

STUDY GUIDE FOR FUEL HANDLERS

Revised August 2006



City of Phoenix

Phoenix Sky Harbor International Airport

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Purpose

The purpose of this study guide is to standardize safety and fire prevention training information for airport-based aircraft and ground service equipment fuel vendors' personnel. This study guide focuses on safety procedures in aircraft fueling and fuel handling. Personnel who complete hands-on training can be issued a Fuel Handler's Endorsement valid for the term of their Security Badge if they qualify with the following:

1. Hold a valid security badge endorsed for airfield driving.
2. Complete a 40-hour initial fuel training course in fire safety that is acceptable to the FAA, and complete biannual recurrent training afterwards.
3. Successfully pass the Airport Fuel Handler Certification test.

The Fuel Handler's Endorsement may be suspended or revoked at the discretion of the Aviation Department for failure to comply with Rules, Regulations, or the contents of this manual. Employees may be required to attend remedial training and/or retake the Airport Fuel Handler Certification Test if they allow their badge to expire.

According to Part 139 Certification requirements, at least one supervisor with each fueling agent shall have completed an aviation fuel handling training course approved by FAA prior to initial performance of duties. All employees shall complete 40 hours on-the-job training and recurrent instruction every 24 consecutive calendar months.

This study guide is designed as a supplement to the hands-on training personnel should receive from a qualified supervisor in fire safety, fuel handling, and fueling aircraft. This study guide provides supplemental information to cover the following subjects:

Personnel Safety

The most effective way to maintain a high level of personnel safety is through initial and recurrent training of personnel on safety procedures designed to protect everyone in the work environment. It is important that you follow the correct procedures for your area and use the correct safety equipment provided. Smoking is only permitted in Designated Smoking Areas.

Personal Protective Equipment (PPE)

Personnel should take advantage of the protective equipment provided such as earplugs, gloves, footwear, and safety goggles. These items were designed to make the work environment safer for individuals. Certain clothing will generate enough static electricity to cause a spark, which can cause an explosion. It is recommended that wool, nylon, Dacron, polyester and other similar material not be worn by fueling personnel. Cotton clothing is preferable.

Spill Prevention

Fuel spills create a fire hazard, increase risks to personal safety, contaminate the environment, and destroy pavement. It is everyone's responsibility to be alert to incorrect procedures that may result in a spill or leakage. The best method of prevention is to follow approved procedures. Ensure that:

1. Equipment is in acceptable operating condition.
2. Fueling operations are performed in accordance with regulations and standards.
3. All safety precautions are followed.

Spill Control and Clean-up

It is essential that all fuel spills, regardless of size and location, be reported to Airport Emergency Services so that the spill can be dealt with in a safe and expeditious manner.

General procedures for a fuel spill are as follows:

1. Stop the flow of fuel.
2. Place fire extinguishers upwind of the spill.
3. Notify Airport Emergency Services at (602) 273-3311.
4. Notify your supervisor.
5. Do not move the fuel truck.

Do not start or turn off any equipment, including ground power units. If an engine is running, leave it running. If an engine is shut off, do not start it. Ignition of the spill is more likely to occur from engines backfiring during startup or shutdown.

If it is safe to do so and you have the proper training, equipment, and material, you may start to clean up or begin containment of the spill before the Fire Department arrives. If you do not have appropriate equipment, stand by your fire extinguisher and direct other traffic away from the area. The airport fire crew has the proper equipment and personnel to handle the situation safely. Follow the instructions of the Fire Department for fuel spill clean-up procedures.

Wing vent spills account for over 95% of all fuel spills at Phoenix Sky Harbor International Airport. In order to quickly and safely mitigate these spills, the following procedures shall be followed should any quantity of fuel be spilled during fueling operations:

1. Immediately stop the flow of fuel from the fueling equipment. Locate the nearest fire extinguisher and place it and you upwind of the spill. The area should be cleared of personnel.

2. The ramp supervisor, fueler, or other responsible party must notify Airport Emergency Services immediately by dialing extension 3311 (273-3311) and reporting the spill. Give the exact location of the spill and the approximate amount of fuel spilled. Identify whether the spill has been contained and if fuel is still leaking. The Fire Department, airport maintenance personnel, and Operations will be dispatched to the scene.
3. Fuelers and/or ramp workers should locate the yellow spill kit barrel on the ramp closest to the spill and move the barrel to the spill area. When and where it is possible, absorbent materials from the emergency spill kit should be used to contain the spill and keep it from spreading or flowing into drains or other areas. Only empty metal containers can be placed under the wing vent to capture leaking fuel. Plastic containers, such as the yellow spill kit barrels, may produce static electricity, which is a potential source of ignition. Plastic containers shall not be used to contain or store fuel.
4. To help eliminate potential sources of ignition, such as motors and catalytic converters, sparks, etc., do not move the fuel truck or start or turn off any equipment, including ground power units. If an engine is running, leave it running. If an engine is shut off, do not start it. A 50 foot "clear zone" must be maintained around the spill. No unauthorized motor vehicles may be operated in this area.
5. In some cases, the fuel recovery unit will be used to remove the fuel from the ground. Fuel on the ground will be vacuumed and contained by the spill recovery cart. Once the fuel has been removed from the ground, the absorbent booms will be placed in the metal container supplied with the fuel recovery unit. They are not to be put back into the plastic spill kit barrel.
6. In most cases absorbent shall be used to cover the spill and prevent fuel from entering drains or other similar

areas. Small quantities of absorbent material may be used to prevent fuel from running along expansion joints in the concrete ramp or from seeping out from under the booms on uneven surfaces.

Environmental Conditions and Safety

Lightning

Extreme caution is necessary during lightning and severe storms. Fueling operations will be suspended during severe disturbances. All lightning storms near the airport should be cause for concern. Storms move. Be attentive to any storm in the area. Cease fueling operations whenever lightning is in the immediate vicinity of the airport.

Safe Practices

After all safety measures have been met, steps must be taken to protect the environment:

- Use approved absorbent materials, such as absorbent booms (pigs), clay or foam pads, to prevent the fuel from going down storm water drains or other drains.
- Prevent the flow of spilled fuel from traveling to areas where it would be absorbed into the ground, contaminating the soil or water supply.

All purpose absorbent clay materials should be used to cover spills or to prevent fuel from leaking around or under absorbent booms or from running along expansion joints on concrete ramps. The absorbent booms (pigs) can be found in the fuel spill kits and are the preferred materials for spill containment.

Fuel or petroleum products may only be deliberately drained or defueled into an approved container at an approved designated location. It is a violation of EPA regulations for fuel or other petroleum products to be deliberately drained into any storm or sanitary drain system.

Basic Fire Science

Fire is a chemical reaction. For fire to occur and materials (including liquid fuels) to continue burning, three elements must be present: the first is oxygen, the second is fuel, and the third is heat. If any one of these three elements is not present, fire cannot ignite, and an active fire will be extinguished. This concept is known as the "fire triangle." There are three ways to extinguish a fire. The first way is to cut off the oxygen supply, the second is to remove the fuel, and the third is to reduce the temperature.

The responsibilities of an aircraft fueller require handling large quantities of aviation fuel. This fuel will normally fall into two categories: aviation gasoline (AVGAS), and jet fuel (Jet-A). Temperatures generated by burning fuels can approach 2000° Fahrenheit, and create considerable hazards to personnel, aircraft, equipment, and buildings in the immediate area. Caution and common sense must always be used when handling any type of fuel. The fire hazards of most aviation fuels are best described in the terms and characteristics of flash point, vapors, and auto ignition.

Flash Point

The flash point of a fuel is the temperature at which the fuel produces sufficient vapors to form an ignitable mixture with air near the surface or in the container, but will not sustain combustion. The flash point of Jet-A is 100° to 140° Fahrenheit, which means at these temperatures, the fuel gives off enough vapors to form an ignitable mixture. The flash point of 100LL AVGAS is -40° Fahrenheit. This means that AVGAS will produce an ignitable vapor in the air at a much lower temperature than Jet-A.

Vapors

Aviation fuels are highly volatile, which means they evaporate and produce vapors rapidly. Fuel vapors are easily ignitable and explosive. Fuel vapors are heavier than air and are capable of traveling along the ground and finding a source of ignition. AVGAS is the most volatile of the fuels used at Sky Harbor due to its low flash point temperature. If an ignition source is present (such as a spark from a motor, vehicle exhaust, static, or heat from a headlight that is missing a lens cover), and the fuel is at or above its flash point temperature, it could ignite and carry fire back to the container. The result can be a severe explosion and fire.

Vapors are the main reason the following are not allowed within 50 feet of fueling equipment or aircraft:

1. Open flames
2. Smoking cigarettes, cigars, pipes, etc.
3. Matches and lighters
4. Welding and cutting
5. Flares, flare pots, any open flame lights
6. Exposed flame heaters

An empty or less-than-full fuel tank retains vapors in the empty portion and, therefore, presents a greater danger of explosion than a full tank. No vehicle fuel tank should be loaded liquid full. At least 1% of space above fuel shall be maintained to allow for expansion of the contents due to temperature variations.





Auto Ignition Temperature

Auto ignition temperature is the temperature at which the fuel will ignite without a spark or other outside ignition source. This is important to remember, because the residual heat of a jet engine after shutdown or the heat from hot aircraft brakes can cause spilled fuels to ignite. Even when the temperature is below the auto ignition temperature, hot components can cause fuel to vaporize, creating an explosive mixture. Ignition sources such as static electricity, uncovered light bulbs, and hot exhaust systems have the potential to ignite the fuel mixture. For this reason, missing or broken lenses on headlights or clearance lights, faulty exhaust systems, or other potential sources of ignition must be repaired prior to continued service of the fueling vehicles or any ramp service vehicle.

Understanding what may cause a fire and the characteristics of fuel as a potential fire hazard is important, especially when combined with fire extinguishing principles. Both are important for determining the proper extinguishing procedures when dealing with fire. It is also important to know the class of fire material you need to extinguish.

Classes of Fire

Fires are grouped into four different classifications:

- A**  **Class A** fires involve ordinary combustibles such as wood, paper, cloth, rubber, and many plastics.
- B**  **Class B** fires involve flammable liquids, greases, and gases.
- C**  **Class C** fires involve energized electrical equipment.
- D**  **Class D** fires involve combustible metals. Class D fires are very uncommon at the airport. Most dry chemicals can be used to extinguish Class D fires. **Under no circumstance should water be used on Class D fires.** Water can cause an explosive reaction.

Fire Extinguishing Agents

The different classes of fire require different types of extinguishing agents. The most common extinguishing agents used at City of Phoenix airports are water, dry chemical, and Aqueous Film Forming Foam (AFFF). It is important to understand their applicability to the different classes of fires and their effect on the fire triangle.

Water

Water has a cooling effect, which reduces the temperature of the burning materials and eliminates the heat side of the fire triangle. Water extinguishers are rated for use on Class-A fires.

Water is not to be used on electrical fires. The electricity can follow the water stream back to the user and may cause electrocution. Extreme caution should be used when extinguishing a liquid fuel fire with water. Previous training is important. If the correct procedure is not followed when using water on liquid fuel fires, the water stream may splash the burning fuel and spread the fire.

Dry Chemical

Dry chemical extinguishes a fire by smothering the burning surface and leaving a coating of the dry chemical material after the flames are extinguished. The coating prevents re-ignition of the fire as long as the coating is intact. Dry chemical extinguishers eliminate both the heat and oxygen sides of the fire triangle and are very effective if used properly. Dry chemical is effective on both vertical and very irregular surfaces. Some dry chemical extinguishers are rated for Class ABC, while others are only rated for BC. BC extinguishers are effective on Class A fires in small, confined areas such as wastebaskets or garbage cans.

Aqueous Film Forming Foam (AFFF)

When AFFF is applied to a fire it leaves a soapy covering on the material creating a "vapor seal", which extinguishes the fire by eliminating both the heat and oxygen sides of the fire triangle and prevents the release of vapors that can cause flashback and re-ignition. AFFF is designed to be used on a fire that is on a pool of liquid fuel. All airport firefighting units carry large quantities of AFFF for use in firefighting activities involving liquid fuel and aircraft. AFFF is not effective on

vertical and very irregular surfaces. AFFF is designed for use on flammable liquids and is rated for Class B fires.

Fire Extinguishers



Fire extinguisher training will be administered by either the Fire Department or a fueling supervisor trained and certified in accordance with FAR Part 139. Portable fire extinguishers are available at all fixed fueling locations. The average fire extinguisher located on most trucks or at most fixed locations are dry chemical and will have only about 20 to 30 seconds of discharge duration. For this reason, it is important that fuel handlers receive "hands-on" instruction in their use. In an emergency fire situation, this training should ensure maximum efficiency from the extinguisher.

In the event of a fire, NOTIFY AIRPORT EMERGENCY SERVICES IMMEDIATELY at **(602) 273-3311**.

Fire extinguishers must be inspected monthly to comply with NFPA and FAA regulations.



The proper use of a fire extinguisher is critical to safe and fast suppression of a fire:

1. If it is safe to do so, remove the fire extinguisher from its mount and pull the safety pin using a rapid twisting motion.
2. Position yourself upwind if outside or between the fire and a safe exit if in an enclosed space. Never allow the fire to get between you and a safe exit point.
3. Activate the fire extinguisher and move in on the fire only as close as it is safe to do so. Open the nozzle of the extinguisher by pressing or pulling on the lever and discharge the extinguisher at the base of the flames in a rapid sweeping motion. Never point the extinguisher at the middle or upper portion of the flames.
4. As the flames are extinguished, move forward, continuing the rapid sweeping motion. This will smother and cool the burning material and provide the most effective application of the extinguishing agent.

5. After the fire is out, DO NOT turn your back on the fire area. There is always the dangerous chance of flashback and re-ignition. BACK AWAY from the extinguished fire. Should re-ignition occur, you would be in a position to continue spraying the fire with an extinguishing agent.
6. NEVER enter a liquid fuel fire area without proper protective clothing and enough extinguishing agents to completely extinguish the fire. Liquid fuel fires can flash back quickly and engulf you in flames. Large areas of burning liquids are more effectively and safely handled by trained firefighters with proper protective clothing and equipment.
7. Fight a fire only if it is safe to do so. If the situation becomes too much to handle, leave the building or area immediately.

Aircraft Fueling Equipment

Proper marking of aircraft fueling equipment is a fire safety requirement. The following are standards that need to be followed to ensure compliance with NFPA 407.

All aircraft fuel servicing tank vehicles must have signs with letters that are at least three inches high posted on each side and rear of the vehicle. These signs will read "Flammable, No Smoking" and clearly show the type and grade of fuel in the truck. The product identification numbers are 1203 for AVGAS and 1863 for Jet-A. These numbers help the airport fire crew make a rapid decision on how to handle the situation should a fire occur. Emergency fuel shut-off controls should be clearly and boldly marked by signs and/or placards with letters that are at least 2 inches high and read "Push" or "Pull" as applicable.



Aircraft fueling vehicles must be equipped with an emergency fuel shut-off that is capable of overriding all other fuel controls and must be able to stop all fuel flow with one physical movement. A deadman control is any device that will stop the flow of fuel when released by the operator. The flow control handle on the nozzle used for overwing fueling is considered a deadman control. Deadman controls must always be used

and shall not be bypassed or locked open.

The pneumatic or electric control handle on the nozzle used for single point fueling is considered a deadman control. Each is designed to stop the flow of fuel. Each aircraft fuel servicing tank vehicle must be equipped with at least two 20BC rated fire extinguishers. They must be located on and easily accessible from each side of the fuel truck.

For obvious reasons, smoking shall not be permitted in any fuel truck. "No Smoking" signs shall be installed in each aircraft fueling vehicle cab. Smoking equipment, such as cigarette lighters and ashtrays, should be removed or made inoperable. Matches, cigarette lighters, or any type of igniting device are not permitted on or within 50 feet of any fueling equipment, facility, or aircraft. This means they should not be in your possession when handling fuel.

Fuel tank vehicles shall not be operated unless they are in proper repair, have no leaks, and are free of accumulated grease, oil, and other combustibles. Proper and careful operation of equipment will maximize safety and efficiency of the fueling operation.

Hydrant Vehicle



The hydrant fuel-servicing vehicle dispenses jet fuel into the aircraft from an underground fuel pipeline network referred to as the hydrant system. The hydrant unit filters the fuel, monitors the gallons pumped, and

controls the pressure placed on the aircraft system. The hydrant unit dispenses fuel using the single point fuel nozzle.

Each hydrant fuel-servicing unit shall be equipped with one 20BC extinguisher. Fire extinguishers must be properly mounted and unobstructed. If the safety seal is broken, the pressure is low, or the cylinder is visibly damaged, the extinguisher must be repaired or replaced.

All vehicles should have the markings "Flammable," "No Smoking" and "Emergency Shut-Off" clearly marked.

The general condition of the vehicle should be inspected for safety defects, damage, fuel leaks, condition of tires, and broken lenses. The condition of all hoses, swivels, and nozzles must be visually checked for damage or leaks. In addition, the level on the fuel surge tanks need to be checked to prevent overfill.

The bonding cables and clamps need to be checked for damage. Any defective or leaking equipment must be repaired before using the vehicles.

Loading Rack

Fuel loading and receiving racks must have at minimum two readily accessible fire extinguishers with a minimum 20BC rating. Outflow connectors must be controlled by a deadman fuel flow control feature in addition to all hoses and nozzles. The deadman control should be capable of completely stopping the flow of fuel with one physical movement.

Bonding is an integral part of the loading/receiving rack construction. It is necessary to manually bond delivery tankers and fuelers. Bonding cables and clamps must be checked for damage.

Top Loading

Top loading of fuel into a fuel truck is prohibited at Phoenix Sky Harbor International Airport. Top loading is also prohibited per Maricopa County Rule 352.

Bottom Loading

The pre-check system is designed to automatically stop the flow of the fuel when the tank is full. The pre-check system must be tested immediately once a bottom loading operation is started to ensure proper operation of high level shut-off system. If the pre-check system does not operate properly, the fuel truck operator must position an observer on top of the cargo tank so the rising fuel level can be monitored to prevent overflow.

Proper Fueling Procedures

Parking Fueling Vehicles

Properly parking an unattended aircraft fueling vehicle is important for fire prevention and safety.

1. Parking areas for unattended aircraft fuel servicing vehicles shall be located so that at least 50 feet of clearance is maintained from any aircraft, airport terminal building, cargo building or other airport structure that houses the public, other than maintenance facilities and garages for fuel servicing vehicles.
2. Parking areas shall be arranged to prevent any leakage from draining to an adjacent building or storm drain that is not suitably designed to handle fuel.
3. Fueling vehicles shall be arranged to allow for evacuation of the vehicles from an area in an emergency.
4. Fueling vehicles shall be arranged to provide at least 10 feet of clear space between parked vehicles for accessibility for fire control purposes.
5. Fueling vehicles should never be parked inside an aircraft hangar.

Understanding the procedures for delivering fuel into the aircraft is very critical. There are a variety of aircrafts, many with their own specific fueling procedures. No matter what the specific fueling procedure, SAFETY is always the priority. Before fueling an aircraft, check the following:

1. The fuel is the proper type of fuel for the aircraft. The correct procedure for putting fuel into the specific type of aircraft is understood. The aircraft being fueled is the aircraft listed on the service order.
2. If there is any doubt on any of these points, do not fuel the aircraft. Check with a supervisor before proceeding.

3. Emergency fuel shut-off switches are located on the terminal buildings at each aircraft gate. These emergency fuel shut-off switches will stop fuel flow from the hydrant system. Before beginning any fueling operation, make sure you know where they are located. Fire extinguishers are also provided at each gate location.
4. Position the fueling vehicle so that an exit is available in case of emergency. If it is necessary to back into position, be sure that a second person is available to assist you. Set the emergency brake on the equipment and chock the fueling vehicle.
5. If an aircraft is hangared, it must be pulled out at least 25 feet from the hangar before fueling.
6. Once the fuel truck has been positioned at an aircraft for fueling, attach the bonding wire to the aircraft. The clip on the end of the bonding wire must be attached to an approved aircraft bonding point. If none is available, attach it to a bare metal part of the aircraft. This must be bare metal, not painted metal. Never attach the bonding cable to a propeller or brake line. Always allow adequate time for the static electricity to dissipate before beginning fueling or defueling operations. It can take between 2 and 3 minutes for an aircraft to dissipate its static charge after bonding. After bonding is complete, open the fuel caps.
7. Prepare the equipment for fuel delivery. After a safety check is completed, fueling can begin.
8. A guide is required to assist if backing a vehicle into position alongside an aircraft and is also recommended as an added safety measure whenever appropriate.
9. Employers may have additional fueling procedures. At a minimum, the airports' safety procedures must be followed.

10. After fueling has been completed and hoses stowed, remove the bonding cables from the aircraft connection, then ensure that all caps and panels on the aircraft are secured and that all fueling equipment is safely stowed.

Safety points when performing overwing fueling operations on an aircraft:

- Always bond the aircraft before fueling.
- Use approved bonding methods.
- Never place a ladder under wing fueling vents.
- Keep in mind that aircraft wings will settle as the aircraft is fueled. Do not place ladders under aircraft wings when the possibility exists that the wing might settle onto the ladder.
- Always use a wing mat (over wing fueling).
- Never rest the hose or nozzle on the aircraft skin.
- Never insert the nozzle more than three inches into the fuel filler neck.

Bonding

Control of Electrostatic Charges

Controlling electrostatic charges reduces the chances for electrostatic sparks, which are ignition sources, and could result in an explosion or fire. The existence of flammable vapors in fueling and fuel spill recovery operation areas makes it imperative that proper bonding procedures are followed in order to eliminate electrostatic charges. Vapors and ignition sources can equal explosions and fires.

All fueling vehicles are equipped with bonding cables used to prevent sparks from static electricity (static electricity is more prevalent on a cold, dry day). These cables are to be used every time you fuel an aircraft to prevent a fire or explosion that could be caused by the discharge of static electricity.

Aircraft Fueling Vehicle Inspection

Prior to driving or operating an aviation fuel truck, the operator should conduct a walk-around inspection of the vehicle. The following items should be visually checked:

1. Vehicle body: general overall condition, safety defects
2. Windows: cracks, normal operation
3. Lights: lens covers, operational bulbs
4. Tires: damage, proper inflation
5. Fuel tank: leaks, clearly marked with type of fuel, location of emergency shut-off controls and safety placards
6. Hoses, swivels: damage or leaks
7. Nozzles: damage or leaks
8. Bonding cables: clamps, cable for damage
9. Fire extinguisher: properly mounted and unobstructed, safety seals intact, correct pressure and inspection current

Check for satisfactory operation of the brake or safety interlock system. Be sure that all brake or safety sensors installed are functioning satisfactorily and the vehicle does not creep. If inoperative, wheel-chocking procedures must be used until the interlock system is repaired and operating properly. A minimum of one pair of chocks is required to prevent forward or aft movement of the vehicle.

Any defective or leaking equipment must be repaired prior to using the vehicle. Loose items carried in shirt pockets can easily fall into aircraft fuel or fueling vehicle tanks. Such items can contaminate the fuel and cause severe damage to filter and pump systems. Precaution must be exercised to ensure that objects carried in pockets do not fall into any fuel storage tank or system.

Driving/Positioning of Fueling Vehicle

Fueling vehicles are not to be driven under any portion of the terminals. The fueling vehicle shall be positioned so that it can be easily driven away from an aircraft without extensive maneuvering or backing. A clear path shall be maintained to permit rapid removal of the fueling vehicle in an emergency. Vehicles and equipment shall not be located where they would obstruct exit paths from occupied buildings or aircraft in the event of fire.

When positioning the fueling vehicle, a minimum 15 foot radius must be maintained between aircraft fuel vents and the fueling vehicle. Never park the fueling vehicle under an aircraft wing. Aircraft vents may leak onto the fueling vehicle motor and cause a fire.

Emergency brakes on vehicles must be set before leaving the vehicle. All vehicles must be chocked.

Due to the National Security concerns and elevated threat levels, never leave keys in unattended vehicles. If a vehicle is not under the direct control of an authorized employee, the vehicle should be turned off and the keys should be removed. In addition, vehicles parked for extended periods of time, such as overnight, should be locked.

Notice of Violation Form

 City of Phoenix AVIATION DEPARTMENT		DATE WRITTEN	TIME	CLAIM	NOTICE NO.
NOTICE OF VIOLATION	THIS IS TO NOTIFY:			<input type="checkbox"/> AM	
	SUPERVISOR'S NAME:	SUPERVISOR PHONE NUMBER	DATE OF VIOLATION	<input type="checkbox"/> PPM	
	COMPANY NAME AND PHONE NUMBER:		<input type="checkbox"/> AIRPORT <input type="checkbox"/> PHX <input type="checkbox"/> DVT <input type="checkbox"/> GYR		
	LOCATION OF VIOLATION:	COMMENTS:			
	TYPE OF VIOLATION OBSERVED:				
<input type="checkbox"/> 49-CFR §1542.201: Expired / Not having / properly displaying ID (PHX) <input type="checkbox"/> P.C.C. §4-49 (D): Failure to Stop at Designated Stop <input type="checkbox"/> 49-CFR §1542.203: Access to ADA (PHX) <input type="checkbox"/> P.C.C. §4-52: Exceeding 25 mph Max Service Rdwy <input type="checkbox"/> 49-CFR §1542.203: Failure to escort/be escorted (PHX) <input type="checkbox"/> P.C.C. §4-52: Exceeding 15 mph Max/Ramps & Aprons <input type="checkbox"/> P.C.C. §4-2: Airfield Access <input type="checkbox"/> P.C.C. §4-49 (G): No Ramp Driver's Permit <input type="checkbox"/> P.C.C. §4-2: Minimum Standards <input type="checkbox"/> P.C.C. §4-49 (G): Failure to Yield to Aircraft <input type="checkbox"/> P.C.C. §4-2: Aircraft Fueling-Safety & Disposal <input type="checkbox"/> P.C.C. §4-52: Not Properly Logged (PHX) <input type="checkbox"/> P.C.C. §4-2: Violation-General Aviation Handbook <input type="checkbox"/> P.C.C. §4-99: Wildlife Management Violation <input type="checkbox"/> P.C.C. §4-12: Damage to Airport Property <input type="checkbox"/> P.C.C. §4-104: Endangering Persons or Property <input type="checkbox"/> P.C.C. §4-32: Negligent Operation of Aircraft <input type="checkbox"/> Other - See comments					
BADGE CONFISCATED: <input type="checkbox"/> YES <input type="checkbox"/> NO		OPERATIONS SKY HARBOR DEER VALLEY GOODYEAR OFFICES: 602-683-2651 623-869-0977 623-932-4550			
COPIES: WHITE: Adm'n. Files; YELLOW: Individual VIOLATOR (IF AN EMPLOYEE, VIOLATOR'S SUPERVISOR) MUST CONTACT AIRPORT OPERATIONS WITHIN 5 DAYS OF INFRACTION DATE OR AIRPORT BADGE/PERMIT MAY BE SUSPENDED.					
Signature	Print Name	Issued By	Position	121-490 Rev. 9/04	

Nozzles

Fuel is dispensed from two types of nozzles. One type of nozzle is used to fuel aircraft with filler locations on the top of the wings. This is referred to as overwing fueling. The nozzle used for overwing fueling is called an overwing nozzle. This nozzle is similar to those found in automobile service stations. The control handle is referred to as a deadman fuel flow control. If the fueler releases the handle on the nozzle, the fuel will quit flowing. It was designed this way to prevent accidental overflows and spillage.

Never block the deadman control in the open position.

The second type of nozzle is used for delivering fuel into aircraft with single point, pressurized fuel systems; therefore, it is referred to as a single point nozzle. The single point nozzle has a remote deadman attached by cable to the fuel system. If the remote deadman is not physically activated, the fuel will not flow. Single point nozzles are used to deliver jet fuel only.

All fueling vehicles have emergency shut-off valves. The operator should be familiar with each piece of fueling equipment and the location of all emergency shut-off controls. The controls are designed to shut down the fueling process immediately if the operator encounters a fuel leak, split hose, or other problem while fueling.

Fuel Facility Inspections

The following items should be included in a fuel storage facility fire safety check:

1. Check the general condition of the yard area for appearance and cleanliness. It should be free of weeds or any combustible materials.
2. Assure all "NO SMOKING" and "FLAMMABLE" signs are in place.
3. Check the location of emergency shut-off controls. Be familiar with the operation of these controls.
4. Check tanks, piping, valves, hoses, meters, filters, and other equipment for fuel leaks. Any visible leak must be repaired immediately.
5. Check the condition of static bonding reels and clamps.
6. Verify that fire extinguishers are in the proper place with no obstructions. Check all seals, pressure gauges, and inspection tags. If the pressure is low or the seal is broken, the extinguisher must be replaced immediately.
7. Prior to receiving fuel into storage, check the liquid level of all tanks and ensure that all valves are in the proper position to prevent overfill and spillage.

Reference Material

Phoenix Aviation Rules and Regulations

Subject: Jet-A Fuel Spill Policy Phoenix City Code Chapter IV, Article V, Section 4-114

Subject: Aircraft Fueling and Safety Training Program Phoenix City Code Chapter IV, Article V, Section 4-120. This regulation outlines the training and information necessary for proper aircraft fuel handling procedures at City of Phoenix airports.

National Fire Protection Association (NFPA) 407

NFPA 407 is the Standard for Aircraft Fuel Servicing. Chapter 5 "Operations" governs the standards for aircraft fuel servicing fire safety. It includes the requirements for vehicles to have deadman controls and fueling equipment to have emergency fuel shut-off controls. Pertinent information from NFPA 407 has been incorporated into this study guide.

Federal Aviation Regulations (FAR)

FAR Part 139.321 Handling and Storing of Hazardous Materials and Substances.

The FAA requires personnel handling fuel to be trained in the use of appropriate fire extinguishers and to be made aware of the potentially dangerous conditions usually associated with flammable liquid fires.

Federal Aviation Administration (FAA)

FAA Advisory Circular (AC) 150/5230-4 Aircraft Fuel Storage, Handling, and Dispensing on Aircrafts AC 150 provides safety procedures and practices designed to prevent unsafe conditions and decrease the probability of fire and/or accidents. Section one, Introduction, through section eight, Personal Safety, is mandatory reading for all personnel.

Environmental Protection Agency (EPA)

Federal Water Pollution Control Act 1977 and Oil Pollution Act of 1990. The Clean Water and Oil Pollution Acts define responsibilities for compliance with the environmental regulations set forth by the federal government to protect rivers and waterways. Fuel spill clean up and disposal procedures were developed to satisfy these federal regulations.

