Engine & Propeller Directorate

Aviation Safety - Aircraft Certification Service

Presented to: WTS International
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Aviation Safety (AVS) Mission

• To promote aviation safety in the interest of the American Public and the millions of people who rely on the aviation industry for business, pleasure, and commerce.
Aircraft Certification Service (AIR)

Standards
• Sets regulations and standards for design, production, and airworthiness of civil aeronautical products

Certification
• Determines eligibility and issues:
  – Design approvals for aircraft, engines, propellers, and parts
  – Production approvals for manufacturers
  – Airworthiness certificates for aircraft and parts

Continued Operational Safety
• Oversees production approval holders
• Conducts inspections and surveillance to ensure compliance with regulations
• Monitors continued operational safety of civil aircraft fleet, investigates to determine causal factors of potential or actual problem areas and determines corrective action
• Promotes safety management
• Takes enforcement action when FAA regulations have been violated
Engine and Propeller Directorate

Responsible for:

- 14 CFR part 33, airworthiness standards for aircraft engines
- 14 CFR part 35, airworthiness standards for propellers
- Policy and guidance for engines, propellers, and auxiliary power units
- Original type certification or changes to approved designs of aircraft engines, propellers and auxiliary power units
- Certification and continued operational safety of aircraft engines and propellers including imported products
Aircraft Certification Service (AIR)  
*NextGen* support

- Headquarters program office supports *NextGen* technology development
- Field offices certify aircraft level installations
  - **Local *NextGen* projects:**
    - Activation of Enhanced Vision System (EVS) on CIRRUS SR20, SR22
    - Avidyne DFC100 autopilot installed on CIRRUS SR20, SR22
    - Upgrade GPS TO Wide Area Augmentation System (WAAS) Capability and upgrades Honeywell FMZ-2000 for Localizer Performance with Vertical Guidance (LPV) on BOMBARDIER CL-600-2B16
Environmental Hazards to Engines

- **Rain and Hail**
  - Engine tests conducted at extreme levels

- **Icing**
  - Engine tests conducted at extreme levels. New rulemaking underway to further strengthen the requirements

- **Birds**
  - Engine tests conducted at extreme levels. Rule revised twice in the past decade to strengthen the requirements
Volcanic Ash and Aviation

- 9 encounters resulting in engine power loss
- No accidents
- Effects on aircraft:
  - Engine power loss, damage to electrical systems, failure of critical navigational systems, contamination of air conditioning systems, pitting of windscreen where it can become opaque
Aviation Fuels

Jet Fuel (Turbine-Engine Aircraft)

- **Challenges**
  - Price and security of supply of petroleum fuels
  - Greenhouse gas emissions from petroleum fuels

- **FAA Initiatives and Support**
  - Facilitating development and deployment of alternative jet fuels
    - Sponsor of Commercial Aviation Alternative Fuels Initiative (CAAFI)
  - Research supporting development of alternative jet fuels
    - Continuous Lower Emissions, Energy, Noise (CLEEN)

Aviation Gasoline (Piston-Engine Aircraft)

- **Challenges**
  - Aircraft piston engines require lead additive in fuel for safe operation
  - But… lead is a toxic chemical
  - Environmental pressure to remove lead from aviation gasoline

- **FAA Initiatives and Support**
  - Taking leadership role to address issue with industry
    - Unleaded Avgas Aviation Rulemaking Committee (UAT ARC)
  - Supporting industry research at FAA testing center
    - William J. Hughes Technical Center in Atlantic City, NJ
Airworthiness Directives (ADs)

• Aircraft Certification issues ADs when an unsafe condition is found in a particular aircraft, engine, propeller, or appliance and when the unsafe condition is likely to exist or develop in products of the same type design.
• ADs prescribe corrective actions, or conditions and limits under which the products may continue to be operated.
• ADs are key elements of the FAA’s safety rulemaking responsibilities.