

Unmanned Systems

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Hurricane
Katrina



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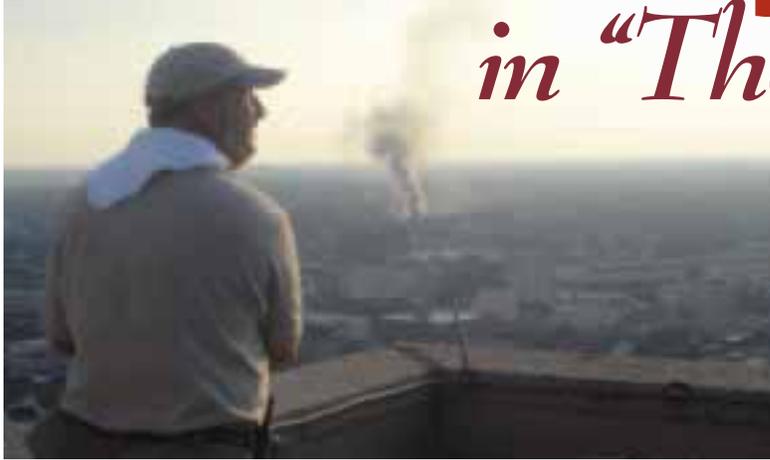
A Bug's Life



Unmanned Systems to the Rescue

Not so Easy

in "The Big Easy"



Bird's Eye View of New Orleans. A Fire Burns in the Distance.



A Mean Season.

By Jay Willmott

The Labor Day weekend holiday had hardly begun in a Washington, DC suburb when my cell phone interrupted a quiet gathering of a few close friends.

It was the U.S. Air Force's Task Force Katrina Project Officer calling to confirm his earlier advisory that L-3's Evolution XTS UAV systems were to deploy to New Orleans in support of Hurricane Katrina search and rescue efforts.

The urgency of the Air Force's invitation made my heart pound with anticipation. This was not a drill, or another warfighting experiment.

Less than a week before, Katrina had torn through three Gulf Coast states; now, all manner of support was pouring into the area in response to the massive destruction wrought by the deadly Category 5 storm.

After years of "what-if" hypothetical applications, here was a rare situation for UAV technology to prove its maturity and value, but in a very non-traditional sense. Small UAV systems were earning their keep every day on the battlefield, but now a critical need had arisen in America's homeland, and lives possibly hung in the balance. The USAF had asked: would we have adequate equipment? Would our staff be able or willing to dismantle their holiday plans to operate and maintain systems in harsh conditions for an indeterminate amount of time.

I began phoning response team members as I hurriedly left the party to begin making preparations to drive to New Orleans the following day, proud in the knowledge that L-3 had made significant investments in hardware, and therefore would be able to rise to the occasion of one of our nation's worst natural disasters, if we got there in time.

This was going to be BAI's second post-Hurricane UAV operation. My thoughts drifted back to ten years earlier, when Hurricane Opal made landfall in the same region. Then, I was a member of the BAI

Two Weeks in Hell

team that operated hand-launched Javelin UAVs along the Gulf Coast for a local NBC network affiliate. Although we had arrived on the scene too late to do any good, we managed to make a minor splash with the media, and probably helped heighten public (and federal) awareness of UAVs at a time when few outside of the military were aware of them. But this time things would be different. This hurricane's devastation was far worse, and the situation was deteriorating rapidly.

BAI's Evolution XTS systems were being requested in New Orleans to complement a USAF team of Forward Air Control (FAC) personnel who would be operating L-3's ROVER III multi-band receiver to pull down live video being broadcast from airborne reconnaissance assets such as Scathe View, mounted on manned aircraft. These conventional recce tools were already on site, searching the disaster area for survivors of the storm and the flooding that ensued in its aftermath. L3's Evolution XTS UAVs would fly much lower, and provide area commanders with a highly mobile, real-time EO or IR sensor capability to augment the capabilities of the larger manned systems.

The L3 team consisted of personnel from L3-BAI in Easton, MD, as well as from BAI's parent division, L3 Integrated Systems in Greenville, TX, with additional operators and maintenance personnel. Within 36 hours of receiving notice, our team of seven met up with the USAF FAC squad in Birmingham, AL, where we quickly stocked up on ice, water and other essentials, and departed in a road convoy for New Orleans. We were warned that there would be little, if any, fuel as we drew closer to the storm-ravaged coast, and we made numerous stops throughout the night to top off our fuel tanks. By 3 a.m. we had reached Baton Rouge, where we bedded down on the floor of a small church that had opened its doors to survivors and rescue personnel.



Hauling Relief Supplies.

The following morning we traveled the remaining 70 miles into the heart of the disaster in Louisiana. The damage from the storm was noticeably worse the closer we came to the city of New Orleans. The foundations of railways had been swept away, countless trees were toppled, billboards bent in half, and windows were blown out of large and small buildings alike. Because of the forced evacuation, there was very little traffic, which was a good thing, since without power, practically none of the city's traffic lights was operating.

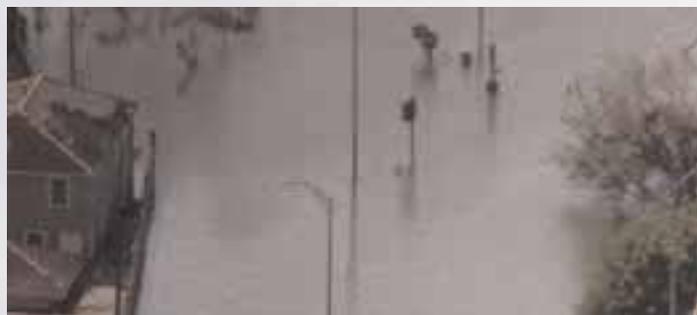
Heavily armed guards at roadside checkpoints screened vehicles to ensure that only official relief personnel would enter the now-empty city and surrounding parishes. Because rioters had fired shots at arriving rescuers the day before we arrived, our team was provided with an armed escort as we entered the city. It was a surreal experience to traverse through the darkened, empty neighborhoods.

At New Orleans International Airport, our group met briefly with FEMA organizers, who dispatched us to Algiers Naval Air Station, situated directly across the Mississippi River from downtown New Orleans. That is where we would be stationed along with members of the U.S. Army's 82nd Airborne Division who were responsible for patrolling the downtown district in search of disaster victims, and to maintain order.

Upon arriving at Algiers NAS, we parked our vehicles in the base recreational campground and set up for an extended stay. Some of our crew was "housed" in a recreational vehicle (trailer), part of us bunked in a cargo trailer along with equipment, and still others slept in tents. Algiers NAS, like the neighborhoods and parishes around it, was without power or water; electric power was provided by generators that roared through the night. The old adage "if you don't bring it, you won't have it" was on the money.

Fortunately, portable toilets began arriving soon after we did, as did tractor-trailer loads of equipment and supplies destined for hurricane survivors and to sustain rescue personnel, who soon crowded the base. A "mess" was set up to serve two hot meals per day if desired, but more often than not we 'dined on' meals-ready-to-eat, or MREs. We felt proud to be living "like soldiers." Hot and squalid as our conditions were, it was luxurious compared to those described by the 82nd Airborne grunts, many of whom had previously served overseas, enduring far worse.

Our hopes of providing small UAV (SUAV) aerial search and rescue assistance would soon vanish, however. Because of heavy air traffic in the region (primarily helicopters) the FAA was refusing to permit UAV operations, period. Despite suggestions that Restricted Operating Zones be established during periods (i.e. late at night) when air traffic was minimal, no permission would be made for any



Water, Water Everywhere.

UAV operations, even for the smallest of systems, including our 8-pound Evolution XTS UAV.

Undeterred, our team decided to make the best use of the tools we had. Recognizing that a UAV is, after all, a wireless camera system, we ventured into the downtown district with our armed escorts and managed to convince security personnel at the New Orleans Hilton to allow us onto their rooftop.

Thirty-five flights of stairs later, we assembled Evolution aircraft to look out over the cityscape, and surveyed the situation through the payload's 10X zoom lens. Live imagery was broadcast to the 82nd Airborne's Tactical Operations Center (TOC) at Algiers NAS, where it was received on ROVER III and the Evolution ground station. Displayed on the TOC's large plasma displays, this imagery provided the 82nd's commanders with a "God's eye view" of his area of operation.

During the course of the next two weeks, our team relocated to the 55-story St. Charles building, where, because of the grueling hike, it was necessary for our equipment to be



Tactical Ops Center.



Backpackable Evolution UAV.



Waterlogged City.

Special Report: Handling Hurricanes

airlifted onto the roof using Black Hawk helicopters. From that vantage point, Evolution XTS cameras were able to monitor the slowly receding floodwaters, and provide early warning of fires being set by arsonists.

In one instance, a fire was observed by the rooftop Evolution team and the imagery, overlaid with the Latitude / Longitude of the center field of view,

was transmitted to the 82nd's TOC. The TOC quickly and precisely geolocated the fire, and called in a helicopter bucket apparatus. Using water drawn from the Mississippi River, the helicopter extinguished the blaze within nine minutes of when it was initially spotted.

Our team enjoyed the feeling of satisfaction that came from contributing, even just our miniscule part, to the overall rescue effort. After two very long, very hard weeks providing daylight and thermal imagery of the city, the citizens of New Orleans slowly began returning to their homes and businesses to assess their damages, and our team gratefully retreated to our own homes. We were the lucky ones. The 82nd Airborne soldiers, National Guardsmen, and countless other emergency relief workers would remain in New Orleans, many to this day, helping put the pieces back together.

In retrospect, it was disappointing, for our team, as well as for the other members of the UAV industry who stood ready to provide assistance in the traumatic days following Hurricane Katrina, to have not been able to operate our systems and to utilize the full benefits of UAV technology at a time when it could have been most useful.

Still, the response of the UAV community served to awaken federal agencies as to the state of readiness of our UAV systems, and highlighted the need for them to definitize airspace deconfliction



Keeping Order.



Aviation was Critical



Rescue Me.

methods to facilitate inter-operation of manned and unmanned systems for the public good.

Prompt action ensued. Only a few weeks later, as Hurricane Wilma bore down on Florida, an FAA official announced that three separate COAs (Certificate Of Authorization) were being issued, whereby UAVs would be able to operate in carefully defined airspace / parameters, to provide humanitarian search and rescue support, if needed.

Its gratifying to know that UAV technology and the companies that manufacture and support it have matured to the point of being ready, willing, and able to provide homeland defense support. Clearly, our federal agencies are waking up to the benefits of the technologies our industry has worked hard to mature and place into daily use.

Operation of unmanned aerial vehicle systems in the national airspace will not be accomplished overnight. And not without measured application of enabling technologies and methodologies to assure that airspace integration is performed safely. But it is happening and when new opportunities to contribute to the public good arise, we will be ready to respond.

Jay Willmott is Executive Vice President of BAI Aerosystems, a Division of L-3 Communications.



Assessing the Damage.