ASPECT
Airborne Spectral Photometric Environmental Collection Technology
Nation’s only 24/7 Airborne Stand-off Chemical and Radiological Detection, Infrared and Photographic Imagery Platform

Aircraft
- Cessna 208B Super Cargo Master Platform based in Addison, Texas
- Aircraft Crew: Two Pilots, One Operator, All Commercial/ATP Rated
- Speeds: Data Collection at 100 kts; Cruise at 170 kts
- Range/Aloft Time: Range 1,200 NM; Aloft Time 4 – 6 hours
- Range: Can be anywhere CONUS collecting data within 9 hours
- Coverage: 4-hour coverage within a 800 mile radius
- Service Altitude: Data Collection at 300 to 5,000 ft AGL
- Ground Needs: Standard FBO, ISP with high speed internet

ASPECT Team
- Scientists and engineers all with advanced degrees with over 75 years of collective airborne remote chemical and radiological detection experience
- Derived from collaborative research, development, testing and implementation with the interagency, academia, states, and the private sector
- Provides onsite support to first responders, performs data analyses, and makes adjustments and repairs to the system and/or data products per the customer needs
- Provides time critical information while maintaining a budget conscious response
- Designs the chemical detection hardware and develops software applications; commercially available hardware is used for the radiological applications

ASPECT Program
- 24/7/365 Readiness with 1 hour wheels up capability
- Provides secure information to the First Responder / Incident Commander that is timely, useful, and compatible with numerous software applications
- Promotes coordination and communication with all stakeholders regarding operational data and products
- Multi-role responses (homeland security, emergency response, and environmental characterization)
- Provides infrared & photographic images with geospatial chemical (including oil) and radiological information
- Products and data formats are customer driven and can be provided to the customer within minutes to hours depending on the mission

ASPECT Technologies:
- An Infrared Line Scanner to image chemical plumes
- A High Speed Infrared Spectrometer to identify and quantify the composition of the chemical plume in the ppb to ppm range
- Gamma-Ray Spectrometer for radiation detection and isotope identification
- Neutron Detection System for enhanced radiological detection
- High resolution digital cameras (aerial & oblique) with ability to rectify for inclusion into GIS
- Broadband Satellite Data System (SatCom)
Chemical Capabilities
• ASPECT uses the principles of remote passive infrared detection via a Fourier Transform Infrared Spectrometer (FTS) to detect and quantify gaseous constituents present in the air column between the aircraft and the ground
• Chemical detection software is designed to filter out common atmospheric constituents as it automatically searches for 78 chemical compounds in near real-time (5 in the air column below the aircraft
• Hundreds of other chemicals can be processed by the team post survey

Radiological Capabilities
• The only airborne remote sensing system in the country that provides NaI & LaBr and neutron detectors
• Improves the US EPA airborne gamma-screening and mapping capability of ground-based commercially available state-of-the-art hardware
• Applies IAEA, DOE, and EPA processing algorithms
• Near real-time product development based on customer input
• Possess NRC licensed gamma and neutron sources for use in exercises and training activities

Deployment History
• Over 170 responses and deployments since 2001
• National Special Security Events (NSSE) and Special Event Assessment Rating (SEAR) level events (e.g., DNC, RNC, Inauguration, Super Bowl)
• Natural Disasters (e.g., Hurricanes Katrina, Rita, Gustav, and Sandy)
• Environmental Emergencies (e.g., Deepwater Horizon/BP Oil, West Fertilizer, Gold King Mine, site characterizations for Superfund sites)

Photography
• High resolution geo/orthorectified visible digital aerial images
• Geo/orthorectified infrared images
• Georeferenced oblique images
• Customizable display engines (ESRI, Google)

Website: http://www.epa.gov/emergency-response/aspect

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