggested that a webinar on the storm surge model before the meeting could allow members to get more out of the live briefing. Ms. Watson stated that an administrative webinar which does not seek public comment would not need a Federal Register notice.

Chair Wellslager sketched out potential top recommendations, on IOCM, data centralization, beta geoid models from GRAV-D, and continuing education and outreach through professional organizations.

Public Comment Period

There was no public comment at this time.

Meeting Wrap-Up and Discussion of Next HSRP Meeting

Dr. Kudrna shared with the panel some ideas for the spring meeting in the Washington, D.C. area. This meeting will be focused on Washington policy questions. Members of the House Ports committee will be invited. The HSRP Chair and Vice Chair will possibly meet with OMB.

An HSRP position paper, focusing on the theme of the economy and jobs and mentioning the needs presented by the Northwest Passage and post-Panamax vessels, will be prepared by the planning group. Dr. Kudrna stated he will write a first draft of this position paper, then route it back to the Chair and the full HSRP.

Vice Chair Perkins said that the first day of the meeting will be in the Department of Commerce building, and the second day will be at the Rayburn House Office Building. It might make sense to have the IOCM briefing on the second day. Admiral Glang suggested inviting members of the IOOS FACA to the meeting.

Chair Wellslager said it would be best to meet in late May, rather than March, because meeting in March would create too much lag time between that meeting and the November 2013 one.

Chair Wellslager reviewed past meeting locations and invited suggestions for the location of the 2013 fall meeting. Mr. Carothers suggested meeting in the New York to learn about NOAA's work during Sandy. Ms. Lockhart seconded the suggestion. Mr. Hanson suggested that meeting in Miami would allow discussion of the impact of the Panama Canal and other channel deepening projects. Dr. Jay pointed out that the panel has not been to the Los Angeles/Santa Monica area. Admiral Glang proposed the panel members decide on the fall meeting location through email. Ms. Watson stated that she plans HSRP meetings months in advance, so it would be best to decide on a location by late April or early May.

Dr. Kudrna suggested doing a Doodle online poll to decide on dates and a fall meeting location. Capt. Swallow offered to have OCS staff outline some of the topics which would be relevant at different meeting locations. Chair Wellslager agreed.

Adjournment

The meeting was adjourned at 2:44 p.m.

HSRP VOTING MEMBERS IN ATTENDANCE:

Matthew Wellslager, HSRP Chair	South Carolina Geodetic Survey
Scott R. Perkins, HSRP Vice Chair	T-Kartor U.S.A.
Rear Admiral Kenneth E. Barbor	U.S. Navy (retired), University of Southern Mississippi
Lawson W. Brigham, Ph.D.	Distinguished Professor of Geography and Arctic Policy, University of Alaska Fairbanks & Senior Fellow, Institute of the North
Jeffrey J. Carothers	Fugro Consultants, Inc.
Captain Deborah Dempsey	Columbia River Bar Pilots
Rear Admiral Evelyn Fields	NOAA Corps (retired)
William Hanson	Great Lakes Dredge & Dock Company
David A. Jay, Ph.D.	Professor, Portland State University
Gary Jeffress, Ph.D.	Professor of Geographic Information Science, Texas A&M University, Corpus Christi and Director of Conrad Blucher Institute for Surveying and Science
Frank Kudrna, Ph.D.	Kudrna & Associates, Ltd.
Carol Lockhart	Hydrographic Surveying/LiDAR Hydrography
Joyce E. Miller	Joint Institute for Marine and Atmospheric Research, Research Corporation, University of Hawaii
Susan Shingledecker	BoatU.S. Foundation for Boating Safety and Clean Water

HSRP VOTING MEMBERS NOT IN ATTENDANCE:

Stephen Carmel	Maersk Line Limited
----------------	---------------------

HSRP NON-VOTING MEMBERS IN ATTENDANCE:

Andy Armstrong	Center for Coastal and Ocean Mapping, University of New Hampshire
Juliana Blackwell	Director, National Geodetic Survey, NOAA
Richard Edwing	Director, Center for Operational Oceanographic Products and Services, NOAA

DESIGNATED FEDERAL OFFICIAL:

Rear Admiral Gerd F. Glang	Director, Office of Coast Survey, NOAA
----------------------------	--

NAVIGATION SERVICES STAKEHOLDER PANEL:

Chris D. Bonura	Director of Industrial Development, Port of New Orleans
Capt. Peter W. Gautier	Captain of the Port, U.S. Coast Guard Sector New Orleans
Kenneth Graham	NOAA/NWS, Meteorologist in Charge, Weather Forecast Office, New Orleans-Baton Rouge
Capt. Douglas J. Grubbs	Crescent River Port Pilots Association
Capt. Michael R. Lorino, Jr.	President, Associated Branch Pilots (Bar Pilots) for the Port of New Orleans
Capt. David B. Trent	President, Port of Lake Charles Pilots

GEOSPATIAL & WATER LEVEL STAKEHOLDER PANEL:

Henri Boulet	Executive Director, LA-1 Coalition
Stephen V. Estopinal	South Louisiana Flood Protection Authority - East
James E. Mitchell, Ph.D.	IT GIS Manager, Louisiana Department of Transportation and Development
Clifford J. Mugnier	Center for Geoinformatics, Louisiana State University
Randy L. Osborne	Center for Geoinformatics, Louisiana State University
Robert A. Turner, Jr.	South Louisiana Flood Protection Authority - East

NOAA STAFF PRESENT:

David Kennedy	Assistant Administrator, National Ocean Service, NOAA
Tim Osborn	Navigation Manager, Gulf of Mexico Region
Margaret Spring	Principal Deputy Under Secretary for Oceans and Atmosphere, U.S. Department of Commerce/NOAA
Capt. John Swallow	Chief, Navigation Services Division, Office of Coast Survey
Suzanne Vancooten	NOAA/NWS, Lower Mississippi River Forecast Center
Kathy Watson	HSRP Program Coordinator
Craig Woolcott	NOS/PPAD

OTHER SPEAKERS AND ATTENDEES:

Honora Buras	CPRA
Jon Dasler	David Evans & Associates
Ralph Diaz	Boh Brothers Construction
Sean Duffy	Big River Coalition
Richard Durrett	Waggoner Engineering
Win Ellington	Office of Senator Thad Cochran
Cherrie Felder	Lower Mississippi River Waterway Safety Advisory Committee (LMRWSAC)
Colonel Edward R. Fleming	U.S. Army Corps of Engineers, New Orleans District Commander
Myrtis Franke	Office of Senator Thad Cochran
Joe Gonzales	Manson Construction Co.
Garrett Graves	Coastal Protection & Restoration Authority of Louisiana

P. J. Hahn	Plaquemines Parish
Capt. Sherri Hickman	Houston Pilots Association
Kurt Johnson	Louisiana Department of Transportation and Development
Joshua Kent	Louisiana State University (C4G)
Tara Levy	C&C Associates
Hunter Lipscomb	Office of Congressman Steven Palazzo
Matt Love	Ocean Conservancy
T. J. Moran	Office of Congressman Steven Palazzo
James Murphy	MARAD
Mike Nitska	The Hydrographic Society of America, Louisiana
Carol Parsons Richards	Coastal Protection & Restoration Authority of Louisiana
George Petras	U.S. Coast Guard
Jason Poret	Hydroterra Technologies
Nancy Rabalais	National Sea Grant LUMCON
Kelly Schulz	Vice President, New Orleans Convention & Visitors Bureau
Carol Short	University of New Orleans
Bethany Stich	University of New Orleans
Kirstin Sullivan	U.S. Coast Guard
Ancil Taylor	C. F. Bean