



## Fact Sheet

# Civil Air Patrol ARCHER System

### **ARCHER: Airborne Real-time Cueing Hyperspectral Enhanced Reconnaisance**

- ARCHER is a custom-designed system of hyperspectral imaging hardware and software.
- Hyperspectral imaging (HSI), in an aerial application, allows an operator to program into an onboard computer the “spectral signature” of an object. A sensitive HSI camera onboard can then detect and pinpoint any object(s) on the ground that match the signature. The HSI sensor is also capable of detecting anomalies, objects significantly different from the background in which they are located. Data on possible “hits” that match the spectral signature or anomalies can be processed in real-time, stored and analyzed, and transmitted to ground teams.
- HSI has real-world applications for search and rescue, disaster impact assessment and relief, and homeland security.
- Civil Air Patrol’s ARCHER system will be the nation’s first fully operational, large-scale hyperspectral imaging system.
- HSI is a daytime non-invasive technology, which works by analyzing an object’s reflected light. It cannot detect objects at night, underwater, under dense cover, underground, under snow or inside buildings.
- HSI can be used in conjunction with CAP’s existing satellite-transmitted digital imaging system (SDIS) to send images from the aircraft to the ground via e-mail and a satellite phone in two minutes or less.
- Since 2003, CAP has invested almost \$5 million in the ARCHER system, along with additional funds to purchase Gippsland GA-8 Airvans to serve as the system platform.
- Space Computer Corporation of Los Angeles, CA has provided the software and NovaSol Corp. of Honolulu, Hawaii has provided the hardware for the ARCHER system.
- ARCHER was researched and developed under the direction of CAP’s all-volunteer Advanced Technologies Group, headed up by Col. Drew Alexa, CAP, of Colorado Springs, Co and Lt. Col. (Dr.) John Kershenstein, CAP, of Fairfax Station, Va.
- CAP developed ARCHER in cooperation with the Naval Research Laboratory, the Air Force Research Laboratory and the U.S. Coast Guard Research & Development Center. ARCHER is the largest interagency project CAP has ever undertaken in its 63-year history.
- Between August 2005 and June 2006, CAP will strategically place ARCHER systems in key locations all around the country. By the June of 2006, CAP will have a total of 16 ARCHER systems in operation.
- Funding for ARCHER was provided to CAP by Congress under the 2002 Defense Appropriations Act.

#### **For more information on the Civil Air Patrol ARCHER system, contact:**

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