



Safe, secure building allows hospital staff to do their job

Full Mitigation Best Practice Story

Saint Tammany Parish, Louisiana

Lacombe, LA - As Category Five Hurricane Katrina approached the southeast Louisiana coastline, the Louisiana Heart Hospital (LHH) prepared for the worst. Michelle Hays, Chief Financial Officer and acting Chief Executive Officer, lead the effort along with Bart Gomez, Team Leader for Facilities Management, and the hospital's committed medical staff and physicians.



During Hurricane Katrina's approach, the hospital accepted transfer patients from area hospitals located on low-lying ground. Devoted hospital staff cared for more than double its normal patient load. The hospital never lost power or water supply and sustained only minor roof damage. It also provided housing, meals, meeting rooms, and medical care to law enforcement and response teams in the days following Katrina.

Prudent decision making during the design and construction of the facility contributed to the ability of the hospital to withstand Hurricane Katrina. Opened in February 2003, the hospital is a 58-bed, specialty care facility. The non-flood zone property was selected for its convenient location between Covington and Slidell, above the storm surge projection. Wynn Searle, the Vice President of Operations / Hospital Development at Medcath, Incorporated, stated that "its location dictated a wind-resistant design per code requirements, including common engineering safety features." Historical storm data also indicated the need for particular attention to hurricane-resistant design in this Southeast Louisiana region.

A wetland survey revealed the need for extensive site preparation which included the placement of more than \$1 million worth of sand to compress the swamp-like soil. Safety measures included installing impact-resistant windows that meet the missile impact test created for hurricane prone areas by Miami Dade County. These reinforced windows are designed to sustain the force of winds of 130 to 140 mph. According to Mr. Searle, "measures were taken to attach the roof membrane to meet a certain 'wind uplift requirement' (determined by their insurance company and testing lab) to preclude uplift from significant wind storms." He added that there were additional costs associated with the damage prevention measures, but clearly the minimal damage sustained by the hospital demonstrates their cost effectiveness.

One advantage of these construction techniques is lower flood insurance premiums. According to hospital officials, these premiums would have been considerably higher if they had not used such hurricane-resistant methods and materials.

An independent water-treatment plant for domestic water supply and fire protection, and a 1,700-foot well that was drilled during construction, allowed the facility to function after the disaster.

The hospital's two large generators engaged when electrical power failed. Additional diesel fuel was ordered as the storm approached, enabling the hospital to run the air-conditioning units and continue dialysis treatments, cardiac catheterization lab procedures, and surgeries. The protocol for back-up diesel fuel now has been addressed and cylinders have been purchased to hold an additional 1,800 gallons of fuel on site.

The staff realized the worst was about to hit as the winds increased. All entrances to the hospital except the emergency entrance were blockaded and sandbagged. No flooding occurred and the only damage the hospital sustained was caused by mechanical roof screen panels bolted to a support system on the roof, designed to disguise the air handling system. The hurricane winds played havoc with the panels, slashing parts of the hospital roof and causing some leaks. Several cars in the parking lot were damaged by flying debris. Consequently, hospital officials stated that the cosmetically designed panels will not be replaced.

Problems with the hospital information technology system prevented outside communication during the hurricane. According to Ms. Hays, "there were no land lines, no cell phones, no email, no form of communication with the outside world." To prevent future interruptions, LHH has purchased additional equipment for better communication, such as a satellite phone and a satellite system enabling email and voice capability via computer. Because some communication towers were working sooner than others, service from multiple cell-phone providers has been acquired.

Now, more than a month after Katrina, the hospital continues to be a hub of activity. It serves as a meeting place for local officials and law enforcement, and offers employment opportunities for at least 80 people who lost their jobs because of the storm. Patient transfers are still being made because of staffing shortages in other areas.

Clearly, the mitigation measures LHH took to reinforce their building benefited patients, staff, and the surrounding communities. According to Ms. Hays, "No one expected this hospital to play the role that it did during this disaster event."

Photo Caption 1: Four cylinders used for extra diesel fuel located behind the hospital. Photo Caption 2: Louisiana Heart Hospital, Lacombe, LA. Photos courtesy of Michael Schuler.

Activity/Project Location

Geographical Area: **Single County in a State**

FEMA Region: **Region VI**

State: **Louisiana**

County: **Saint Tammany Parish**

City/Community: **Lacombe**

Key Activity/Project Information

Sector: **Private**

Hazard Type: **Flooding; Hurricane/Tropical Storm**

Activity/Project Type: **Retrofitting, Structural**

Structure Type: **Steel Frame; Masonry, Reinforced**

Activity/Project Start Date: **02/2003**

Activity/Project End Date: **Ongoing**

Funding Source: **Private funds**

Funding Recipient: **Critical Facility - Medical**

Funding Recipient Name: **Louisiana Heart Hospital**

Activity/Project Economic Analysis

Cost: **Amount Not Available**

Activity/Project Disaster Information

Mitigation Resulted From Federal Disaster? **No**

Value Tested By Disaster? **Yes**

Tested By Federal Disaster #: **No Federal Disaster specified**

Year First Tested: **2005**

Repetitive Loss Property? **No**

Reference URLs

Reference URL 1: <http://www.fema.gov/business/nfip/>

Reference URL 2: <http://www.ohsep.louisiana.gov>

Main Points

- The Louisiana Heart Hospital withstood the worst Hurricane Katrina could throw at them with the help of disaster mitigation planning and preparedness.
- Mitigation compliance resulted in lower flood insurance premiums and a safer environment.
- The purchase of additional communication equipment will prevent the hospital's isolation in the event that another emergency should arise.



Four cylinders used for extra diesel fuel located behind the hospital.



Louisiana Heart Hospital, Lacombe, Louisiana



Team Leader for Facilities Management inspecting damage to the roof.