



# Advisory Circular

CAA-AC-AWS28

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## REFUELLING PROCEDURES AND FACILITIES

### 1.0 PURPOSE

This Advisory Circular (AC) is issued to give information and guidance on regulatory requirements and general basic refuelling procedures and facilities.

### 2.0 REFERENCE

The Civil Aviation (Airworthiness) Regulations.

### 3.0 OBJECTIVE.

#### 3.1 Procedures for handling and dispensing aircraft fuels.

The following must be included in the manual:

- i. Dispensing equipment procedures;
- ii. Electrostatic protection procedures;
- iii. Contamination protection procedures; and
- iv. Related recordkeeping procedures.

**3.2 Manual.** The applicant's manual must include procedures for vendors and contractors concerning refueling procedures and facilities. It should also establish standards for refueling, facilities and the applicant's overall responsibility for conducting the operations within established industry standards.

### 4.0 FUELS.

**4.1 Aviation Gasoline (AVGAS).** The naming system for the grades of aviation gasoline is derived from the general term “AVGAS” followed by the grade marking. The grades are identified by their performance numbers, as recognized by all military and commercial specifications (e.g., 80, 100LL, and 100).

The naming system for AVGAS grades is printed on all containers in white letters and numbers on a red background.

Storage containers are also marked with a circular band around the piping, the color of which matches the dye in the AVGAS flowing through the line. The dyes are red for AVGAS 80, blue for AVGAS 100LL, and green for AVGAS 100. A minimum 4-inch wide band is recommended. If the pipeline is painted the color of the AVGAS, then no banding is needed.

**4.2 Jet Fuels.** The classifications of aviation turbine fuels are universally referred to as “jet fuels.”

The naming system for the jet fuel is printed on all containers in white letters on a black background to distinguish it from aviation gasoline.

Examples of jet fuel storage container markings include the following:

**Jet A fuel** containers are marked with a single 4-inch wide (minimum) black band around the piping;

**Jet A-1** fuel containers are marked with two 4-inch wide (minimum) black bands; and

**Jet B-1** fuel containers are marked with three 4-inch wide (minimum) yellow bands.

**5.0 GEOGRAPHIC CONSIDERATIONS.** Inspections of contract fueling facilities by the office having the geographic responsibility must be coordinated with the Authority.

## **6.0 PROCEDURES.**

a) The manual indicates whether services will be performed by the operator or contracted out.

b) The manual defines the following:

- i. Lines of authority and responsibilities.
- ii. The training program.
- c) The manual contains procedures for the following:
  - i. Inspection of incoming fuels;
  - ii. Elimination of fuel contamination;
  - iii. Use of dispensing equipment;

- iv. Refueling and defueling, by specific make and model of aircraft;
  - v. Protection from fire (including electrostatic protection); and
  - vi. Supervising and protecting passengers during refueling.
- d) The manual includes procedures for record retention and ongoing inspections of the following:
- i. Fuel (checks, etc.)
  - ii. Storage facilities and dispensing equipment;
  - iii. Filters.
  - iv. Safety equipment
  - v. Training programs for servicing personnel.
  - vi. Individual training records; and
  - vii. Vendors (in accordance with applicant's program).

## **7.0 Facilities.**

a) The following should be in place;

- i. Personnel training requirements are documented and current;
- ii. Training is conducted according to the manual curriculum;
- iii. Piping is marked and color-coded to identify fuel type and grade; and
- iv. Control/cutoff valves are clearly marked with instructions for emergency use (e.g., on/off).

b) The fuel farm/storage area provides for the following:

- i. Proper security (fenced and posted);
- ii. Proper display of "Flammable" and "No Smoking" signs; and markings to identify type/grade of fuel.

c) The equipment should include the following:

- i. A positive low point sump; and

- ii. Adequate fire extinguishers.
- d) The fuel filters/filter separators contain, at a minimum, the following:
  - i. An inlet strainer;
  - ii. Inflow and outflow filter/separators sized to match maximum pump flow capacity;
  - iii. Differential pressure check system;
  - iv. Positive water defense system;
  - v. Sump drain with outlet located to facilitate capture of outflow; and
  - vi. Fuel sampling (Millipore or equivalent) fittings downstream of all filters and filter/separators.
- e) The hoses, nozzles, and outflow connectors are:
  - i. Specifically designed and tested for delivery of aviation fuels;
  - ii. Controlled by spring-loaded, non-bypassable automatic (deadman) fuel flow cutoff valves;
  - iii. Equipped with dust cap or other feature that will minimize contaminant introduction into fuel/system;
  - iv. Equipped with non-bypassable 100 mesh nozzle/connector screens; and color coded to identify fuel type.

The electrical equipment, switches, and wiring will be of a type or design approved for use in hazardous locations (explosion proof, e.g., free of exposed conductors, contacts, switches, connectors, motors).

The grounding and bonding equipment ensures that piping, filters, tanks, and electrical components are electrically bonded together and interconnected to an adequate electrical ground. The system should have ground wires, bonding wires, and clamps adequate to facilitate prompt, definite electrical ground connection between the fueler/pit/cabinet, grounding system, and aircraft being fueled.

Fuel tenders and fueling pits should have the following:

- i. Appropriate markings displayed (e.g., “DANGER,” “FLAMMABLE,” “NO SMOKING,” fuel grade, standard hazardous material placard, filter due dates, and emergency fuel shutoff);
- ii. Appropriately placed fire extinguishers; and
- iii. Air filter/spark arrestor and a leak-free exhaust system terminating in a standard baffled original equipment type muffler, if equipped with internal combustion engine.

A handwritten signature in dark ink, appearing to read 'James', with a horizontal line underneath it.

**Civil Aviation Authority**