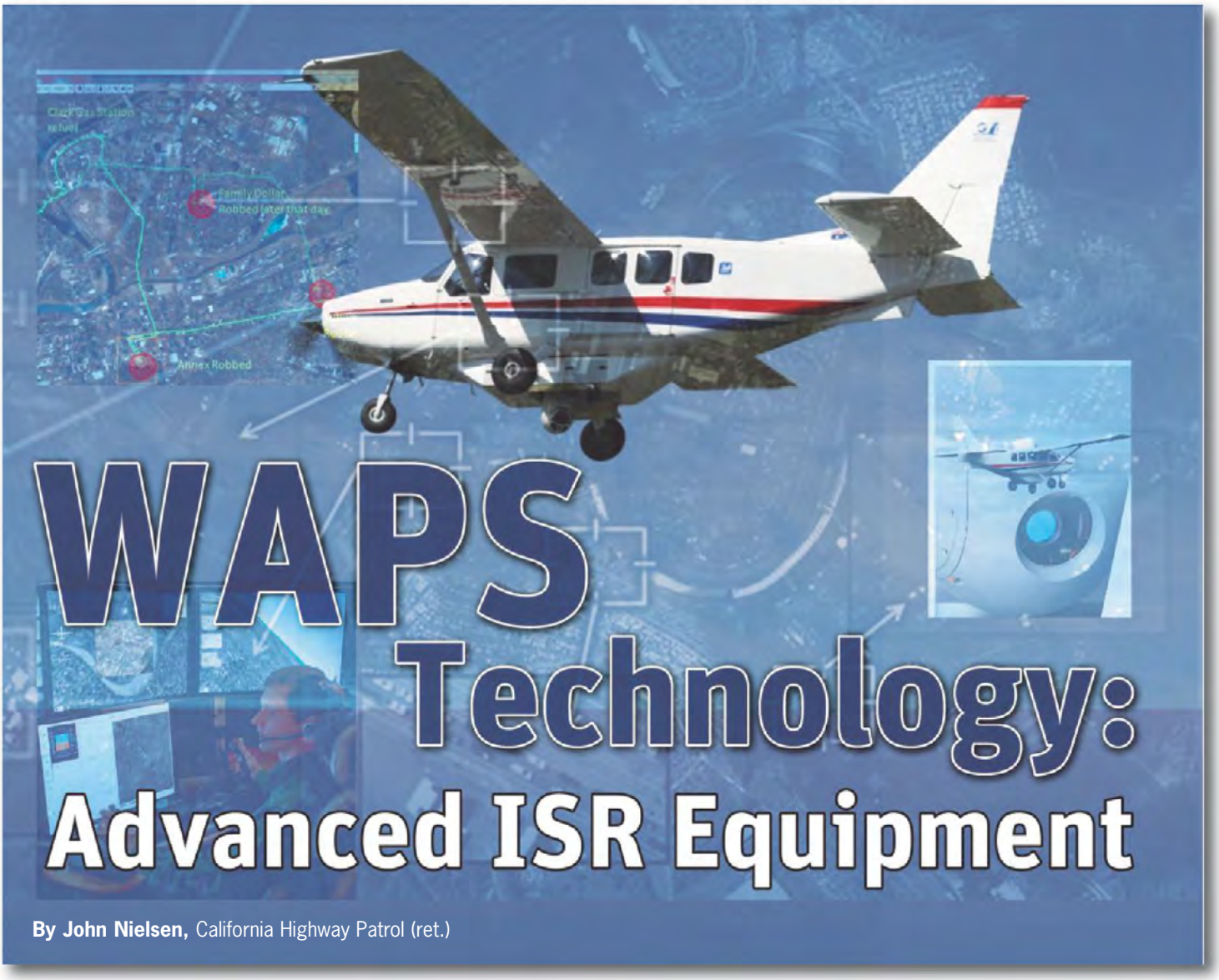

WAPS Technology: Advanced ISR Equipment

By John Nielsen, California Highway Patrol (ret.)

We have all read ads about new gadgets that will significantly change the way we work as airborne law enforcement officers. Better communications systems, clearer and more stable cameras, downlinks with more range, new aircraft with better performance—the list goes on and on. ALEA EXPO 2014 in Phoenix, AZ, allowed us to explore all the current technology available to our industry under one roof, and I set out to explore what the next game changer might be for fixed-wing operations.

The technology I found with the most potential was an intelligence, surveillance and reconnaissance (ISR) system known as wide area persistent surveillance (WAPS). I spoke in detail about the technology with Nathan Crawford, owner of Consolidated Resource Imaging, one of a number of companies that produces WAPS systems. Crawford is a brilliant engineer capable of describing this technology in head-spinning terms, but to put it simply, think of WAPS as a live version of Google Earth with a constant view area the size of a 25-square-mile city. The WAPS gimbal holds a series of high resolution fixed cameras that take several pictures per second. The system then stores the data in a digital recorder. After watching several demo videos of WAPS in action, I realized this technology is a virtual crime scene time machine.

"The sensor, mapping, tracking, communications, digital downlink and video monitor advancements in the new and improved ISR equipment is a true game changer."

Imagine a crime takes place while a WAPS sensor is operational. The TFO/analyst locates the scene, zooms in and rewinds the data back in time to when the crime took place. The system can tag and track suspects from the occurrence of the crime and determine their current location. The real-time information can be developed in about the same time it would take an on-scene investigator to put out an initial "BOLO."

WAPS was developed and used during the war in Iraq and Afghanistan, where it was deployed on both manned and unmanned

fixed-wing aircraft. The main mission was to counter improvised explosive devices by recording the activities associated with incidents. WAPS technology and the multiple layers of information it provided saved thousands of lives and put bomb makers out of business. WAPS can be used for major events, disaster response and traffic/pattern of life studies. It was developed for a military mission but can be used for one of the most difficult problems our country faces—the domestic war on crime.

During my 30-year career with the California Highway Patrol (CHP), I was fortunate enough to experience game changing technology when we adapted military grade ISR electro-optical infrared (EO-IR) systems to our fixed-wing aircraft. Technology like that allowed CHP to be more effective and efficient by changing the way we collected and sent information. I foresee a future of fixed-wing ISR aircraft with both WAPS and conventional EO-IR technology attached to a single airframe. These ISR systems will be operated by a combination of both airborne and remote controlled, ground-based TFO work stations. More patrol airtime, an immediate timely response, and clear concise information will always be a true tactical advantage.

WAPS technology has the potential to impact and change the way crime is handled. The American people are at a point where we need to make a cultural decision. Do we want to fight crime with all the tools and technology currently available? Will unmanned aircraft systems come into play, and how will aircraft separation technology be developed to help make that a reality? I don't have all the answers. I do know manned fixed-wing aircraft with advanced ISR equipment are being adopted by law enforcement agencies all across the nation. The sensor, mapping, tracking, communications, digital downlink and video monitor advancements in the new and improved ISR equipment is a true game changer. And the fixed-wing airborne law enforcement community must be ready to roll with these technologies.