



Transportation Research Board (TRB)

84TH Meeting: January 9 – 13, 2005

**Aircraft Particulate Matter Emissions
Session 685**

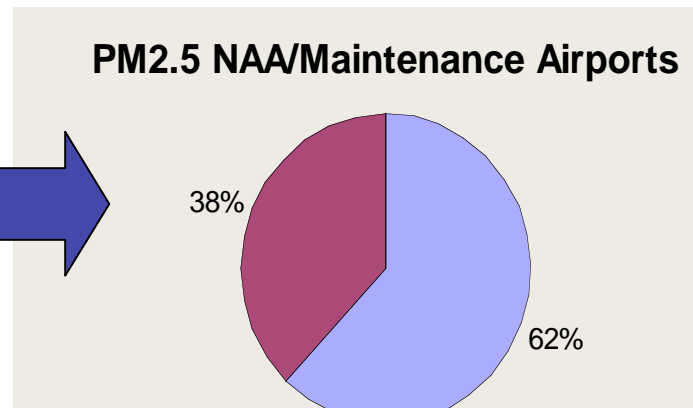
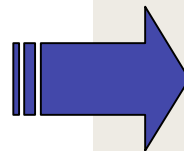
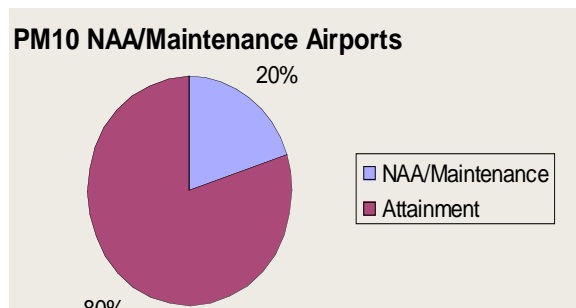
Washington, D.C.
January 12, 2005

Julie Draper
Federal Aviation Administration
Office of Environment and Energy

Motivation

PM is a Growing Concern for Aviation

- Particulate matter (PM) represents a direct threat to public health and contributes to visibility degradation... *NESCAUM, 2003*
- Data on particulate matter emissions is not available for aircraft... *GAO, 2003*
- 10 of the 50 Largest Public Use Airports in PM10 NAA/Maintenance Areas; Approximately 31 will be in PM2.5 areas... *DOT ACAIS Airport Database and EPA Green Book for Nonattainment Areas*



Motivation

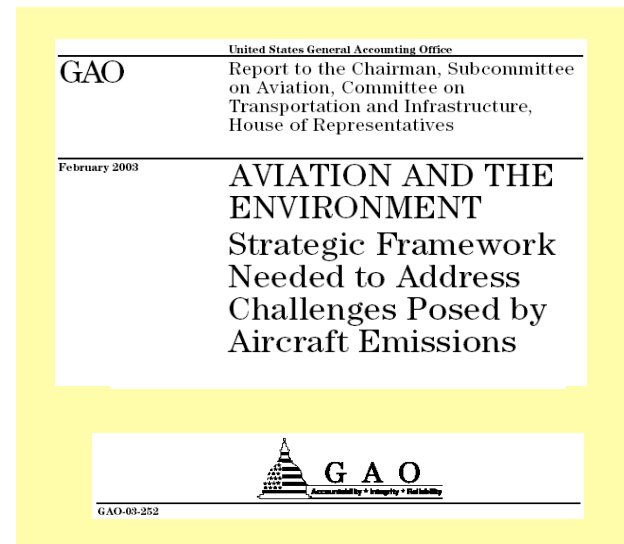
FAA Research and Engineering Development Advisory Committee (REDAC) Environment & Energy (E&E) Subcommittee Guidance (Fall 2004)

- PM issues are a reality, there are standards, and airports have to show compliance
- Airports feel the National PM Roadmap activity to understand and quantify particle emissions from aviation sources is critical
- CAEP and Europe are pursuing activities -- U.S. needs to be well informed

➤ *Recommend providing appropriate resources to expand PM measurement activities*

Additional Motivation

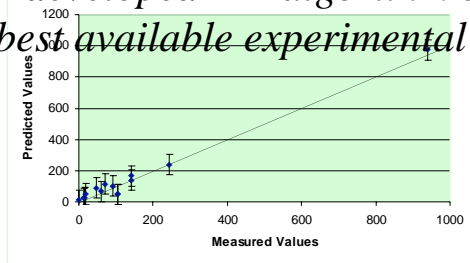
- ICAO has expressed a need to evaluate trade-offs between PM, other pollutants, and noise.
- GAO established a mandate to develop a plan to address aviation emissions by developing a Strategic Framework.



Current Activities

First Order Approximation (FOA)

FAA-developed PM algorithm based on best available experimental data



NASA's Ultra-Efficient Engine Technology (UEET) project

Striving for 70% PM emission reduction by 2007



NASA Aircraft Particle Emissions eXperiment (APEX)

Characterizing PM emissions data from commercial aircraft engines



FAA/NASA/Transport-Canada Center of Excellence (COE)

Researching measurement, metrics, and health effects of aircraft PM emissions



**Partnership for AiR Transportation
Noise and Emissions Reduction**

Current Activities - 2

Air Force (AEDC), Navy
(NAVAIR), EPA collaboration

*Measuring PM emissions from the
Joint Strike Fighter (JSF)*



Strategic Environmental Research
& Development Program (SERDP)
*Developing PM emission factors for military
aircraft*



Aircraft National PM Roadmap

*Tying together current programs to focus on
needs of ultimate users*



Today's Agenda

- John Pehrson - Camp, Dresser & McKee
 - ***Past Practices: What was Available and How it was Used***
- Ian Waitz – MIT
 - ***U.S. Commercial Inventories and Local Air Quality Effects***
- Chowen Chou Wey - NASA Glenn Research Center
 - ***APEX and Other Research Activities***
- Curtis Holsclaw - FAA Office of Environment & Energy
 - ***Aircraft National PM Roadmap***