

Fueling Inspections

International and FAA Fuel Fire Safety ICAO Annex 14, Chapter 9

Presented to: ICAO / FAA Aerodrome Certification
Inspectors Workshop for the Caribbean Region

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Federal Aviation
Administration



Fueling Safety



Fueling Safety

Fire safety standards for fueling operations are required to be established to prevent fires during fueling operations. This incident was caused by an engine fire in the tanker.



Fueling Safety

Fire safety standards for fueling operations are required to be established to prevent fires during fueling operations. This incident was caused by improper bonding.



Fueling Safety

Aircraft Fuel Servicing Tank Vehicle



Aircraft fuel servicing tank vehicles are vehicles having a cargo tank used in the transportation and transfer of fuel into or from an aircraft.

Fueling Safety



Aircraft fuel servicing hydrant vehicles do not have tanks. These vehicles connect to a pressurized Airport Fueling System hydrant and transfer the fuel to the aircraft through a filter.

Fueling Safety

Aircraft Fuel Servicing Cart



Aircraft fuel servicing carts are equipped with facilities to transfer fuel between a Airport Fueling System hydrant and an aircraft and are normally parked at a fixed location near a gate.

ICAO Fueling Safety

Annex 14 Section 9.6 Ground servicing of aircraft

- 9.6.1 Fire extinguishing equipment suitable for at least initial intervention in the event of a fuel fire and personnel trained in its use shall be readily available during the ground servicing of an aircraft, and there shall be a means of quickly summoning
- the rescue and fire fighting service in the event of a fire or major fuel spill.

ICAO Fueling Safety

9.6 Ground servicing of aircraft

- 9.6.2 When aircraft refuelling operations take place while passengers are embarking, on board or disembarking, ground equipment shall be positioned so as to allow:
 - a) the use of a sufficient number of exits for expeditious evacuation; and
 - b) a ready escape route from each of the exits to be used in an emergency

Fueling Safety

- ICAO Annex 14 does not include standards for fueling operations, so this session only addresses FAA requirements and does not include a comparison of ICAO standards and practices for fueling operations.
- Other National aerodrome certification regulations may include fuel quality control in addition to fire safety standards for fueling operations, depending on how the National Civil Aviation Authority is organized.

U. S. Fueling Safety

U.S. Aviation Fueling Requirements

FAA Part 139 only addresses fire safety standards for fueling operations. Fuel quality control is inspected by the FAA Flight Standards Division Inspectors as part of inspecting airline operations. Inspection of fuel quality control by FAA Airports Division Airport Certification Inspectors would be a duplication of FAA regulations.

U. S. Fueling Safety

U.S. Fueling Fire Codes

- Inspection of airport fueling systems and mobile fuelers addressed in this session are based on the National Fire Protection Association (NFPA) 407, *Standard for Aircraft Fuel Servicing, 2001 Edition*, and NFPA 30, *Flammable and Combustible Liquids Code*.

National Fueling Standards



U. S. Fueling Safety

National Fire Protection Association (NFPA) Standards NFPA 407, *Standard for Aircraft Fuel Servicing.*

The purpose of this standard is to establish reasonable minimum fire safety requirements for procedures, equipment, and installations for the protection of persons, aircraft, and other property during ground fuel servicing of aircraft using liquid petroleum fuels. These requirements are based upon sound engineering principles, test data, and field experience.

Fueling Safety

Purpose of Fueling Inspection

- The fueling inspection is conducted for compliance to the airport fire safety standards listed in the Airport Certification Manual or the Fire Code attached to the ACM.
- The purpose of conducting inspections of fueling facilities and mobile fuelers is to check for fueling agent compliance to the airport operator's fire safety standards

Fueling Agents

The FAA defines “fueling agent” as “a person or company that sells fuel on the airport.”



Fueling Safety

Fueling Inspection:

- The FAA requires airport operators to conduct inspections of their fueling agents for compliance to the airport's fire safety standards every three (3) calendar months.
- FAA inspections of fueling facilities and fuelers are basically an evaluation of the airport's required fueling inspection program.

Fueling Safety

Conducting the Inspection



Fuel Inspection Checklists

FIRE SAFETY INSPECTION ATTACHMENT 321-3

FUEL STORAGE AREAS LOADING /UNLOADING STATIONS

AIRPORT: The Eastern Iowa Airport (CID)
 FUELING AGENT: LANDMARK
 DATE: 10/30/06

QTR 1 ☐ QTR 2 ☐
 QTR 3 ☐ QTR 4 ☐ FOLLOW UP ☒

	JET A			100LL			GASOLINE			DIESEL		
	S	U	R	S	U	R	S	U	R	S	U	R
Fencing/locks												
No Smoking Signs/ No Evidence of Smoking												
All tanks, machinery, piping is bonded or grounded												
Emergency fuel shut off provided/Outside spill area												
Emergency fuel shutoff placards, 7 ft abv grade	✓											
Fuel Equipment maintained, free from leaks												
Emergency fuel shut offs clear/tested every 6 mos												
Procedures for prevention and control of spills	✓			✓			✓			✓		
Bonding connections available												
Deadman controls available												
No evidence of bypassing deadman controls												
A/C fuel hose in good condition												
Portable fire extinguishers/ inspected												
Explosion proof electrical equipment												
Above gnd fuel piping protected by barrier guard												
Fire extinguishers on ramps/aprons												

S - SATISFACTORY U - UNSATISFACTORY R- REMARKS

REMARKS: placarding ok, procedures in place
& posted. 10/30/06

Fueling Safety

Parking of Aircraft Fuel Servicing Vehicles

Parking areas for unattended aircraft fuel servicing tank vehicles shall be arranged to provide the following:

- Dispersal of the vehicles in the event of an emergency.
- A minimum of 10 feet of clear space between parked vehicles for accessibility for fire control purposes.
- Prevention of any leakage from draining to an adjacent building or storm drain that is not suitably designed to handle fuel.
- A minimum of 50 feet from any parked aircraft and buildings other than maintenance facilities and garages for fuel servicing tank vehicles.

Fueling Safety

Parking of Aircraft Fuel Servicing Vehicles



Maintenance of Aircraft Fuel Servicing Vehicles



This is one method of documenting that a fuel truck is out of service.

Reporting of Fuel Leaks in the U.S.

The airport fire crew shall be notified if a spill covers over 10 feet (3 m) in any direction or is over 50 feet (15 m) in area, continues to flow, or is otherwise a hazard to persons or property. The spill is investigated to determine the cause, to determine whether emergency procedures were properly carried out, and to determine the necessary corrective measures.



Engine Exhaust System

Exhaust system components shall be secured and located clear of components carrying flammable liquids and separated from any combustible materials used in the construction of the vehicle.



Most fuel trucks have the muffler and exhaust pipe at the front of the vehicle where it will be clear of fuel tanks and piping in the event of a leak.

Smoking Restrictions

- Smoking equipment such as cigarette lighters and ash trays shall not be provided. If a vehicle includes such equipment when initially procured, it shall be removed or rendered inoperable.
- Cigarette lighters and ashtrays are prohibited.
- A “No Smoking” sign shall be posted prominently in the cab of every aircraft fuel service vehicle.



Placards



Each aircraft fuel servicing vehicle or cart shall have a sign on each side and the rear to identify the product. The sign shall have letters at least 3 inches (7.62 cm) high and shall be of a color contrasting sharply with the sign background for visibility. The word FLAMMABLE and the name of the product carried, such as JET A, JET B, GASOLINE, or AVGAS shall appear on the sign.

Placards



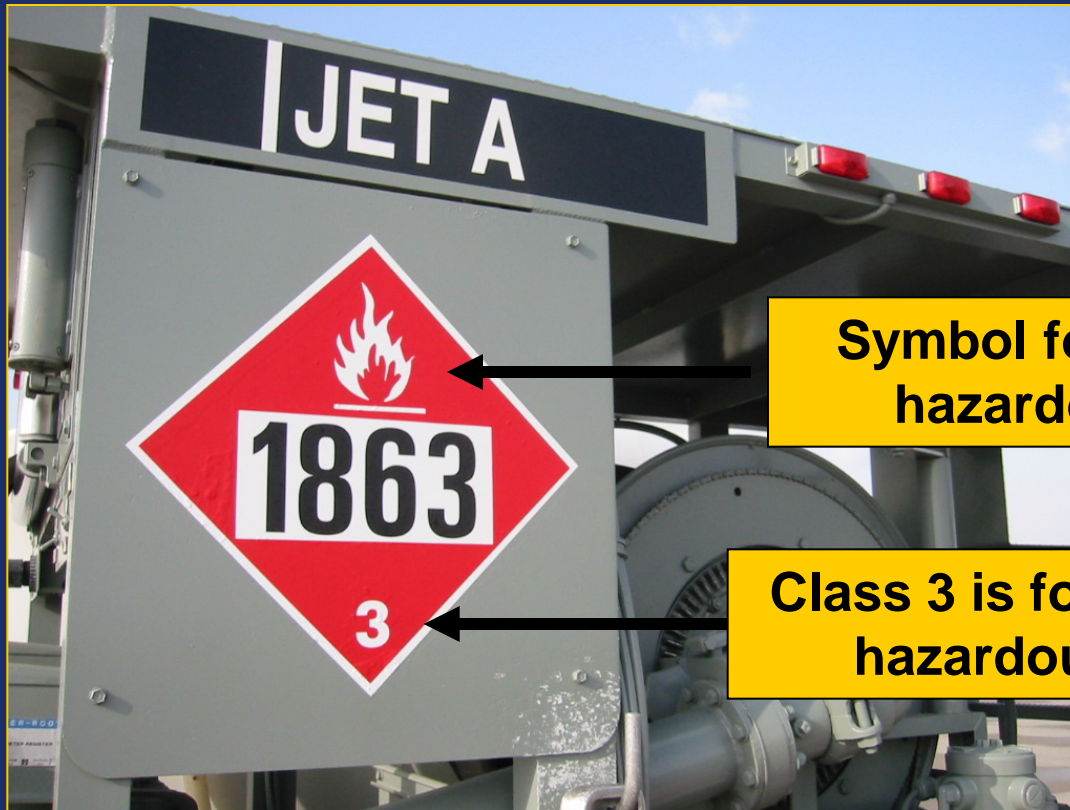
Many fuel trucks also have the Flammable and product signs on the front.

Placards



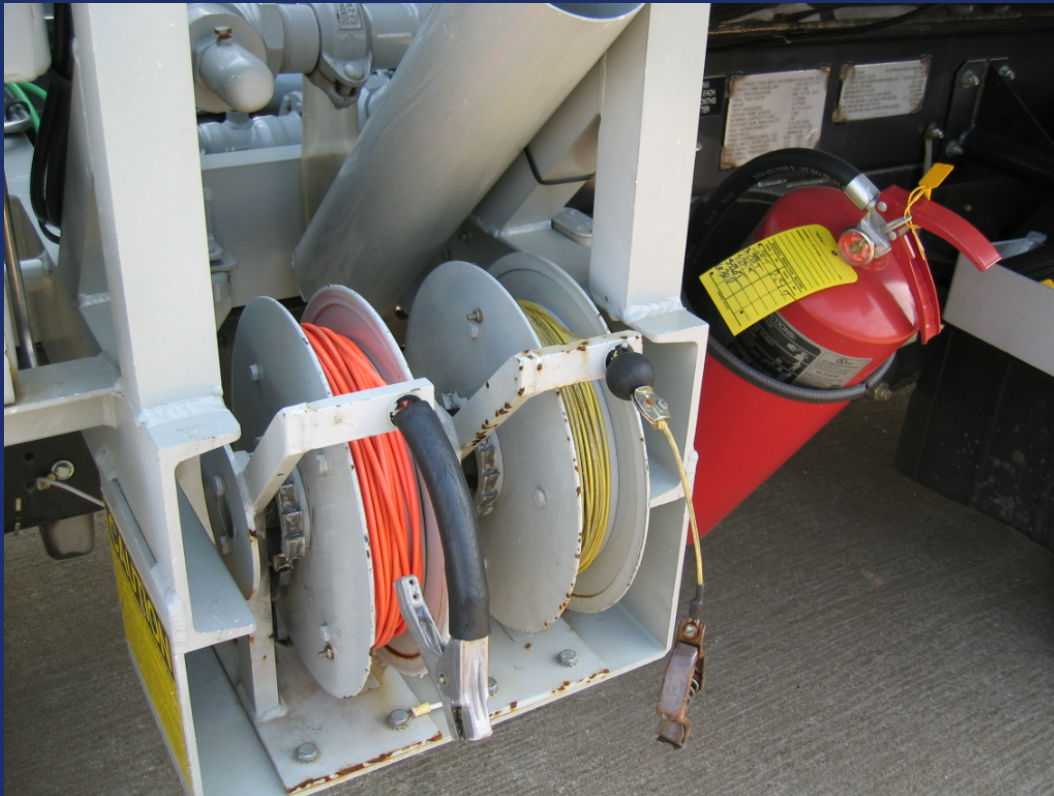
The placard Identification number for gasoline is “1203”.

The FLAMMABLE placard Identification Number for Jet fuel is “1863”.



FLAMMABLE placards must have a red background with white symbol, class and inner border.

Cables shall be provided on the vehicle or cart to allow the bonding operations.



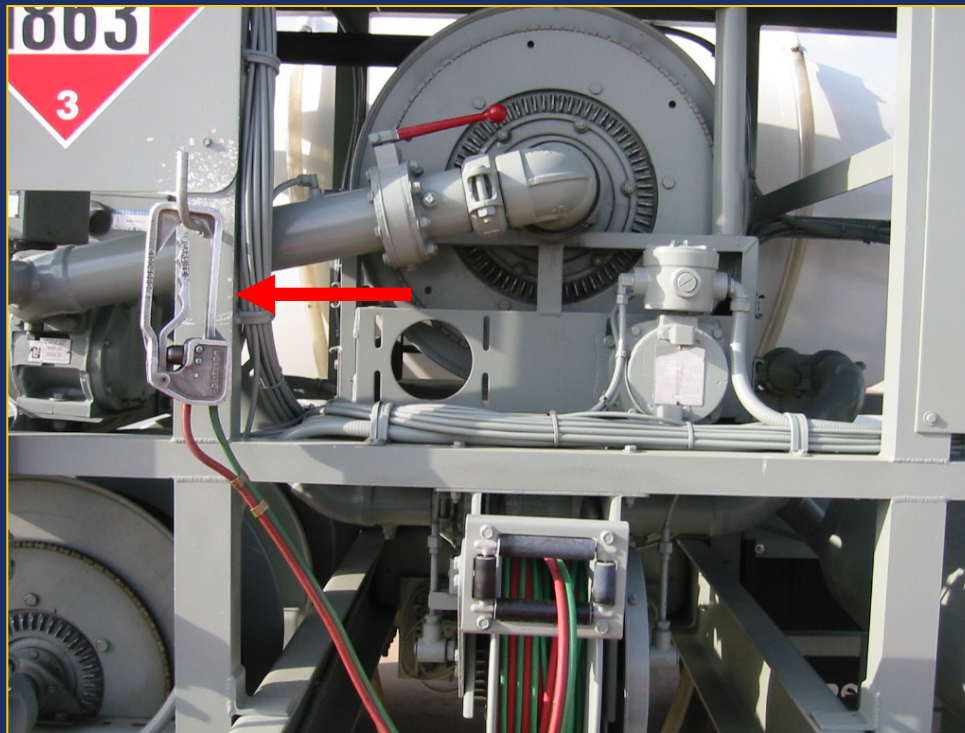
Fire Extinguishers



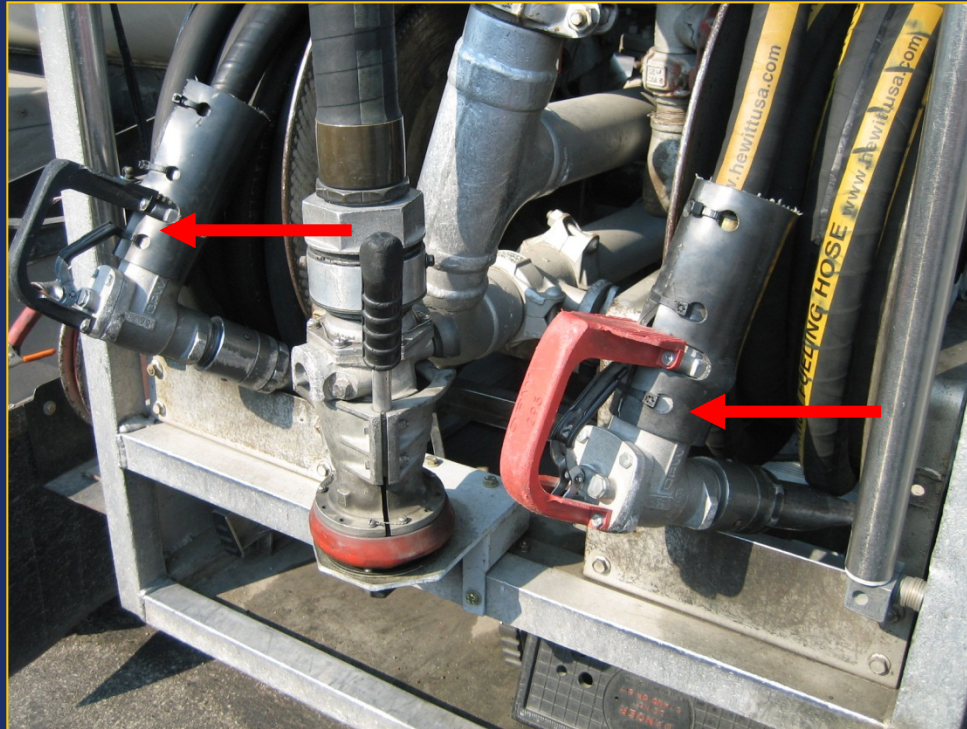
Two fire extinguisher are required on fuel servicing tank vehicles, with one mounted on each side.

Deadman Controls

A Deadman Control is a device that requires a positive continuing action of a person to allow flow of fuel.

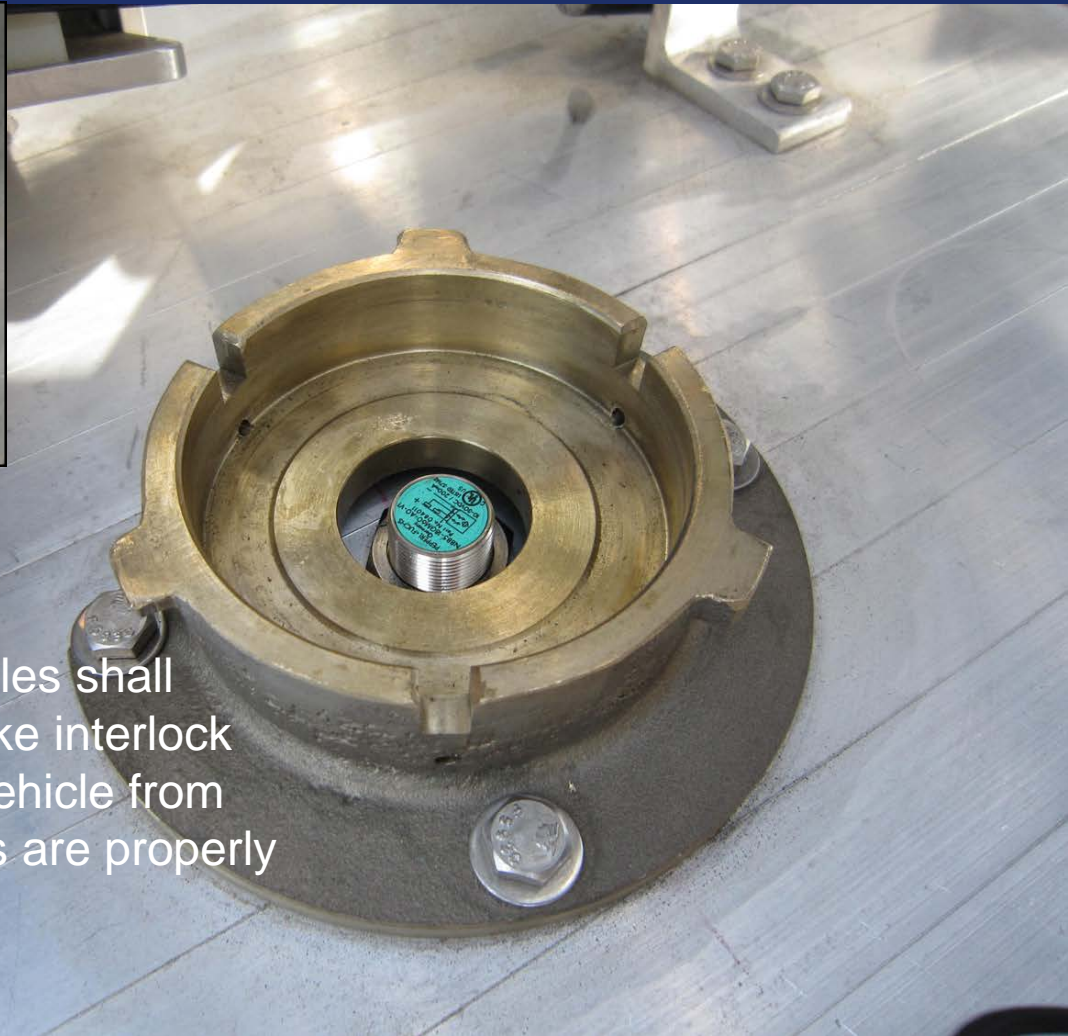


Deadman Controls



This is an example of an overwing nozzles with the deadman controls located on the nozzle.

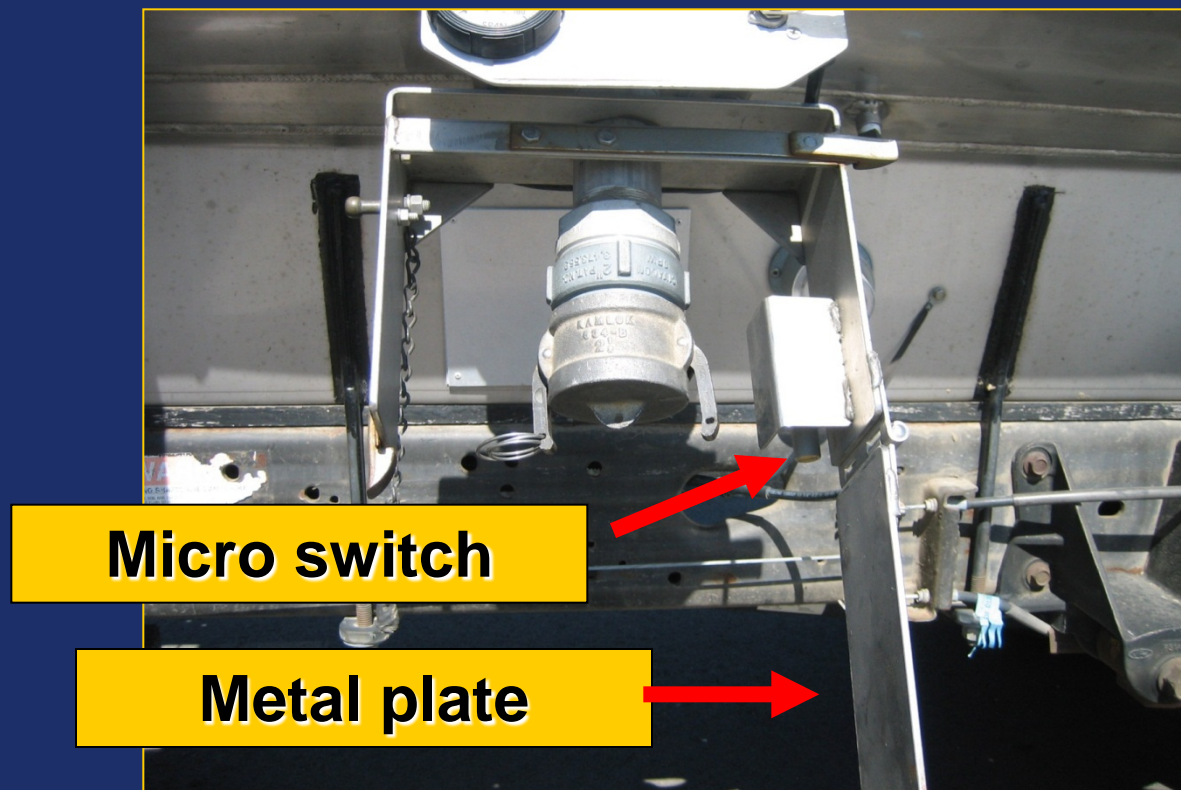
Inspecting Fuel Interlocks



Aircraft fuel servicing vehicles shall incorporate an integral brake interlock system that prevents the vehicle from being moved until all hoses are properly stored.

Brake Interlock System

The metal plate on this bottom fill coupling must be closed to depress the micro switch to release the brakes. The metal plate cannot be closed until the hose is disconnected.



Emergency Shutoffs



For pneumatic operated emergency shutoffs, fuelers must be started up and placed in pump mode in order to check the emergency shutoff system.

Aircraft Fueling Hose



Aircraft fueling hose shall be inspected before use each day. The hose shall be extended as it normally would be for fueling and checked for evidence of blistering, carcass saturation or separation, cuts, nicks, or abrasions that expose reinforcement material, and for slippage, misalignment, or leaks at couplings. If coupling slippage or leaks are found, the cause of the problem shall be determined. Defective hose shall be removed from service.

Dome covers should be physically inspected, especially on older trucks.



Look for signs of fuel leakage around the dome cover, indicating a problem with the dome cover seal or gasket. Physically inspect the dome cover gasket to check the condition and presence of a gasket.

Inspecting Airport Fueling Systems



An Airport Fueling System is an arrangement of aviation fuel storage tanks, pumps, piping, and associated equipment, such as filters, water separators, hydrants and station, or aircraft fuel servicing vehicles, installed at an airport and designed to service aircraft at fixed positions.

Grounding Airport Fueling Systems



Underground fuel tanks and piping are grounded by the nature of the installation.

Grounding Airport Fueling Systems



Above ground fuel tanks need to be grounded or bonded together and connected to a grounding rod.

Grounding



Check above ground fuel tanks for proper grounding.

Emergency Shutoffs



The emergency fuel shutoff system shall include shutoff stations located outside of probable spill areas and near the route that normally is used to leave the spill area or to reach the fire extinguishers provided for the protection of the area.

Loading of Aircraft Fuel Servicing Tank Vehicles



A bonding connection shall be made between the cargo tank and the loading rack before any fuel connections are made and shall remain in place throughout the loading operation.

Loading of Aircraft Fuel Servicing Tank Vehicles



The operator shall initiate fuel flow by means of a deadman control device.

Aircraft Fueling Hose



Check hoses for evidence of blistering, weather cracking, carcass saturation or separation, cuts, nicks, or abrasions that expose reinforcement material, and for slippage, misalignment, or leaks at couplings.

Portable Fire Extinguishers



During fueling operations, fire extinguishers shall be available on aircraft servicing ramps or aprons.

Portable Fire Extinguishers



For normal, single parking configurations, extinguishers specified for protection of fuel servicing operations should be located along the fence, at terminal building egress points, or at emergency remote control stations of airport fixed-fuel systems.

Bonding



Before loading tank vehicles through open domes, a bonding connection shall be made to the vehicle or tank before dome covers are raised and shall remain in place until filling is completed and all dome covers have been closed and secured.

Monitoring Fueling Operations



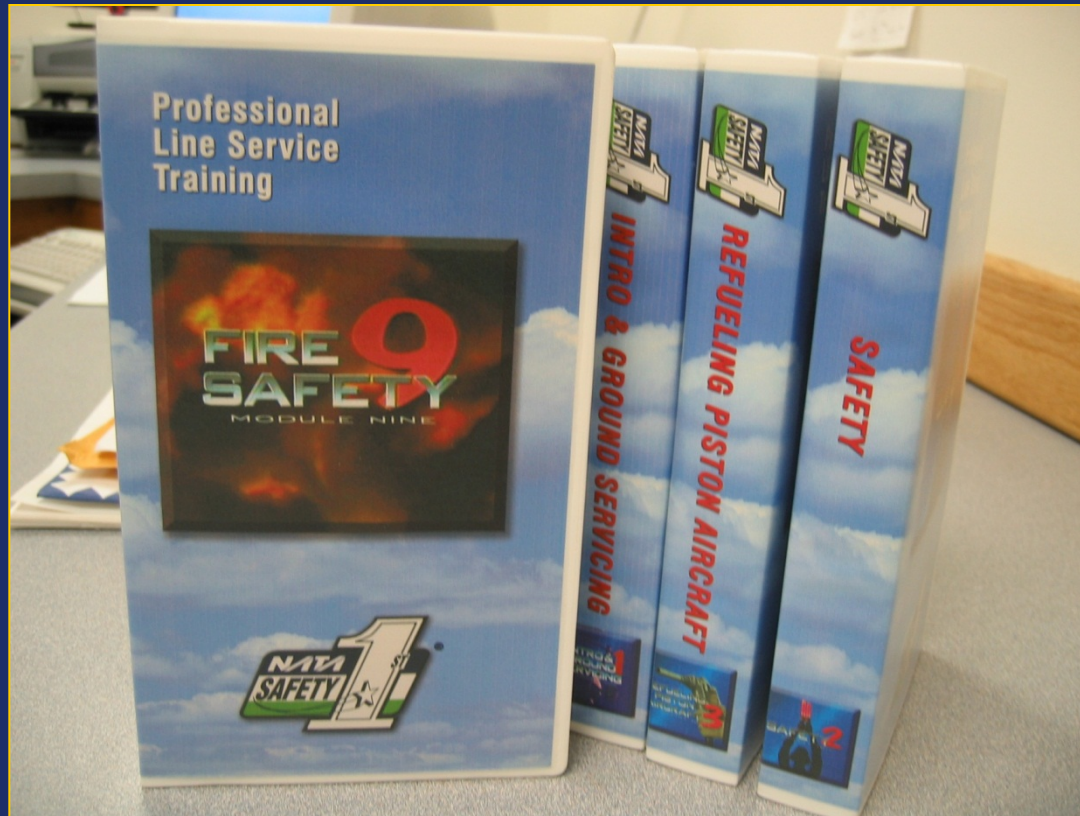
Observe fueling operations while inspecting aircraft fuel servicing vehicles to check for compliance with fire safety standards. In particular, check for proper bonding procedures and use of deadman controls.

Monitoring Fueling Operations



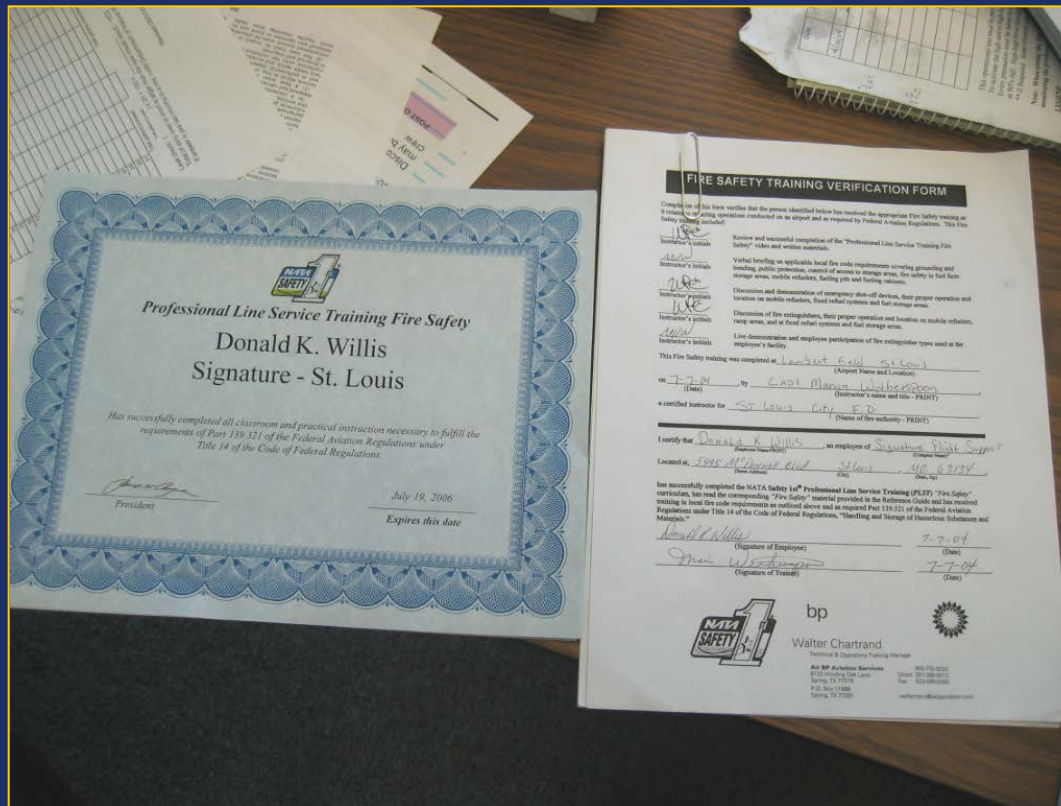
Aircraft fuel servicing vehicles and carts shall be positioned so that a clear path of egress from the aircraft for fuel servicing vehicles shall be maintained.

Fueling Agent Training



In the U.S., each fueling agent supervisor must complete training at an aviation fuel training course in fire safety is acceptable to the FAA.

Fueling Agent Training Records



Fueling agent training records should be reviewed to ensure that the records are being maintained.

Fueling Questions ?????

