

Educating Future Aviation Technologists on ASTM Turbine Fuel Standard Specifications

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Aviation industry's vast and global nature demands future technologies who are able to handle a wide array of scientific, technical, economic, and political challenges. Thus, teaching techniques utilized by the educators should be well beyond the conventional "sage on stage", transforming professors into rather a "guide on the side".

Knowledge Economy →

Thinking Economy

Objective – "Aviation Fuels" Course Implementation

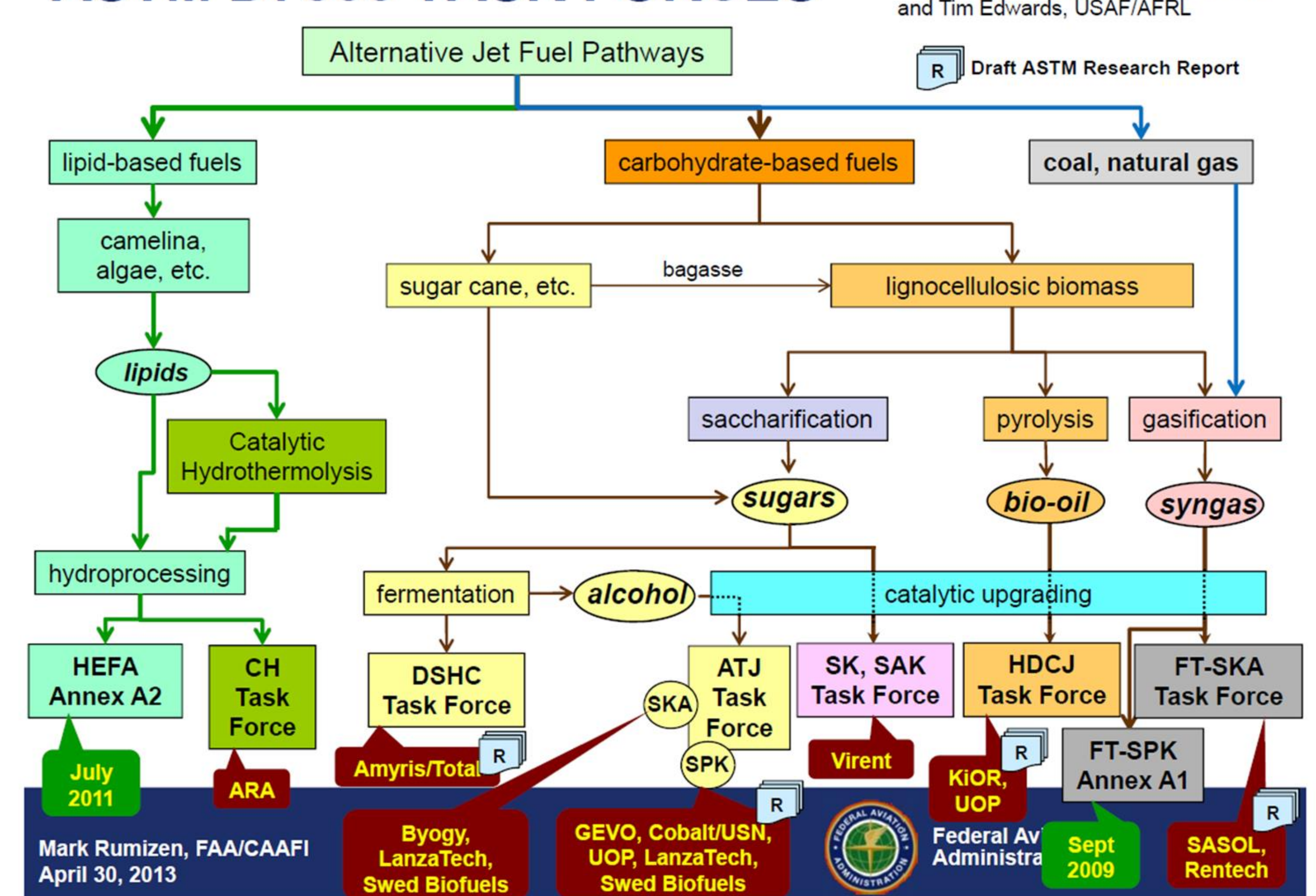
- ✓ **Learning by doing**
- ✓ **Industry centered**
- ✓ **ASTM D1655, ASTM D4054 and ASTM D7566**

- Conventional Jet Fuel
- Fischer-Tropsch (FT)
- Hydroprocessed Esters and Fatty Esters (HEFA)
- Synthetized Iso-Paraffins (SIP)

Purdue Polytechnic Institute (PPI)
<https://polytechhub.org/>

ASTM D7566 TASK FORCES

Adapted from Brown, Iowa State, 2012 and Tim Edwards, USAF/AFRL

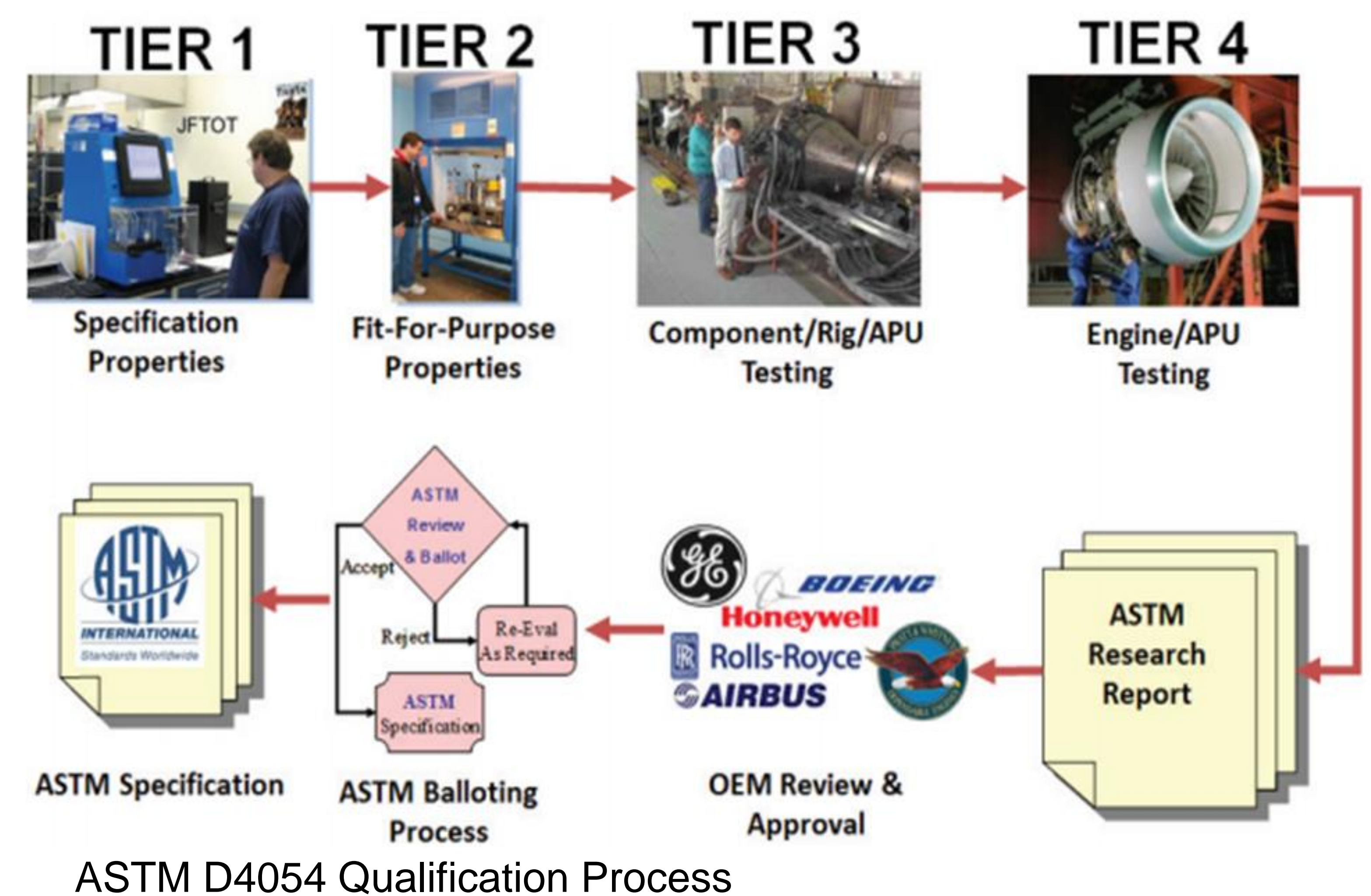


Pedagogy and Methodology

- * **Guest lectures from industry**
- * **Field trips to fuel manufacturing sites**
- * **Lab projects - testing equipment & procedures**

Learning Outcomes

1. **Classify fuel properties and characteristics**
2. **Recognize conventional & alternative processes**
3. **Identify various grades and types of aviation fuels**
4. **Differentiate technologies specific to feedstock**
5. **Design fuel testing and interpret data**
6. **Predict "fuel readiness level"**



Reference

1. ASTM. (April 2010). D4054-09: Standard practice for qualification and approval of new aviation turbine fuels and fuel additives. DOI:10.1520/D4054-09
2. ASTM. (December 2013). D1655-13a: Standard specification for aviation turbine fuels. DOI:10.1520/D1655-13a
3. ASTM. (June 2014). D7566-14a: Standard specification for aviation turbine fuel containing synthesized hydrocarbons. DOI:10.1520/D7566-14a

