

Federal Aviation Administration Acquires Lockheed Martin WindTracer Lidar

Doppler Lidar System Improves Wind Hazard Detection at Las Vegas International Airport

The U.S. Federal Aviation Administration (FAA) has purchased a WindTracer(R) lidar system from Lockheed Martin, which is being tested at the Las Vegas McCarran International Airport. The system is designed to improve flight safety and airport operational efficiency by providing advanced warning of wind hazards and wind shifts.

Developed and produced by Lockheed Martin Coherent Technologies, the WindTracer system continuously scans the approach and departure corridors, enabling air traffic control personnel to offer precise, timely direction to pilots during their most critical phase of flight. The lidar system uses pulses of infrared light and receives data when the light reflects off naturally-occurring dust particles in the air. It complements radar by excelling in dry and clear weather conditions.

In 2005, a WindTracer was installed at McCarran for a demonstration. Data from the system and comparison to the onsite Terminal Doppler Weather Radar (TDWR) showed a significant increase in wind shear detection rate.

More detailed testing is being conducted by the FAA which started in August 2007, producing a larger set of sample events with expanded truth data as well as air traffic operations input, human factors evaluation, and system availability analysis. The results showed more than half of all wind shear events and 91 percent of dry microburst incidents were detected by the lidar. Because of these results, the FAA determined WindTracer lidar was the solution to supplement the TDWR at dry climate sites where dry gust fronts and microbursts occur more than wet wind shear.

At McCarran, the frequency of dry wind shear events is roughly three times that of wet events. For microburst and gust front encounters, pilots often perform a wind shear go-around to stabilize the approach for safe landing. WindTracer lidar, coupled with TDWR, can considerably reduce the costly go-around phase of flight by producing accurate warning signals and weather alerts.

"More than 40 airports in the U. S. use TDWR systems to detect microburst during rain. Airports located in a dry environment, including Las Vegas, Denver, Salt Lake City and Phoenix, can significantly improve wind hazard detection by implementing lidar capability," said Dr. Steve Hannon, director of Environmental Sensing for Lockheed Martin Coherent Technologies. "It is gratifying to work with the FAA and other key supporting organizations to use Doppler Lidar to improve the safety and efficiency of airport and airline operations."

The WindTracer system will operate at the temporary location used for the 2007 test activities until the permanent site is ready. During the 2008 wind shear season, improved alerting software will be installed and tested on additional wind shear events to further refine the sensing capability and ready the system for full operational alerting in 2009.

Organizations involved in the WindTracer demonstration at McCarran included the FAA (administration and meteorological support), Lockheed Martin, Clark County Department of Aviation and McCarran International Airport.

McCarran International Airport is the principal commercial airport serving Las Vegas and Clark County, Nevada. In 2007, McCarran ranked 14th in the world for passenger traffic, with 47,595,140 passengers passing through the terminal. The airport was ranked sixth in the world for aircraft movements, with 609,472 takeoffs and landings.

Headquartered in Bethesda, Md., Lockheed Martin is a global security company that employs about 140,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services. The corporation reported 2007 sales of \$41.9 billion.

For additional information, visit our website: <http://www.lockheedmartin.com/windtracer>

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