Documentation, Monitoring and Laboratory Testing of Aviation Fuel During Shipment from Refinery to Airport

API RECOMMENDED PRACTICE 1543
FIRST EDITION, JULY 2009

REAFFIRMED, APRIL 2019

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Downstream Segment

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Introduction

Aviation fuels pass through a variety of storage and handling facilities from refinery to airport. As aviation fuels are stored and transported in storage and transportation systems where contact with non-aviation products may occur (e.g. multiproduct pipelines, nondedicated ship or barge) a fuel quality monitoring program is required in addition to equipment, operating, inspection and maintenance standards. This program should consist of documentation from the refinery source showing the quality of fuel being released which can be compared to ongoing monitoring of the fuel at downstream sites, typically by laboratory means as it is transported towards the aircraft. The purpose of this practice is to ensure the fuel remains on specification.

If this original documentation is not available then full certificate of analysis (COA) laboratory testing is required to verify the fuel is still within the limits of the fuel specification. Although in this case the amount, type, and usage of approved additives in the fuel is unknown.

The consequences of a failure to supply the correct, on specification product to aircraft is potentially so serious that it is essential for each organization in the supply chain have a fuel quality monitoring program in place with documents demonstrating that the fuel continues to meet the original fuel specification.

This RP provides guidance for documenting, ongoing monitoring and laboratory testing (fuel quality monitoring program) of aviation fuel quality throughout the supply chain. This document is not intended to offer guidance on all aspects of fuel handling.

An effective fuel quality monitoring program will facilitate the delivery of on specification fuel which is fit for use. Fit for use means that the fuel not only meets the relevant specification, but also is essentially free of non-aviation products, unapproved additives and other contaminants.

Design, construction, operations, maintenance and additional inspection requirements for pre-airfield storage terminals can be found in API 1595.

Design, construction, operations, maintenance and additional inspection requirements for airport facilities can be found in the airport site operations standard/manual (i.e. ATA 103 or other applicable industry standards). Additional information may be found in API/EI 1540.

Documentation, Monitoring and Laboratory Testing of Aviation Fuel During Shipment from Refinery to Airport

1 Scope and Purpose

This recommended practice (RP) was developed to provide guidance on the development of an aviation fuel monitoring and testing program (fuel quality monitoring program) for aviation fuel from point of manufacture to delivery to the airport. “Proper handling” entails documenting and testing aviation fuel quality as product is transported throughout the supply chain to maintain the original product specification.

Mandatory requirements in this standard are designated by the word “shall.” Recommendations are designated by the word “should.” Optional items are designated by the word “may.” This standard incorporates by reference a number of other standards and RPs that need to be referred. The distinction between mandatory, recommended and optional provisions in the referenced documents are not changed by nature of their reference in this standard.

The values stated for this standard are in U.S. (USC) customary units.

2 References

The following referenced documents are cited in this document for informational purposes. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

API *Manual of Petroleum Measurement Standards* (*MPMS*) Chapter 8, *Sampling*

API Recommended Practice 1540, *Design, Construction, Operation and Maintenance of Aviation Fueling Facilities, IP Model Code of Safe Practice Part 7*

API Recommended Practice 1595, *Design, Construction, Operation, Maintenance, and Inspection of Aviation Pre-airfield Storage Terminals*

ASTM D156 [1], *Standard Test Method for Saybolt Color of Petroleum Products (Saybolt Chromometer Method)*

ASTM D910, *Standard Specification for Aviation Gasolines*

ASTM D1655, *Standard Specification for Aviation Turbine Fuels*

ASTM D3420, *Standard Test Method for Pendulum Impact Resistance of Plastic Film*

ASTM D4057, *Standard Practice for Manual Sampling of Petroleum and Petroleum Products*

ASTM D4306, *Standard Practice for Aviation Fuel Sample Containers for Tests Affected by Trace Contamination*

ASTM E1, *Standard Specification for ASTM Liquid-in-Glass Thermometers*

ASTM E100, *Standard Specification for ASTM Hydrometers*

ATA 103 [2], *Standard for Jet Fuel Quality Control at Airports*

EI HM50 [3], *Guidelines for the Cleaning of Tanks and Lines for Marine Tank Vessels Carrying Petroleum and Refined Products*

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1 ASTM International, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428, www.astm.org.
2 Air Transport Association, 1301 Pennsylvania Ave, NW, Suite 1100, Washington, DC 20004, www.airlines.org.
3 Energy Institute, 61 New Cavendish Street, London, UK W1G 7AR, www.energyinst.org.