U.S. EPA HURRICANE RESPONSE 2017

ASPECT Aircraft

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ASPECT: The Nation's Only 24/7 Airborne Stand-off Chemical and Radiological Detection, Infrared and Photographic Imagery Platform

Introduction

The Office of Emergency Management's Chemical, Biological, Radiological, Nuclear Consequence Management Advisory Team (CBRN CMAT) provides specialized expertise and cutting-edge response assets such as the Airborne Spectral Photometric Environmental Collection Technology (ASPECT) aircraft to assist local and Federal agencies supporting hazardous substance response and incidents involving weapons of mass destruction.

ASPECT consists of a suite of sensors and software mounted in a fixed wing single engine aircraft and uses the principles of remote hazard detection to image, map, identify, and quantify chemical vapors and deposited radioisotopes. It provides first responders – emergency workers on scene -- with actionable information on the situation.

ASPECT has been used by EPA regions for many response actions. They include monitoring during Deepwater Horizon, Superstorm Sandy, Super Bowls, Presidential Inaugurations, Olympic Games, numerous fires and hurricanes.

How it Works

ASPECT consists of sensors mounted in a Cessna 208B Super Cargo Master aircraft. It can detect chemical plumes and ground-based radiological materials. ASPECT is also capable of collecting high-resolution digital photography and video and can take thermal and night images by using instruments that track differences in heat below the airplane.

It is equipped with a Global Positioning System and uses navigation data to match photographic and infrared information with physical locations. This allowed EPA staff members to find and electronically tag the location of debris as small as one square foot during recovery of the Columbia shuttle wreckage. Quick delivery of chemical data to first responders is an important requirement of an emergency response. All information ASPECT collects can be sent to a ground unit using a satellite communications system.

ASPECT can also be used for non-emergency projects, including aerial photography, thermal imaging and radiation surveys. Activation of the system can be coordinated through the EPA Headquarters Emergency Operations Center.

The aircraft and sensor systems are available 24 hours a day, 7 days a week for emergency response. Any EPA on-scene coordinator can activate ASPECT. A simple phone call gets the system into the air in less than an hour.