Alternative Jet Fuel (AJF) Certification
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Acronym Listing
(In Order of Appearance)

• SLIDE 3:
  – AJF: Alternative Jet Fuel
  – SAIB: Special Airworthiness Information Bulletin

• SLIDE 4:
  – CAAFI: Commercial Aviation Alternative Fuel Initiative
  – FT-SPK: Fischer-Tropsch Synthesized Paraffinic Kerosene
  – HEFA: Hydroprocessed Esters and Fatty Acids
  – SIP: Synthesized Iso-Paraffins
  – FT-SPK/A: FT-SPK with Aromatics
  – ATJ-SPK: Alcohol to Jet Synthesized Paraffinic Kerosene

• SLIDE 6:
  – HDCJ: Hydroprocessed Depolymerized Cellulosic Jet
  – HFP-HEFA: High Freeze Point HEFA
  – Virent SAK: Synthesized Aromatic Kerosene
  – Virent SK: Synthesized Kerosene

• SLIDE 7:
  • OEM: Original Equipment Manufacturer (aircraft or engine)

• SLIDE 8:
  – ASCENT: FAA Aviation Sustainability Center of Excellence
How Do We Certify AJF?

**GIVEN:** Aircraft are Certified to Operate on a Specified Fuel

**1.** Aircraft are Certified to Operate on a Specified Fuel

**2.** Conventional Jet Fuel Specification

**3.** Evaluation Process

**4.** Drop-In AJF Specification

**THEN:**

New AJF Approved to Use on Virtually All Existing Aircraft

**IF:**

New AJF Found to be Equivalent to Conventional Jet Fuel Using Industry Process

**THEN:**

Annex with New AJF Added to Drop-In Fuel Spec

**GIVEN:**

Aircraft are Certified to Operate on a Specified Fuel

- FAA Bulletin SAIB NE-11-56R2
- Drop-In Fuels Also Meet Conventional Fuel Spec
- D4054
- D1655
- D7566
- FAA Bulletin NE-11-56R2
A Decade of Progress
D7566 Drop-In Fuel Spec

May 24, 2006
CAAFI
Established

June 2009
FT-SPK Annex A1

June 2014
SIP Annex A3

July 2011
HEFA-SPK Annex A2

November 2015
FT-SPK/A Annex A4

April 2016
ATJ-SPK Annex A5
The Current Challenge

Let's Take a Closer Look at the Evaluation Process

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- Conventional Jet Fuel Specification
- Drop-In AJF Specification

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**ASTM D4054 Evaluation Process**

**Let's Take a Closer Look at the Evaluation Process**

**GIVEN:** Drop-In Fuels Also Meet Conventional Fuel Spec
**D4054 Qualification Process**

**Tier 1**
- ATJ-SKA (Byogy, Swed Biofuels)
- HDCJ (KIOR) (Inactive)

**Tier 2**
- Specification Properties
- Fit-For-Purpose Properties

**Tier 3**
- HFP-HEFA (Green Diesel)
- ATJ-SKP (Ethanol) (LanzaTech)
- Virent SAK

**Tier 4**
- Component/Rig Testing
- Engine/APU Testing

OEM Review & Approval

- Annex A1 FT-SPK
- Annex A2 HEFA
- Annex A3 SIP
- Annex A4 FT-SKA
- Annex A5 ATJ SPK (Isobutanol)
OEM Review Process

- Conducted by OEM Engineering/Technical Organizations:
  - Resource Intensive Process
  - Rigorous and Comprehensive Technical Review
  - Takes Time and Funding

Driven by Engagement/Priority from Airline Community
D4054 Clearinghouse Concept

- **Structured as a Cost Share Arrangement**
- **FAA Seed Money Under ASCENT Center of Excellence**
- **Accepts In-Kind Contributions (testing partners)**
- **Also Accepts Direct Contributions**

**University of Dayton Research Institute (UDRI)**

- **Candidate AJF In**

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**Stakeholder Engagement /Support Needed!**

**Final Research Report Out**
Policy Requests

1. Direct R&D resources and funding to the D4054 Clearinghouse to support the testing and evaluation of candidate alternative jet fuels.

2. Direct state-domestic candidate AJF producers to ASTM and support their qualification effort at ASTM.

3. Communicate the drop-in AJF certification concept as described in FAA SAIB NE-11-56R2 to domestic aviation regulatory agencies and issue similar communications to domestic aviation community.