US Army Corps of Engineers
Mississippi Valley Division

Corps Hurricane Response

Task Force Hope Status Report

September 14, 2007

HURRICANE SEASON: JUNE 1 - NOVEMBER 30

Saffir-Simpson Hurricane Scale vs. SLOSH

You need to know more than the wind speed

By Susan Spaht

The Saffir-Simpson Hurricane Scale rates a hurricane's present intensity using wind speed as the determining factor. It rates hurricanes by Category using a 1 to 5 scale. A Category 1 hurricane has the least wind speed while a Category 5 has the highest wind speed. (See box on page 3 for Category speeds).

Those of us living on the Gulf Coast are all too familiar with a weather report that gives us the "category" of an approaching storm. However, Hurricane Katrina taught us that the Saffir-Simpson Hurricane Scale doesn't give the whole picture on the danger and magnitude of a particular storm. Strong winds can certainly be dangerous and damaging, but there are other elements of a storm to consider when judging your level of danger: the diameter or width of the storm, the speed, and the surge potential.

Consider this: Hurricane Camille hit the Gulf Coast in 1969, a terrible storm that killed 259 people and caused billions in damages. Hurricane Camille was a **Catagory 5** storm with 190 mph winds at landfall. But Camille was no match for the devastation of Hurricane Katrina which killed more than 1,400 people in 2005. Katrina was one of the worst storms ever to hit the United States. It was rated a **Category 3** when it made landfall.

Lt. Col. David Berczek, above right, explaining technical hurricane information found in the IPET report. (USACE Photo)

"Wind speed is an important element of a hurricane's damage potential," said Lt. Col. David Berczek, the Corps' Project Manager for Risk and Reliability, "but it's just one element of the information we need to determine the severity of a hurricane. We must also consider a hurricane's surge potential."

Lt. Col. Berczek, while assigned to Task Force Hope in New Orleans, was charged with leading public sessions to explain the highly technical information released by the Interagency Performance Evaluation Task Force (IPET) in Vol. 8 (of their

Continued on page 2

Also in this issue:

Continued from page 1

10-volume report) which covers Risk potential in the Hurricane Protection System (HPS) in the greater New Orleans area.

Lt. Col. Berczek developed graphs, charts, photos and figures meant to simplify the technical IPET information so we all can grasp its meaning and importance. He examines and explains why the Saffir-Simpson Hurricane Scale measures only one part of a hurricane's damage potential.

So, what is "storm surge" and how can we judge a hurricane's surge threat?

According to the National Hurricane Center (HNC): "Storm surge is simply water that is pushed toward the shore by the force of the winds swirling around the storm. This advancing surge combines with the normal tides to create the hurricane storm tide, which can increase the mean water level 15 feet or more.

"In addition, wind driven waves are superimposed on the storm tide. This rise in water level can cause severe flooding in coastal areas, particularly when the storm tide coincides with the normal high tides.

"The level of surge in a particular area is also determined by the slope of the continental shelf. A shallow slope off the coast will allow a greater surge to inundate coastal communities."

In the late 70s, the National Oceanic and Atmospheric Administration (NOAA) developed the first rendition of the computer-run storm surge model, called SLOSH: Sea, Lake and Overland Surges from Hurricanes.

Storm Surge from Hurricane Katrina

This dramatic photo shows Hurricane Katrina's surge overtopping levees under the Paris Road Bridge adjacent to the Entergy power plant in New Orleans East.

> ***"The greatest potential for loss of life related to a hurricane is from storm surge."***
>
> - National Hurricane Center

According to longtime New Orleans TV weatherman Dave Barnes, a member of the Southeast Louisiana Flood Protection Authority-East: "Weather reports have been giving a storm's surge potential since the late 1800s.

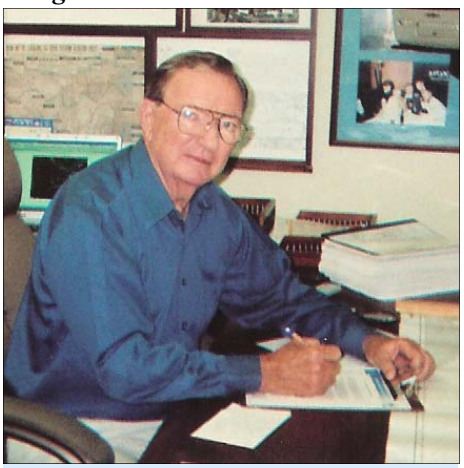
"Since NOAA recognized that the New Orleans region was the most vulnerable in the country to storm surge, SLOSH was designed for this region first.

"The SLOSH model takes into account the hurricane's atmospheric pressure, size, forward speed, track and wind. It predicts the change of water levels in a region with time, including the highest water level expected.

"The latest version of SLOSH is routinely run by the National Hurricane Center when hurricanes threaten coastal areas. In addition, many organizations use SLOSH to evaluate historical and hypothetical hurricanes for storm surge potential. Emergency managers use the output from the latest version of SLOSH for advance planning, and use it during hurricane emergencies to determine which areas must be evacuated ahead of a storm's expected storm surge."

In general, the more intense the storm, and the closer a community is to the right-front quadrant, the larger

Continued on page 3



Dave Barnes, meteorologist, longtime New Orleans TV weatherman and member of the Southeast Louisiana Flood Protection Authority-East.

Continued from page 2

the area that must be evacuated. The problem is always the uncertainty about how intense the storm will be when it finally makes landfall.

"**It's important to know that slow-moving tropical storms usually produce greater flooding from rain than fast-moving storms," Barnes added, "regardless of their intensity."**

When an advisory to evacuate is issued, people should be aware that strong winds can be expected ahead of the storm's eye and they should plan their evacuation accordingly.

Coastal inhabitants should realize that, after the eye of the storm passes, they will experience wind from the opposite direction. "This is especially important information whether a community is located on the Gulf Coast itself or on an adjacent lake or river," Barnes noted, "because a shift in the wind to a more southerly direction may produce additional flooding after the initial surge moves on shore. Many residents of the Slidell area experienced this effect when Hurricane Katrina moved over the area."

People living along the Gulf Coast are keenly aware that we are in the height of the hurricane season right now. If a tropical storm or hurricane should threaten us this season, we should all pay close attention to its size, wind (Saffir-Simpson Scale), forward speed, track and its **surge** potential.

To learn more about storm surge safety actions as well as evacuation information, please visit the National Hurricane Center's Web site at: http://www.nhc.noaa.gov

The Saffir-Simpson Hurricane Scale

Category 1:	**winds 74-95 mph**
Category 2:	**winds 96-110 mph**
Category 3:	**winds 111-130 mph**
Category 4:	**winds 131-155 mph**
Category 5:	**greater than 155 mph**

To learn more about the Saffir-Simpson Hurricane Scale, visit: http://www.nhc.noaa.gov/aboutsshs.shtml

For specific information on the Corps' 100-Year Risk Maps, go to: http://www.mvn.usace.army.mil/hps/100maps.htm

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Editor's Note: Special thanks to Dave Barnes for his contributions to this article.

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The *Status Report Newsletter* supports the information program for Task Force Hope and its stakeholders. It also serves as the primary tool for accurately transmitting the hurricane recovery work to stakeholders. This is an online publication and open to public distribution.
This issue and past issues can be found at: www.mvn.usace.army.mil/hps

Comments and questions may be sent to the Status Report Newsletter editor at: b2fwdpao@usace.army.mil

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US Army Corps of Engineers

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"Every single thing that we do, every day that we are working on the Hurricane Protection System, we are *reducing Risk*."

- Karen Durham-Aguilera, P.E., SES
Director, Task Force Hope

London Ave. Canal Load Test Reaches 7 feet

By Susan Spaht

The Corps of Engineers conducted a test at the London Avenue Outfall Canal to determine if the "safe water elevation" could be raised above four feet, the current level. The "safe water elevation" is the highest level that is safe for the water to rise and assure structural stability to the canal walls.

This photo of the cofferdam at London Ave. Outfall Canal was taken on August 22, the day the water level reached seven feet. (USACE Photo)

The Corps conducted this "load test" to scientifically determine if the canal could safely accommodate a higher water level.

Raising the safe water elevation is important because it will:

- Allow the city to pump water into the canal at a higher rate
- Allow the floodgates to remain open longer during a tropical event
- Reduce the risk of flooding in the area during rainfall and/or a tropical event

"The Corps went about this in collaboration with the Southeast Louisiana Flood Protection Authority-East and the New Orleans Sewerage & Water Board," said Karen Durham-Aguilera, Director of Task Force Hope. "An external peer review team composed of members of academia was used to help frame the method and manner of testing and to oversee the entire process."

The tests, which started in late August, involved the building of a cofferdam along a 150-foot section of the canal wall which is considered the most vulnerable. The tests involved gradually letting water into the cofferdam up to pre-designated levels, and measuring the impact on the integrity of the canal walls. This was performed over a two-week period. Water in the cofferdam was brought to a height of seven feet before the test was stopped.

Sophisticated instrumentation was installed to provide engineers with real time data about any sudden change in soil or I-wall movement and/or seepage. The technical information has been collected and engineers are now reviewing the information to make their determination about raising the safe water elevation in the canal. This should be complete in about a week or so.

"Our goal is to raise the safe water elevation to the five-foot mark," said Dr. John Grieshaber, Chief for Execution Support in the Hurricane Protection Office. "Raising the safe water elevation an additional foot would provide 30% more pumping capacity into the canal."

Dr. Grieshaber emphasized the importance of that by adding, "That means that rain water can be more quickly pumped out of the city in any type of rain event. An additional 30% is a lot of water."

Dr. Grieshaber further explained, "During Hurricane Katrina, water in the canal reached in excess of nine feet and caused two wall failures. The assumed failure mode involved development of a crack between the water side wall and the embankment which induced seepage pressure. That caused the failure of the toe of the embankment.

"These load tests monitored any wall movement as well as any seepage pressure in both the water side and protected side of the canal walls. We are looking to determine the stability of the embankment in these tests."

Dr. John Grieshaber

Col. Jeffrey Bedey, Commander of the Hurricane Protection Office, said that engineers in charge of the load test are "cautiously optimistic" about getting a favorable go-ahead on the five-foot safe water elevation level. "We'll know very soon."

MRGO Update

Mississippi River Gulf Outlet at Bayou Bienvenue

September 4 marked the end of the National Environmental Policy Act (NEPA)-required 45-day public comment period for the Draft Integrated Final Report to Congress and Legislative Environmental Impact Statement (LEIS) for the Mississippi River Gulf Outlet Deep-Draft De-Authorization (MRGO).

During comment period, which began in mid-July, the Corps received approximately 2,500 comments from interested individuals and groups. These will be taken into consideration by the Corps when finalizing the report.

The MRGO Deep-Draft De-Authorization Final Report to Congress and Final Legislative Environmental Impact Statement will be completed by the Corps and provided to Congress by the end of December 2007.

The final MRGO report will also be part of the Louisiana Coastal Protection and Restoration (LaCPR) Technical Report, also due to Congress in December 2007.

For more information on the De-Authorization Report, go to this Web site: http://mrgo.usace.army.mil/

Corps of Engineers sets 3 Neighborhood Public Meetings for September

The Corps of Engineers is continuing its ongoing series of public meetings with three meetings in the month of September. Meetings will focus on 100-year hurricane protection projects in Orleans Parish and on the West Bank's Harvey/Westwego areas of Jefferson Parish.

Corps staff will provide updates on construction projects and environmental compliance issues in these areas and answer questions on the proposed 100-year hurricane protection system plan.

The three public meetings will begin at 7:00 p.m. at these locations:

September 19	
Harvey / Westwego Jefferson Parish	Westwego City Council Chambers 419 Avenue A Westwego, LA 70094
September 25	
Orleans East Bank Orleans Parish	St. Paul's Episcopal Church 6249 Canal Boulevard New Orleans, LA 70124
September 27	
Jefferson East Bank Jefferson Parish	Pontchartrain Center 4545 Williams Blvd. Kenner, LA 70065

The public meetings will begin with a description of the Corps' environmental work and updates emphasizing work in the sub basin where the meeting is being held. Questions and comments are encouraged after the project presentations. The Corps will also accept written comments on the hurricane protection system projects by mail, e-mail or through our comment form located on the www.nolaenvironmental.gov web site at any time throughout the environmental analysis period.

Questions concerning proposed hurricane protection system actions should be addressed to: Gib Owen, U.S. Army Corps of Engineers, PM-RS, P.O. Box 60267, New Orleans, LA 70160-0267; phone: 504-862-1337; fax; 504-862-2088 or by e-mail at: mvnenvironmental@mvh02.usace.army.mil.

For more information or to sign up to be on a meeting notification list please visit the following web site: www.nolaenvironmental.com