Sustainable Alternative Jet Fuel Certification and Qualification
Washington, DC
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Cert-Qual Sessions Overview

You Are Here

Plenary
SAJF Certification and Qualification

- Certification Overview
- SAJF Approval Status
- The Path Forward

Unconference 1
Enhancing Fuel Qualification Process
- OEM Review Process
- Stakeholder Engagement
- Approval Process Improvements

Unconference 2
Key Fuel Qualification Challenges
- Key Technical Issues
- SAJF Compositional Considerations

Cert-Qual Breakout
- Centralized Mgt of D4054 Test & Review Process
- Generic Spec
Building a Bridge Over Technology’s Valley of Death

- No Market for Product
- Cost of Plant
- Volatility of World Oil Price
- Difficult to Finance
- New Integrated Business that Doesn’t Fit Many Corporate Cultures

Risk:
- Product Not Approved for Use
- Lack of Incentives and Long Term Contracts
- Difficulty Certifying Jet Fuel

Ref: Presentation AFRL (W. Harrison), 8/15/06
How do we Certify SAJF?

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

2. Conventional Jet Fuel Specification

3. SAJF Evaluation Process:
   - Each New SAJF
   - D7566 Drop-In Fuels Also Meet Conventional Fuel Spec

4. **THEN:**
   - New SAFJ Approved to Use on Virtually All Existing Aircraft
   - Annex with New SAFJ Added to D7566 Drop-In Fuel Spec

**IF:** New SAJF Determined to Be Equivalent to Conventional Jet Fuel Using D4054 Industry Process

**GIVEN:**
- Conventional Jet Fuel Specification
- Drop-In SAJF Specification
A Decade of Alternative Jet Fuel

- May 24, 2006: CAAFI Established
- June 2009: FT-SPK Annex A1
- June 2009: ASTM D7566 Issued
- December 2009: ASTM D4054 Issued
- July 2011: HEFA-SPK Annex A2
- June 2014: SIP Annex A3
- November 2015: FT-SPK/A Annex A4
- April 2016: ATJ-SPK Annex A2

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Let's Take a Closer Look at the Evaluation Process

**ASTM D4054 Evaluation Process**

1. **Given:** Aircraft are certified to operate on a specified fuel.
2. **Conventional Jet Fuel Specification** ➔ **Drop-In SAJF Specification**
3. **SAJF Evaluation Process**
   - New SAJF determined to be equivalent to conventional jet fuel using D4054 industry process.
4. **Then:** Annex with new SAJF added to D7566 drop-in fuel spec.
Provides Feedback on Suitability of Product for Use on Aircraft/Engines/APUs

Necessary for FAA to Make a Determination that D1655 will Continue to Provide Airworthy Fuel

Certification Basis is Maintained on All Aircraft/Engines

Required for Proposed Alternative Fuel to Advance to ASTM Balloting
FAA Acceptance of D7566 SAJFs

Mark Rumizen, May 4, 2015

SPECIAL AIRWORTHINESS INFORMATION BULLETIN

SUBJ: Engine Fuel and Control - Semi-Synthetic Jet Fuel
This is information only. Recommendations aren’t mandatory.

Date: May 19, 2016

Introduction

This Revised Special Airworthiness Information Bulletin (SAIB) advises aircraft operators, fixed base operators, certificated repair facilities, Flight Standard District Offices, Certificate Management Offices, and Foreign Civil Aviation Authorities that jet fuel made from the following synthetic blending components that meet the requirements of ASTM International Standard D7566 are acceptable for use on aircraft and engines certificated for operation with D1655 Jet A or Jet A-1 jet fuel if they are re-identified as D1655 fuel:

- Fischer Tropsch synthesized isoparaffinic kerosene (FT-SPK),
- hydroprocessed fatty acid esters and fatty acids (HEFA),
- synthesized isoparaffins (SIP),
- Fischer Tropsch synthesized kerosene with aromatics (FT-SKA), and
- alcohol to jet (ATJ).

When D7566 jet fuels are re-identified as D1655 fuel, they meet all the specification requirements of D1655 fuel and, therefore, meet the approved operating limitations for aircraft and engines certificated to operate with D1655 fuel, unless otherwise prohibited by the engine or aircraft type certificate (TC) holder. We are revising this SAIB to add FT-SKA and ATJ as synthetic blending components that conform to ASTM International Standard D7566.
SAJF Status

Collecting Tier 1 & 2 Data & Developing Reports

- Virent SK (inactive)
- ATJ-SKA (Byogy, Swedish Biofuels)
- Green Diesel (HEFA Plus)

Collecting Tier 3 & 4 Data & Developing Reports

- Virent SAK
- ATJ-SPK (Ethanol) (LanzaTech)

Approved Fuels

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

Currently In Review Process

- Global BioEnergies?
- POET?
- SBI BioEnergies?
- Joule?
- GSR/GTI?
- Vertimas?

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FT-SPK

Annex A1
FT-SPK

Annex A2
HEFA

Annex A3
SIP

Annex A4
FT-SKA

Annex A5
ATJ SPK (Isobutanol)

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Stakeholder Support/Engagement Necessary to Keep Certification Approval Process Moving

Fuel Producers:
- Build Pilot/Demo Plants and Make Fuel

Airlines:
- Establish SAJF as a Priority with Suppliers

Engine/Aircraft OEMs:
- Allocate Resources to Support Testing of Fuels and Review of Data
Thank You

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