

## **Weather Technology in the Cockpit Program (WTIC)**

Research projects to develop, verify, and validate requirements for incorporation into Minimum Weather Services (MinWxSrc) standards (Federal Aviation Regulations (FARs) Parts 121/135 and 91) to enhance safety by reducing or resolving safety risks before they become causal factors in accidents/incidents and to resolve current and NextGen operational inefficiencies attributable to MET information in the cockpit gas . Each MinWxSrc is defined as:

- Minimum cockpit meteorological (MET) information
- Minimum performance standards (e.g. accuracy) of the MET information
- Minimum information rendering standards

Key WTIC Program accomplishments include:

### **GA Meteorological (MET) Presentations**

Project Overview: Identify shortfalls with current commercially available cockpit MET presentations and renderings and then perform trade studies to develop recommended practices to resolve them.

Recent Accomplishments: Completed Phase 2 which identified a number of presentation shortfalls. Completed initial planning of trade studies to assess potential resolutions to the shortfalls.

### **GA Mobile MET**

Project Overview: Assess the prototype mobile MET application tool and preliminary MinWxSrc inputs, and develop updates to both based on the assessment results.

Project Accomplishments: Completed planning for the conduct of the Phase 1 evaluation of the mobile MET application tool. Revised prototype the tool based on findings during the assessment planning.

### **PEGASAS Projects**

Four PEGASAS (the FAA Center of Excellence for GA) projects (Quantifying Causality, VFR to IMC, Adverse Weather Alerting, and MET Product Optimization) will be briefed in a Deep Dive presentation at REDAC meeting so they are not addressed in this document.

### **Eddy Dissipation Rate (EDR) Uplink and EDR Technical Transfer Package**

Project Overview: Reduce NAS inefficiencies attributable to unnecessary airspace avoidance resulting from subjective turbulence reporting being provided to the cockpit via PIREPs, enhance cabin and crew management of turbulence encounters, and enable airlines to implement EDR through the use of the information contained in the technical transfer package.

Recent Accomplishments: Completed flight demonstration of uplinking EDR to the cockpit and data collection to support a NAS benefits assessment. Draft technical transfer package nearly completed.

## **Wind Accuracy Analyses**

Project Overview: Use Phase 1 developed Wind Analysis Framework to develop trade spaces to be used in determining cockpit wind accuracy requirements to support NextGen operations. Evaluate impacts of potential wind enhancements to Flight Management Systems (FMSs).

Recent Accomplishments: Delivered preliminary responses and associated trade spaces to answer four specific wind research questions posed by RTCA SC 206, SC 214, SC186, and SC227 committees to support their standards development efforts.

## **Cockpit Weather Alerting**

Project Overview: Determine the feasibility functionality, benefits, tradeoffs, architecture, and requirements for cockpit weather alerting functions.

Recent Accomplishments: Reached concurrence on potential architecture components, architectural considerations, and a project schedule. Preliminary literature review completed.

## **Tactical Turbulence Alerting**

Program Objectives: Assess the feasibility of and develop preliminary high level capabilities and implementations for tactical turbulence alerting in the cockpit.

Recent Accomplishments: Proposed concepts and obtained concurrence that initial assessments will use turbulence information produced by two prototype products: NEXRAD Turbulence Detections Algorithm (NTDA) and Graphical Turbulence Guidance Nowcast (GTG-N) that incorporates NTDA.

## **WTIC Part 121/135 and Part 91 Concepts of Operations (ConOps)**

Project Overview: Develop a scenario based WTIC ConOps for Part 121/135 and Part 91 aircraft. Use the ConOps to identify operational shortfalls and gaps of MET information in the cockpit.

Recent Accomplishments: Completed the Part 121/135 and the Part 91 ConOps. Began planning to perform a functional analysis of the ConOps.

## **RTCA Special Committee (SC) 206 Aeronautical Information and Meteorological Data Link Services**

Program Objectives: Provide recommendations for availability of high-quality and reliable electronic Aeronautical Information Services (AIS) and MET Information Services necessary to support the transition and implementation of NexGen Air Transportation System performance based capabilities.

Recent Accomplishments: Completed Architecture Recommendations for Aeronautical Information (AI) and Meteorological (MET) Data Link Services document (DO-349). The delivery recommendations provide industry supported recommendations that will enable greater flexibility for the review and operational approval of systems delivering AIS and MET data services to aircraft cockpits.