

DNRC Fuel Servicing & Equipment Requirements

1. General

- a. The fuel servicing vehicle must be inspected and approved annually and must be stationed as assigned by the requesting agency.
- b. The fuel servicing vehicle must be capable of transporting fuel over typical local terrain to include unmaintained roads and grades of up to 9%. Fuel tank/chassis combinations must meet DOT requirements.
- c. Fuel tank/chassis combinations that are not compatible and/or that exceed the gross vehicle weight rating (GVWR) when tank(s) are full are not permitted.
- d. Fuel servicing vehicles must be properly maintained, cleaned, and reliable. Tanks, plumbing, filters, and other required equipment must be free of leaks, rust, scale, dirt, and other contaminants. Trailers used for the storage and transport of fuel must have an effective wheel braking system.
- e. Spare filters, seals, and other components of the fuel servicing vehicle filtering system must be stored in a clean, dry area in the fuel servicing vehicle. A minimum of one set is required to be with the vehicle.
- f. The fuel servicing vehicle tank capacity must be sufficient to sustain 8 hours of flight (14 hours of flight when the aircraft is doubled crewed and required in the Schedule of Items). Note that the aircraft's fuel load, at the start of the day, may be considered part of the sustained flight time requirement. Barrels are not acceptable. The fuel servicing vehicle manufacturers' gross vehicle weight (GVW), with a full fuel tank, must not be exceeded.
- g. All tanks will be securely fastened to the vehicle frame in accordance with DOT regulations and must have a sump or sediment settling area of adequate capacity to provide uncontaminated fuel to the filter.
- h. A 10 gallon per minute filter and pump is the minimum size acceptable. Filter and pump systems sizes must be compatible with the aircraft being serviced.
- i. The filter manufacturer's Operating, Installation, and Service Manual must be with the fuel servicing vehicle. Filters must be changed in accordance with the filter manufacturer's manual, at a minimum of every 12 months, whichever is less, and documented. The filter vessel must be placarded indicating filter change date and documented in the service vehicle log.
- j. Gasoline engine-driven pumps must be designed to pump fuel, have a shielded ignition system, Forest Service approved spark arrestor muffler, and a metal shield between the engine and pump. Other exposed terminal connections must be insulated to prevent sparking in the event of contact with conductive material.

2. Equipment

- a. Each aircraft fuel servicing tank vehicle must have two fire extinguishers, each having a rating of at least 40-B:C with one extinguisher mounted on each side of the vehicle. Extinguishers must comply with NFPA 10 Standards for Portable Fire Extinguishers. Fire extinguishers with an A rating will not be acceptable.
- b. Fuel tanks must be designed to allow contaminants to be removed from the sediment settling area.
- c. Fuel hoses must be compatible with the fuel being dispensed. Hoses must be kept in good repair. The fueling hose length must be a minimum of ½ the rotor diameter plus 20 feet for rapid refueling. Aircraft fueling hose shall be removed from service after 10 years from date of manufacture. Aircraft fueling hose not placed into service within 2 years of the date of manufacture shall not be used. (NFPA 407)
- d. Fuel nozzle must include a 100-mesh or finer screen, a dust protective device, and a bonding cable with a clip or plug. Except for closed-circuit systems, no hold-open devices will be permitted.
- e. An accurate fuel metering device for registering quantities in U.S. gallons of fuel pumped must be provided. The meter must be positioned in full view of the fuel handler while fueling the aircraft.
- f. Fuel servicing vehicles must have adequate bonding cables.
- g. Fuel servicing vehicles must comply with DOT and EPA requirements for transportation and storage of fuel and must carry sufficient petroleum product absorbent pads or materials to absorb or contain up to a five-gallon petroleum product spill. The cooperators are responsible for proper disposal of all products used in the cleanup of a spill in accordance with the EPA, 40 CFR 261, and 262.
- h. All tank inlet ports, drains, and the fuel nozzle must be locked closed or stored inside locked compartments when not in use to preclude tampering, contamination, or improper drainage of the fuel supply.
- i. A deadman flow control must be installed in the fuel system in accordance with NFPA 407.

3. Markings

- a. Each fuel servicing vehicle must have no smoking signs with minimum three-inch letters visible from both sides and rear of the vehicle.
- b. Each vehicle must also be conspicuously and legibly marked to indicate the nature of the fuel. The marking must be on each side and the rear in letters at least three inches high on a background of sharply contrasting color such as Avgas by grade or jet fuel by type. Example: Jet-A, white on black background.
- c. All fuel servicing vehicles must be placarded in accordance with 49 CFR 172.

4. Filtering System (Three-Stage or Single-Stage is acceptable)

- a. The first and third-stage elements of a three-stage system and the elements of a single-stage system must be new and installed by the cooperator during the annual inspection.
- b. The separator element (Teflon screen) of the three-stage system must be inspected and tested as prescribed by the manufacturer during the inspection. The filter assembly must be placarded with that data.
- c. If equipped with a drain, the bottom of the filter assembly must be mounted to allow for draining and pressure flushing into a container. If the unit is drained overboard, the fuel must not come in contact with the exhaust system or the vehicle's wheels. If the unit is equipped with a water sight gauge, the balls must be visible.
- d. Three-Stage (filter, water separator, monitor) System: Fueling systems must utilize a three-stage system such as a Facet Part Number 050970-M2 for 20 Gallon Per Minute (gpm) pump, or equal. A Facet Part Number 050971-M2 for a 10 gallon per minute pump, or equal. An acceptable third-stage (monitor) unit is Velcon CDF220 Series for 20-gpm flow or Velcon CDF-210E for 10-gpm systems.
- e. Single-Stage System or Three-in-One Filter Canister: Fueling systems must utilize a single element system such as a Velcon. filter canister with Aquacon cartridge of a size compatible with pumps flow rate. Example: Velcon VF-61 canister with an ACO-51201C cartridge.
- f. Differential pressure gauge(s) must be installed and readable.

5. Fuel Servicing

a. General

- i. The cooperator must supply all aircraft fuel unless the government exercises the option of providing fuel. All fuel provided by the cooperator will be commercial-grade aviation fuel. Only fuels meeting the specifications contained in the aircraft's flight manual must be used.
- ii. Fueling operations, including storage, and handling, must comply with the airframe and engine manufacturer's recommendations and all applicable FAA standards. NFPA Standard No. 407, Aircraft Fuel Servicing, must be followed except that no passengers may be on board during fueling operations.
- iii. The cooperator must ensure that they are in compliance with 40 CFR Part 112: Oil Pollution Prevention; Spill Prevention, Control, and Countermeasure Plan Requirements (SPCC).
- iv. Fuel must pass through a filtering system in accordance with the filter manufacturer's recommendations.

b. Rapid Refueling

- i. There are two approved methods (Closed-Circuit Refueling (CCR) and Open Port) for fueling helicopters with the engine(s) running. (1) CCR. This method of refueling uses a

CCR system designed to prevent spills, minimized fuel contamination, and prevent the escape of flammable fuel vapors. (2) Open Port. This method of refueling allows flammable fuel vapors to escape.

6. Fuel Quality Control Procedures

Compliance with fuel quality control requirements is the responsibility of the cooperater. NFPA 407 must be followed for Aircraft Fuel Servicing. Note 1: Cooperators must advise an appropriate inspector if consecutive contaminated samples are collected from any port.

a. Daily

- i. Check for and remove any water from fuel tanks. A water check will be performed each morning before the vehicle is moved, after every reloading of fuel, washing of equipment, and after a heavy rain or snowstorm.
- ii. Drain all filter/separator drain valves and check for water and other contaminants. raw off any accumulation of water.
- iii. Draw off a sample from the fuel nozzle. Sample must be collected in a clean, clear lass jar, and examined visually. Any visual water, dirt, or filter fibers are not acceptable.

b. During Aircraft Fueling Process

- i. Check sight gauge for water, if equipped.
- ii. Visually inspect fuel system for leaks. Repair as necessary.
- iii. Monitor differential pressure reading.

c. Weekly

- i. With pump operating, pressure flush filter assembly. Continue flush operation until the sample is clear, clean, and bright.
- ii. Sample from closed-circuit nozzle for contaminants.
- iii. Check the condition of covers, gaskets, and vents.
- iv. Inspect all fire extinguishers for broken seals, proper pressure, and recharge date. Recharge as necessary.
- v. Inspect hoses for abrasions, separations, or soft spots. Weak hoses will be replaced.

d. Record Keeping. The fuel handler must keep a daily record containing the following information: (as a minimum)

i. Condition (clean, clear, bright, etc.) of fuel sample at:

- (1) Nozzle Sample
- (2) Filter Sump Sample
- (3) Tank Sump Sample

ii. Filter change (reason & date)

iii. Record of source, location, when, and quantity of fuel loaded into the fuel servicing vehicle.

iv. Fuel servicing vehicle tank ports will be secured and locked to prevent access by unauthorized individuals.