

## **FAA's Discussion**

### **Dorenda Baker**

- Finding an unleaded replacement avgas is an important issue and is a priority for FAA Administrator Michael Huerta and the entire agency.
- We recognize the value of moving away from the last remaining leaded transportation fuel, both from an environmental perspective as well as the health benefits.
- Safety is our top priority at the FAA. And we're working closely with EPA, industry, and Congress to ensure that any unleaded replacement fuel will still maintain the highest levels of aviation safety.
- We're committed to finding a replacement for the majority of the General Aviation fleet by 2018, as outlined in Destination 2025, the FAA's Strategic Plan.
- Even before last year's FAA reauthorization, we recognized the importance of this issue. That's why the Administrator stood up the industry advisory panel in January 2011 to provide guidance to the agency as we work to find a solution.
- As requested in the GA Caucus' letter to the EPA and FAA in September 2011, we are committed to work and collaborate closely with all General Aviation stakeholders in the transition to an unleaded avgas.

## **Peter White**

### **Key Accomplishments**

The FAA created the Fuels Program Office, AIR-20, in August 2012, to lead the FAA's efforts to transition General Aviation to an unleaded avgas

- This office included the Fuels Program Branch, which will provide the “centralized certification office” concept recommended by the UAT ARC (see UAT ARC Key Rec #4)

The FAA Modernization and Reform Act of 2012 section 910 called for the FAA develop an R&D program to qualify an unleaded aviation fuel available and to safely transition the fleet of piston engine aircraft to that fuel, in collaboration with industry groups representing manufacturers, consumers, fuel producers and distributors, and other government agencies.

- This represented a transition from previous R&D efforts aimed at the evaluation of fuel formulations and additives in hopes of identifying a “drop-in” replacement for 100LL - and recognized that transitioning the fleet to a new fuel would require the collaboration of the entire community.
- The FAA issued a detailed R&D report in July 2013 in response to the Modernization and Reform act, which defines a centralized testing program for candidate unleaded fuels at the FAA's William J Hughes Technical Center (see UAT ARAC Key Rec #2) and reports on status

In June 2013, the FAA issued a solicitation for candidate unleaded fuels to participate in the FAA centralized testing program. The solicitation closes in July 2014 (see UAT ARC Key Rec #3)

The FAA and industry have formed an industry-government collaborative initiative called PAFI, and a PAFI Steering Group (PSG) to oversee this activity. The PSG charter was signed by the FAA and industry members in February 2013 (see UAT ARC Key Rec #1, 5)

AIR-20 continues to support applicants that approach the FAA directly for approvals of alternative fuels on specific models of engines/aircraft. These involve fuel offerors applying for 3rd party design approvals (STC's) and OEM's looking to amend their TC's to add new fuels

**The FAA has committed extensive resources to this program and is committed to it's success.**

## **Piston Aviation Fuels Initiative(PAFI)/PAFI Steering Group**

**Mission:** Facilitate the development and deployment of an unleaded AVGAS with the least impact on the existing piston-engine aircraft fleet. This is a govt/industry collaboration to ensure all stakeholders are involved in a coordinated approach to fleetwide implementation

- Established to develop a path forward for the identification, evaluation and fleetwide certification and deployment of the most promising unleaded replacement fuels
- Overcome the significant hurdles which have hindered past efforts to develop an unleaded avgas replacement.
- Provides a sound process to ensure that this goal is achieved with a minimum of disruption to the general aviation industry and with the greatest likelihood of marketplace success.

The PAFI process involves a two phase testing program at the FAA's Technical Center

### **FAA Technical Center Testing Program**

Phase 1 (up to 10 fuels)

- Evaluates candidate fuels for potentially show stopping issues
  - chemical makeup
  - performance properties
  - Establish credible and peer-reviewed test protocols for ascertaining necessary fit-for-purpose data
  - Fit for purpose testing across the ranges allowed by the fuel formulations (worse case formulations)
  - Evaluate emissions and toxicology properties
  - Evaluate business case for candidate fuels
    - Projected production,
    - Availability, and
    - Distribution
    - Costs

Phase 2 (up to 2 Fuels)

- Fuels to be tested at the engine and aircraft level to evaluate their suitability across as much of the existing fleet as possible
- Data collected from this testing will generate data that can be used to support the fleet wide approval of aircraft and engines including the orphaned fleet no longer supported by a manufacturer. This program is the most viable path to a fleetwide approval of new fuel formulations

Data from the Phase 1 and Phase 2 testing can also be submitted for ASTM Production Specification, which will enable the fuels to be accepted in the marketplace in an orderly and comprehensive manner. FAA involvement in this step will ensure acceptance and adoption of the fuel with consumers and across the petroleum and aviation industry.

## **Funding Discussion:**

The 2014 President's budget included \$5.571 million funding for the FAA's William J. Hughes Technical Center establishing it as the primary facility for the centralized assessment and testing that will generate standardized qualification and certification data of candidate fuels.

- This funding will be used to develop test protocols and rigs and equipment to conduct the Phase 1 testing.

## **Q & A**

- Why is finding a replacement fuel so hard?  
Alternative jet fuels all must be "drop-in" fuels – that is fuels that meet the current jet fuel specification and performance characteristics – that can be transitioned to transparently. The search for a drop –in replacement for avgas has been unsuccessful, despite decades of research by both gov't and industry. So, since the performance properties of a replacement fuel will vary in some way, the entire fleet must be evaluated for safe operation on these fuels and be certified to operate on these new fuels. Using traditional methods, this would be a complex and monumental undertaking.
- Is FAA committed to selecting the option that will have the least impact on existing aircraft?  
The PAFI program is designed to identify candidate fuels with the least impact on the existing fleet – through an extensive and comprehensive test program.
- What resources will be available for aircraft owners/operators once a replacement is chosen, to help them with the transition? Will there be financial resources to offset the cost to owners?  
PAFI involves all stakeholders to ensure that transition will be as smooth as possible – across all aspects of implementation (production, distribution, certification, and operation). Replacement fuel candidates will ideally identify a large portion of the existing fleet as "transparent" – i.e. require no or very minimal modifications to operate on the new fuels. Engines and aircraft requiring more extensive modifications will require additional technical and financial resources to be applied.
- Do you have an estimate of how much it will cost to find a replacement fuel?  
The Section 910 report identifies a plan and provides cost estimates for the test program outlined here today. Note that this does not include other FAA and gov't agency and industry "in-kind" contributions that will need to be made to find and implement a replacement fuel. The UAT ARC report provides estimates for these other costs.