



CASE STUDY

IMT Helps City of Houston Deliver Effective Airborne Law Enforcement

Background



Serving a population of over 2 million in a 600 square mile area, the Houston Police Department (HPD) has long relied on its Air Support Division (ASD) as a crucial part of its law enforcement operations. Today, the HPD Air Support Division is the second largest municipal police air support unit in the United States, after the Los Angeles Police Department.

The primary mission of the ASD is to support HPD officers on the ground by giving them an enhanced perspective on events as they occur. Additional functions provided by ASD are patrol flights, suspect tracking, and search and rescue.

Challenge

The initial application as specified by the The City of Houston (TCOH) was to provide the HPD, Houston Fire Department (HFD), EMS and first responders with real-time HD surveillance video from aircraft in order to supplement its tactical and strategic command. The HPD had recently added seven new MD500 helicopters to their fleet, bringing their total to eleven MD500s and a Cessna 182 fixed wing aircraft. TCOH wanted to equip both the existing and newly-acquired HPD airborne units with a state-of-the-art video transmission solution, with the goal of delivering an additional layer of safety and security to law enforcement and emergency communications operations. Cost was a key consideration, since no individual department could bear the cost to implement and maintain the system alone.

Solution (Phase 1)

The Mayor of TCOH had the forethought to pool resources available to the city, and gained access to a Federal grant to secure funding to purchase and deploy a system to fit their requirements.

“Air Support transmits video at all times during our flights. Once all equipment is up and running, the transmitter is turned on, so essentially all the flight can be seen by personnel that might be monitoring the downlink.”

Mark Foster, senior police officer, Houston Police Department

The IMT **Aerial Video Downlink System (AVDS)** included the key technical capabilities that addressed the needs of TCOH. IMT’s AVDS employs an integrated suite of downlink transmitters, receivers and antennas to capture real-time, reliable high-definition video from drones, helicopters and other aircraft for display at command centers and on video management systems.

Video transmitted by these aerial platforms gives those on the ground a clear and reliable picture of what is being captured from above—which would allow HPD helicopter units to see everything and direct ground units with actionable intelligence in real-time.

TCOH, through a competitive bid worth \$3.2 million, awarded IMT a three-year contract to install and maintain the AVDS in December 2008. TCOH renewed this agreement for an additional two years in December 2011. IMT’s responsibilities for implementing this system included:

- Overall site survey
- Installation and commissioning
- Ongoing maintenance and training

IMT supplied both the new and older aircraft with video downlink transmitters, remote controls and antennas. The installation was subcontracted to AeroServices Inc., the municipality’s preferred FAA-certified installer.



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IMT's AVDS connected the helicopter video cameras and thermal imagers to handheld receivers being used by the Houston Fire Department and HPD SWAT teams. This allows the responding department to get an aerial view of the incident and increases situational awareness. Video footage is also received by central receive systems located around the city, and is put on the city's VidSys system.

IMT originally installed and integrated four central receive sites into the HPD video network. These sites include four-way diversity receivers with UltraScan antennas, as well as three 120-degree sector antennas operating in the 6.4 – 6.5 GHz bands for the video downlink from HPD's Fox Aviation Unit. The sites also were provided with 2 GHz BAS capability for receiving ENG feeds from the local broadcasters.

With this combination of receivers and antennas, each of these sites is able to receive video feeds from three aircraft simultaneously. These receive sites were initially equipped for MPEG-2 HD/SD operation, but IMT is now updating the decoders for MPEG-4.

IMT also worked closely with the HFD in the development of the Mobile Viewer (MVR), a tactical portable receiver whose design was based on input from the HFD. This operation frequently deploys aircraft equipped with infrared-capable video cameras during fires and the department wanted ground units to be able to receive video from these aerial platforms to aid in assessment and deployment operations. The HFD also requested the integration of the antenna and battery into the receiver's housing to simplify deployment and also to allow the unit to fit inside a fireman's overcoat.

Solution (Phase 2)

The HPD Air Support Division is also responsible for working with Homeland Security on Port Patrol. Since the Sept. 11 attacks, there has been a heightened awareness around the Port of Houston due to a heightened fear of terrorist threats. With this in mind, in

Phase 2 of the IMT deployment, the AVDS solution was expanded to include portable ground systems as well marine-based capabilities with coverage at the Port of Houston. The expanded system added the following capabilities:

- Aerial coverage of Galveston Bay
- Uplink and repeater coverage from Marine Units
- Additional command vehicle coverage

Results

Since the initial 2008 installation, IMT has made numerous updates to the downlink receive systems. These updates have increased coverage, performance and ease of use. TCOH still relies on IMT as a preferred microwave vendor, and to date, the municipality has invested more than \$4.5M in IMT equipment and services. TCOH and is currently working with the company on new projects for expanding and enhancing its video network.

By integrating the **IMT Aerial Video Downlink System** into its operations, the HPD Air Support Division has been able to provide real-time visibility, enhanced officer safety, rapid response times and tactical insights to its ground operations that were not previously available. This has helped solidify the HPD Air Support Division's reputation as a leader in law enforcement aviation.

IMT Product Components Deployed

ChannelMaster airborne downlink microwave transmitters, Passive Tracker Diversity Receivers, UltraScan antennas, MobileViewer portable Receivers.

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