

Turbulence Prediction and Warning System (TPAWS)

PROGRAM/PROJECT: Aviation Safety Program/Weather Accident Prevention Project [<http://tpaws.larc.nasa.gov>]

LEAD AGENCY: National Aeronautics and Space Administration (NASA)

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SERVICE AREA (S)/INITIATIVE (S)

- *National Aviation Weather Initiatives:*
7: 7, 9

FUNDING

- *Programmed/Planned (\$'s/FY):* \$2.2M/FY 04 \$2.0M/FY 05

TYPE OF PROGRAM/APPLICATION

R&D/Decision Support

SCOPE OF PROGRAM/PROJECT

- *What's being developed, procured, etc.:* Enabling technologies for onboard sensors to detect turbulence, provide warning and mitigate its impacts. Testing is underway to identify performance of technologies in the relevant atmospheric environment and test techniques and criteria are being explored for use in the eventual hardware certification process by the FAA. Technologies include Light Detection and Ranging (LIDAR) and enhanced onboard weather radar (RADAR) through signal processing software.
- *How will operations be changed/improved:* Early detection of turbulence to reduce the risk of turbulence-induced injury or death by providing timely warning of impending turbulence encounters.

PROGRAM/PROJECT MANAGEMENT

- *Basic guidance document for this program:* Weather Accident Prevention Project Level II Plan.
- *Program/Project verification process:* Annual Weather Accident Prevention Project reviews.
- *Method used for end product validation:* Flight testing in a relevant atmospheric environment.
- *Operational training for the user:* NASA is addressing certification issues with the FAA. User training will be considered when and if the technologies are transitioned to operational use.

SCHEDULE/IMPLEMENTATION

- *Next major program milestone:* Radar system integration demonstration in FY 05.
- *Program becomes operational:* TPAWS develops enabling technologies that need to be implemented by industry or government agencies.
- *Plans for further improvements:* Continued detection algorithm development based on in-flight performance of baseline concepts.