Inspecting Airport Fueling Systems
139.321(d) Each certificate holder shall inspect the physical facilities of each airport tenant fueling agent at least once every 3 consecutive months for compliance with paragraph (b) of this section and maintain a record of that inspection for at least 12 consecutive calendar months.
Fueling Operations to Inspect

- Fueling Cabinets
- Self Service Fuel Stations
- Airline Gate Extinguishers
- Fueling Operations
Fueling Operations to Inspect

Fueling Agent Training Records

Fueling Agent Training Materials
ABC rated multipurpose dry chemical extinguishers are not to be used on fuel trucks, aprons and fuel farms.

**NFPA 407, 4.1.6.3** ABC multipurpose dry chemical fire extinguishers (ammonium phosphate) shall not be placed on aircraft fueling vehicles, airport fuel servicing ramps, or aprons, or at airport fuel facilities. *(TIA 12-1 effective 11/8/11)*

Multipurpose dry chemical (ammonium phosphate) fire extinguishing agent is known to cause corrosion to aluminum aircraft components. Although the agent is capable of extinguishing fires on or near aircraft, it is likely that the agent will spread to other, uninvolved aircraft, causing damage from corrosion.
Deadman controls for single point fueling nozzles for Jet fuel normally require squeezing a level or button that maintains the flow control valve in the open position.

This deadman control has a button that must be depressed to maintain the flow valve open for an underwing or single point nozzle.

**NFPA 407, 3.3.13 Deadman Control.** A device that requires a positive continuing action of a person to allow flow of fuel.
4.1.7.2 Deadman controls shall be designed to preclude defeating their intended purpose.

NFPA 407, 4.3.16.2 The deadman flow control in the nozzle shall be permitted for overwing fueling. Notches or latches in the nozzle handle that could allow the valve to be locked open shall be prohibited.

These nozzles have notches that allow bypassing the deadman control and are not in compliance with NFPA 407, 4.3.16.2.
Dry-Break type adaptors are not required on the off-load facilities where tanker trucks deliver fuel to the airport fuel farm.
NFPA 30, 2.5.3.4  All equipment such as tanks, machinery, and piping shall be designed and operated to prevent electrostatic ignitions. All metallic equipment where an ignitable mixture could be present shall be bonded or grounded. The bond or ground or both shall be physically applied or shall be inherently present by the nature of the installation. Any electrically isolated section of metallic piping or equipment shall be bonded or grounded to prevent hazardous accumulation of static electricity.
Above ground fuel tanks need to be grounded or bonded together and connected to a grounding rod.
Check above ground fuel tanks for proper grounding.
NFPA 407, 4.1.3 No Smoking Signs. Entrances to fueling areas shall be posted with "no smoking" signs.
NFPA 30, 2.5.7.3  Ground areas around tank storage facilities shall be kept free of weeds, trash, or other unnecessary combustible materials.
NFPA 407, 4.4.5.3  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.
NFPA 407, 4.3.22.1 Each tank vehicle loading station shall be provided with an emergency fuel shutoff system. This requirement is in addition to the deadman control required by 4.3.20.5 for top loading and by 4.3.21.7 for bottom loading. It shall be the purpose of this system to shut down the flow of fuel in the entire system or in sections of the system if an emergency occurs. This system shall be of a fail-safe design.

NFPA 407, 4.4.5.4* At least one emergency shutoff control station shall be conveniently accessible to each fueling position.
Emergency Fuel Shutoffs

The Emergency Fuel Shutoffs for loading stations are located at the loading stations while the Emergency Fuel Shutoff for the fuel facility is located outside the probable spill areas and near the route that normally is used to leave the spill area or to reach fire extinguishers. Normally, these emergency fuel shutoffs are separate shutoffs, however, there are some fuel facilities where the fuel facility emergency fuel shutoff also covers the loading station. It is up to the AHJ to determine if this setup is acceptable.
An alarm connected to the emergency shutoff is recommended. Some airports have an emergency phone station near the fuel storage area.

NFPA 407, Annex A  Explanatory Material

A.4.4.5.4 Alarms for Emergency Shutoff System. The operation of the emergency shutoff control should sound an alarm at the airport fire crew station and at the fuel storage facility.
NFPA 407, 4.4.5.7 Each emergency fuel shutoff station shall be placarded EMERGENCY FUEL SHUTOFF in letters at least 2 in. high. The method of operation shall be indicated by an arrow or by the word PUSH or PULL, as appropriate.
NFPA 407, 4.4.5.7 (continued) Lettering shall be of a color contrasting sharply with the placard background for visibility. Placards shall be weather resistant, shall be located at least 7 ft above grade, and shall be positioned so that they can be seen readily from a distance of at least 25 ft. Valves used to shut off a hydrant for maintenance purposes shall not have placards that could create confusion in an emergency.
The Emergency Fuel Shutoff placard is not located at least 7 feet above grade. In addition, the word, “FUEL” is missing on the EMERGENCY FUEL SHUTOFF placard. These are common problems with Emergency Fuel Shutoff placards.
The intent of the 7 foot above grade requirement in 4.4.5.7 is to locate the placard above a parked vehicle.
Pipe Bollards

Typical pipe bollards and guard rails used to protect fueling facilities against physical damage from vehicles.
NFPA 407, 5.2.1 Fuel servicing equipment shall comply with the requirements of this standard and shall be maintained in safe operating condition. Leaking or malfunctioning equipment shall be removed from service.
Fuel leaks are a common problem found during inspections of fuel storage and loading areas.
NFPA 407, 4.1.1  Fueling Hose Apparatus. Nozzle receptacles and hose storage shall be arranged to avoid kinks and maintain the hose bend radius within the requirements of API BULL 1529.
Aircraft Fueling Hose

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

NFPA 407, A.5.16 Failure of an aircraft fueling hose in service is a potential source of fuel spillage and a potential fire hazard. The principal reasons for failure of aircraft fueling hoses include the following:

1. Using damaged hoses
2. Using aged hoses
3. Exceeding pressure limits
4. Improper installation
NFPA 407, 4.4.10 – Fuel Servicing Hydrants, Pits and Cabinets.

4.4.10.3 Fueling hydrants, cabinets, and pits shall be located at least 50 ft from any terminal building, hangar, service building, or enclosed passenger concourse (other than loading bridges).
NFPA 407, 5.13* – Portable Fire Extinguishers.

5.13.1 During fueling operations, fire extinguishers shall be available on aircraft servicing ramps or aprons.
Extinguishers should not be blocked by equipment that would hide the extinguisher or hamper access in the event of a fire.
NFPA issued Tentative Interim Amendment 12-1, that prohibits the use of ABC multipurpose dry chemical extinguishers at airport fuel facilities in addition to on fuel trucks and aprons.

**NFPA 407, 4.1.6.3** ABC multipurpose dry chemical fire extinguishers (ammonium phosphate) shall not be placed on aircraft fueling vehicles, airport fuel servicing ramps, or aprons, or at airport fuel facilities. *(TIA 12-1 effective 11/8/11)*
Monitoring Fueling Operations
Observe fueling operations while on the apron areas during the inspection to check for compliance with fire safety standards. In particular, check for proper bonding procedures and use of deadman controls.
Loading of Aircraft Fuel Servicing Tank Vehicles

NFPA 407, 5.20.2 Top Loading.

5.20.2.1 Where loading tank trucks through open domes, a bond shall be established between the loading piping and the cargo tank to equalize potentials. The bond connection shall be made before the dome is opened and shall be removed only after the dome is closed.

NFPA 407, 5.20.3 Bottom Loading.

5.20.3.1 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.
NFPA 407, 4.3.20 – Top Loading.

4.3.20.5 A deadman control shall be provided and located so that the operator can observe the liquid level in the tank as it fills.
NFPA 407, 5.20.3  Bottom Loading.

5.20.3.2  The operator shall initiate fuel flow by means of a deadman control device.
NFPA 407, 5.20 Loading of Aircraft Fuel Servicing Tank Vehicles.

5.20.1.1 Filling of the vehicle cargo tank shall be under the observation and control of a qualified and authorized operator at all times.

5.20.1.2 The required deadman and automatic overfill controls shall be in normal operating condition during the filling operation. They shall not be blocked open or otherwise bypassed.

5.20.1.3 The engine of the tank vehicle shall be shut off before starting to fill the tank.
NFPA 407, 5.10.2* Aircraft being fueled shall be positioned so that aircraft fuel system vents or fuel tank openings are not closer than 25 ft to any terminal building, hangar, service building, or enclosed passenger concourse other than a loading walkway. Aircraft being fueled shall not be positioned so that the vent or tank openings are within 50 ft of any combustion and ventilation air-intake to any boiler, heater, or incinerator room.
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.
NFPA 407, 5.12.2 The propulsion or pumping engine of aircraft fuel servicing vehicles or carts shall not be positioned under the wing of the aircraft during overwing fueling or where aircraft fuel system vents are located on the upper wing surface. Aircraft fuel servicing vehicles or carts shall not be positioned within a 10-ft radius of aircraft fuel system vent openings.
NFPA 407, 5.8.5 Personnel shall not carry lighters or matches on their person while engaged in fuel servicing operations.
NFPA 407, 5.8.6 Lighters or matches shall not be permitted on or in fueling equipment.
NFPA 407

5.8.2 Open flames on aircraft fuel servicing ramps or aprons within 15 m (50 ft) of any aircraft fuel servicing operation or fueling equipment shall be prohibited.

5.8.3 The category of open flames and lighted open-flame devices shall include, but shall not be limited to, the following:

(1) Lighted cigarettes, cigars, pipes
(2) Exposed flame heaters, liquid, solid, or gaseous devices, including portable and wheeled gasoline or kerosene heaters
(3) Heat-producing, welding, or cutting devices and blowtorches
(4) Flare pots or other open-flame lights
NFPA 407, 5.7.6* Communications equipment located outside of the cab of the vehicle and used during aircraft fuel servicing operations within 3 m (10 ft) of the fill or vent points of aircraft fuel systems shall be listed as intrinsically safe for Class I, Division 1, Group D hazardous (classified) locations in accordance with ANSI/UL.913.

If fueling personnel do not know if their communications equipment is safe to use around fuel vapors, they should not use it.
If a thunder storm is in the vicinity, note whether or not fuel servicing operations have been suspended when there are lightning flashes in the immediate vicinity of the airport.

**NFPA 407, 5.9* – Lightning Precautions.**

**5.9.1** Fuel servicing operations shall be suspended where there are lightning flashes in the immediate vicinity of the airport.

**5.9.2** A written procedure shall be established to set the criteria for where fueling operations are to be suspended at each airport as approved by the fueling agent and the airport authority.

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