

2



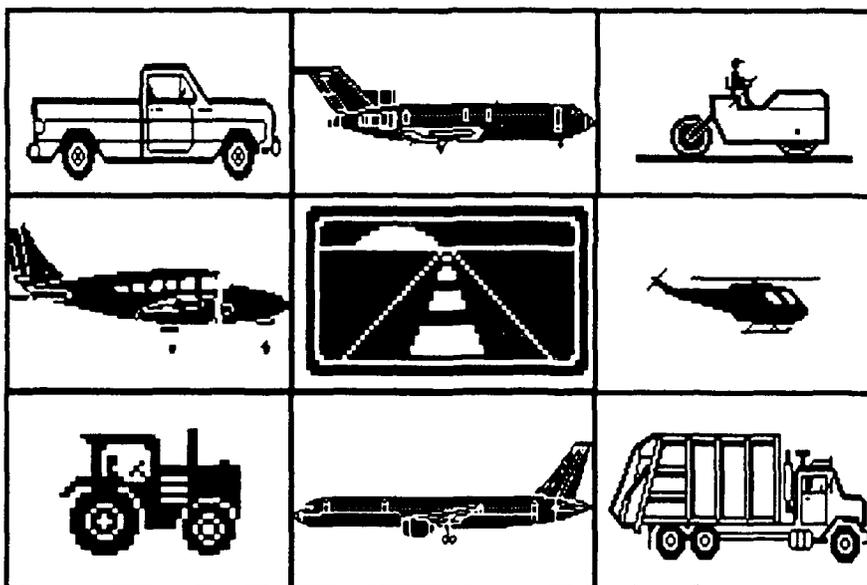
US Department of Transportation

Federal Aviation Administration

TOP SECRET

AD-A231 077

# A GUIDE TO GROUND VEHICLE OPERATIONS ON THE AIRPORT



DTIC  
 ELECTE  
 JAN 15 1991  
 S E D

DISTRIBUTION STATEMENT A  
 Approved for public release;  
 Distribution Unlimited

---

DISTRIBUTION: A-X(AS)-2; A-FAS-1; A-FAF-2/7; A-FFS-7; A-FAT-7

## FOREWORD

Every year there are many accidents and incidents involving aircraft and vehicles on airports that result in property damage, personal injury, and sometimes, death. Most of these accidents and incidents could have easily been prevented.

Some airport operators, airlines, and fixed base operators have extensive formal training programs for employees whose duties involve operating a ground vehicle on the air operations area. However, many rely solely on informal on-the-job training.

In an effort to improve the safety of ground vehicle operations on airports, the FAA developed this guide to ground vehicle operations. The guide provides airport orientation and operational information and would be used as a resource document by the airport operators and other members of the aviation community responsible for training ground vehicle operators. In addition to orientation and operational information, the guide touches on some other areas that a ground vehicle operator may encounter such as Foreign Object Damage, security, and reporting emergencies.

By its very nature, it was necessary for the guide to be generic. If the guide will be used as a training document at a specific airport, there is a need to supplement the guide with information pertinent to the particular airport. Several references are made to this fact throughout the text. There also may be information in the guide not applicable to a particular airport that should be deleted. Some of the necessary supplemental information, along with possible deletions, clarifications, and additions are listed below:

a. Supplemental Information.

(1) Copy of airport's rules and regulations concerning ground vehicle operations.

(2) Airport diagram showing runways, taxiways, aprons, movement areas, vehicle roadways, location of the airport fire station, critical areas for electronic navigational aids, and areas where vehicles are permitted to operate.

(3) Copy of airport traffic patterns.

(4) Airport security procedures that the employee should be aware of and employee's responsibility in this area.

(5) Procedures, person to contact, and telephone number for reporting:

(a) emergencies.

(b) ground vehicle accidents.

b. Deletions, clarifications, and additions. There may be some things covered in the guide that are not applicable to a particular airport, e.g., control towers, ILS's, airport rescue and fire fighting equipment, etc. To avoid confusion, it may be advisable to delete this material. There may also be some material in the guide, or perhaps areas not addressed, that merit explanation or clarification for a particular airport. The guide is not copyrighted, so changes can be made that will enhance its usability at a particular airport.

Any comments or suggestions on improving the driver's guide should be sent to:

Federal Aviation Administration  
Office of Airport Safety and Standards  
Airport Safety & Operations Division, AAS-500  
800 Independence Avenue, SW  
Washington, D.C. 20591

# ACKNOWLEDGMENT

The guide to ground vehicle operations on an airport was written by Betty Stansbury, AAE of BMS Enterprises, under a contract with the FAA. The guide produced under that contract was modified by the FAA to accommodate comments received during coordination with the aviation community. Throughout this effort, the Office of Airport Safety and Standards received support and assistance from the FAA's Office of Safety Oversight.

Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification <i>Per form SD</i>	
By _____	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
<i>A-1</i>	

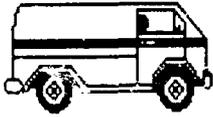


# TABLE OF CONTENTS

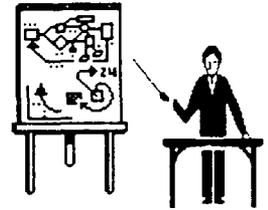
A Message to Vehicle Operators.....	1
The Basic Parts Of An Airport.....	2
Runways.....	2
Taxiways.....	3
Aprons.....	3
And All The Extra Little Things.....	4
Signs.....	4
Lights.....	4
Markings.....	5
Navigational Aids.....	6
What Kind Of Airport Do You Work At?.....	7
General Aviation.....	7
Air Carrier.....	7
Does Your Airport Have An Air Traffic Control Tower.....	7
What If I Have To Go On A Runway or Taxiway?.....	8
At An Uncontrolled Airport.....	8
At A Controlled Airport.....	8
Radio Communications.....	9
How To Talk To The Tower.....	9
Phrases Pilots, Controllers, and Ground Vehicle Operators Use.....	10
Light Signals.....	10

The Aviation Alphabet.....	11
Traffic Patterns.....	11
Other Important Things.....	12
Trash And Rocks Can Be A Real Problem!.....	12
Vehicle/Aircraft Accidents.....	12
How To Report An Emergency.....	13
Aircraft Rescue And Firefighting (ARFF).....	13
Security.....	14
Nighttime Driving-It Looks So Different.....	14
Bad Weather Driving-When It's Snowing, Raining, or Just Plain Lousy Outside.....	14
Specialized Equipment.....	15
Snow Removal Equipment.....	15
Mowers And Other Maintenance Equipment.....	15
Fuel Trucks And Service Vehicles.....	15
What If I Make A Mistake.....	16
How Much Do You Remember.....	17

## A MESSAGE TO VEHICLE OPERATORS



This guide was prepared to teach you about the unique problems and safety requirements of working and driving a vehicle on an airport. If you have never worked on an airport before, it can be a confusing experience for the first few weeks. This guide explains some of the things you will see, how things work, and some of the rules you will have to follow when working on an airport. If you already work on an airport, this guide may teach you some things you didn't know, or remind you of some things you may have forgotten.



### SAFETY IS THE FIRST PRIORITY!



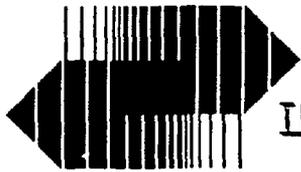
Airports are different than any other place you have ever worked. The potential for injury, not only to yourself, but to pilots and their passengers, is great. Each of us must make safety our first priority. One careless mistake could result in the death or injury of yourself or others. It's up to each one of us to make sure we do everything we can to make the airport as safe as possible.

One way to do that is to know how the airport operates, what the signs and markings mean, the types of problems and safety hazards that may occur, and any special rules that your airport may have. This guide talks about those things and your responsibilities as a vehicle or equipment operator.



We left some blank pages at the back of this guide for your airport manager to add an airport map and a copy of your airport's rules and regulations. If these pages are blank ask your employer to get a copy of them for you. The rules are for your safety as well as the safety of the pilots and their passengers. After you finish reading this guide, ask your employer to show you on the map where you will be working, and which areas you are not allowed to go into.





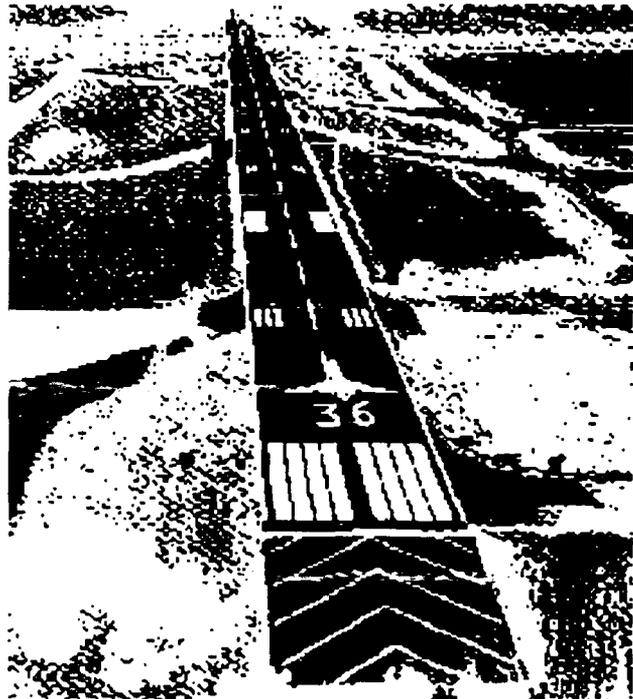
## THE BASIC PARTS OF AN AIRPORT

If you've never worked on an airport before, the names and functions of everything your employer wants you to remember can be confusing. In addition to learning your new job, you need to know some important things about the airport itself.

### **RUNWAYS**

A runway is the area where an aircraft lands or takes off. It can be grass, or packed dirt, or a hard surface such as asphalt or concrete. Runways have special markings on them to help a pilot in the air to tell that it is a runway (and not a road) and to help them when they are landing or taking off. Runway markings are white.

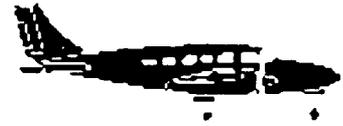
Most runways have numbers on the end. The number is the runway's compass direction. (For example, a runway numbered 36 would be pointing north or 360 degrees.) Some airports have more than one runway going in the same direction, so they add letters to the end of the number - R for right, C for center, and L for left. The other end of the runway is pointing in the opposite direction, so it gets a different number. The runway called 36 would be called 18 (for 180 degrees) if you were looking at it from the other end.



Runways may have other markings besides the end number on them. They may have white stripes down the middle of them, and solid white lines on the edges. Some runways have markings like those shown in the picture above. The most important thing for you to remember about a runway is that it is meant for aircraft use, so you should never drive your vehicle on it, unless you are authorized to do so.



## TAXIWAYS

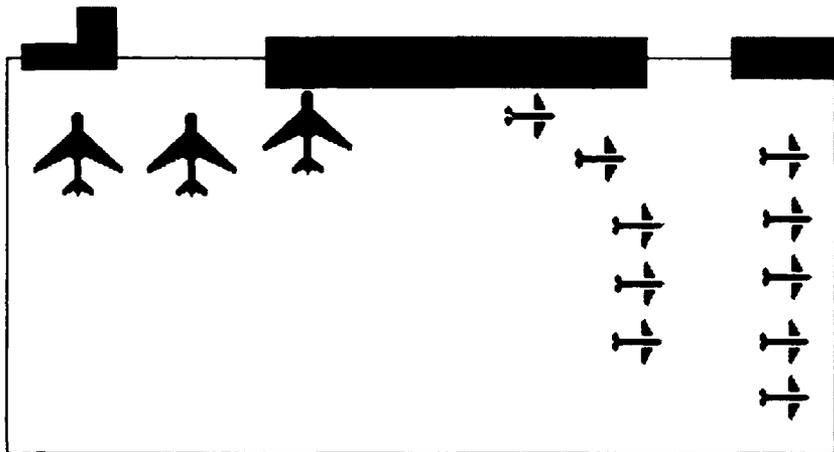


Taxiways are areas used by the aircraft to get to and from their parking place and the runway. Taxiways look a lot like runways, but they usually aren't as wide as the runway, and they don't have the same kind of markings. Taxiway markings are yellow. Instead of numbers taxiways use letters (like A, B, or C) for names. Like runways, taxiways are meant for aircraft use. Never drive your vehicle on a taxiway unless you are authorized to do so.

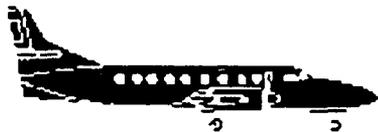
## APRONS

Aircraft aprons are the areas where the aircraft park. Aprons are also sometimes called ramps. They vary in size, from areas that may hold five or ten small planes, to the very large areas that the major airports have. Unlike the runways or taxiways, aprons can be used by vehicles. Your work may require you to drive on an apron. If so, be very careful in these areas.

Watch out for aircraft that are moving and yield the right of way to them. Don't assume the pilot will see you and stop - he or she may be busy with other things like radio communications or checking the aircraft instruments. Every year there are many accidents involving vehicles and aircraft, that result in property damage, personal injury, and, in some cases, death. Don't let this happen to you! Your airport manager has established rules for driving a vehicle on the airport - get a copy and read and obey them. The rules are there for your safety as well as the safety of the aircraft pilot and passengers.

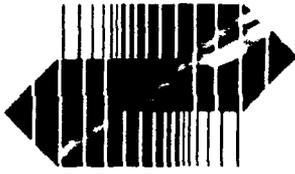


Every year there are many accidents involving vehicles and aircraft, that result in property damage, personal injury, and, in some cases, death. Don't let this happen to you! Your airport manager has established rules for driving a vehicle on the airport - get a copy and read and obey them. The rules are there for your safety as well as the safety of the aircraft pilot and passengers.



In addition to watching out for moving aircraft, be careful not to get too close to a parked one. Aside from nicks and dents which are expensive to repair, you could be hurt if an aircraft suddenly started its engine and you were too close.

You should also be aware of the problem of jet blast or prop wash. This occurs when an aircraft engine is running. If you are near the aircraft, especially if you are behind it, you can be hit by a strong wind that can knock you onto the ground, and in some cases can even burn you. There have been several cases where vehicles have been overturned by jet blast. One way to tell if an aircraft is about to start its engine or if the engine is already running is to look for a flashing light on top of the fuselage (body) of the aircraft.

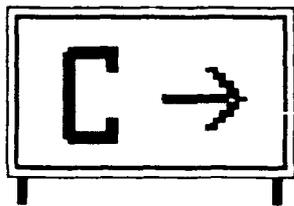
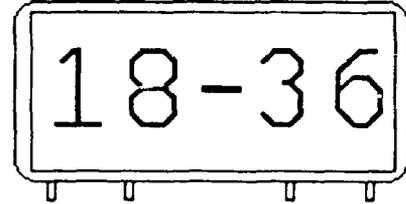


## ... AND ALL THE EXTRA LITTLE THINGS

Let's look at the signs, markings, lights, and navigational aids that are on airports. Depending on how busy your airport is, and whether the airlines use it or not, your airport may or may not have some of these things.

### SIGNS

The signs near the runways and taxiways come in different sizes and colors. If the sign has white numbers on a red background, it is called a runway holding position sign. The name isn't all that important to remember - but what you should remember is that a sign like this (red background, white numbers) means that you are on the edge of the protected area around a runway and you should not be there without special permission (which we'll talk about later in a section called "What if I have to go on the runway?").

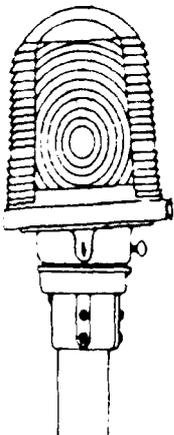


If you see a yellow sign with black letters on it (or at some airports a black sign with yellow letters), that is called a guidance sign. The taxiways at your airport may have these signs next to them. The signs are to help guide the pilot in getting from one place to another while the plane is on the ground (kind of like street signs). Some signs say things like CARGO or TERM (for 'terminal') to identify what the parking area ahead is used for, or the direction to go to find that area.

There are many other kinds of signs. 'Distance remaining' signs are sometimes put by the runway to tell the pilot how much runway length is left. 'ILS Holding position' signs tell pilots and vehicle operators where to stop to avoid interrupting a type of navigation signal used by landing aircraft. The airport manager may put up signs to remind pilots of noise reduction procedures or warning signs to tell you, the vehicle operator, not to drive beyond a certain point.



### LIGHTS



The runways and taxiways at your airport may have lights on their edges. If the runway has lights, the color of the lights along the sides of the runway is white. Near the ends of instrument runways, the lights may have two colors - white on one side and amber on the other. You may see some lights across the end of the runway as well. These are called runway threshold lights and are green on one side and red on the other. Taxiway lights are blue.

In addition to the lights on the ground, your airport may have a flashing light that is on top of a pole or building or tower. This light flashes a green and white light and is called a rotating beacon. This light helps the pilot in the air locate the airport at night.

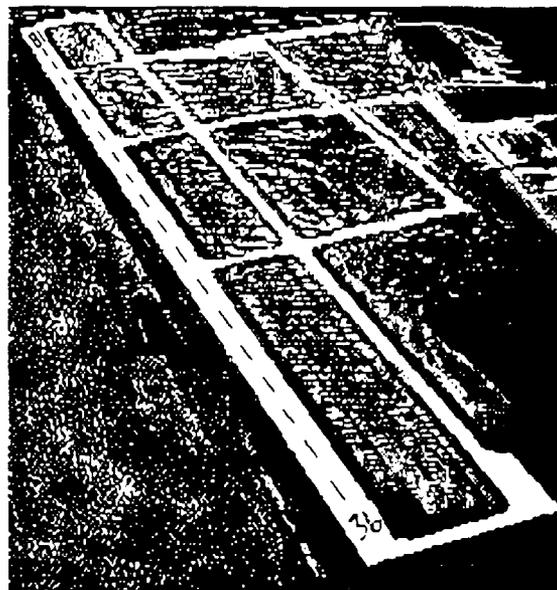
One other light that you may see is on buildings or poles and is called an obstruction light. It is a bright red light and warns pilots that there is an object or structure underneath it.



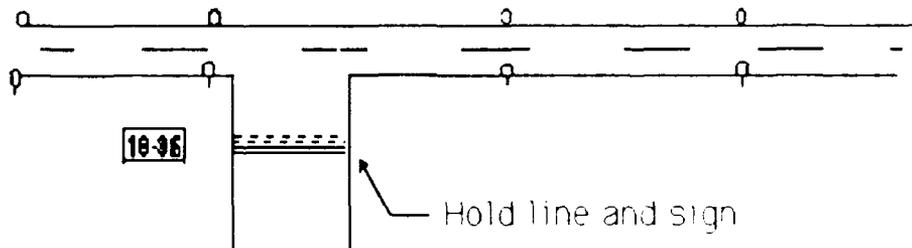
## MARKINGS

Runway markings are always white. Most runways have numbers on each end and a broken stripe down the middle. They may also have a solid white line along the edge. (If the runway at your airport is grass or packed dirt, it may not have these markings.)

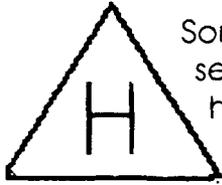
Some runways have extra markings besides centerline and side stripes. These are called touch-down markings, fixed distance markings and threshold markings. They tell the pilot where to touch down when landing, and how much runway is left in front of them.



Taxiways have yellow markings. The center of the taxiway has a solid yellow stripe. The sides may have one or two solid yellow stripes along the edge. Again, not all airports have these markings, especially if the taxiway is grass or dirt. As the taxiway comes up to the edge of the runway, you may see what pilots call a 'hold' line that looks like this. It is two solid yellow stripes followed by two broken yellow stripes. This is the pilot's version of a STOP sign. It means you are about to go onto a runway. Along the side of the taxiway next to the hold line should be a runway holding position sign (the red and white sign we talked about earlier). Remember, you should never go onto a runway, except in special circumstances. So if you see a hold line, stop and don't go any closer to the runway.



Aprons have markings as well. Aircraft parking spaces, called tiedowns, may be marked on the apron. Vehicle roadways may also be marked on the apron. If the aprons on your airport have roadway markings, you should drive your vehicle within those marked areas. Taxiways may also be included on the apron. They will usually be on the outer edge of the apron or provide access to the aircraft gates and parking areas.



Some airports have special landing areas for helicopters. If you see a H in a triangle on the apron or on the ground, that means it is a helicopter pad. Helicopters can takeoff and land right on that small area. Be especially careful when you drive in this area, and look up as well as all around to make sure no one is about to takeoff or land on the pad. Another thing about helicopters - they can blow a lot of dust and gravel around when they are close to the ground, so watch out. And remember, a helicopter is like other aircraft - you must yield right of way.



## NAVIGATIONAL AIDS

Depending on how busy your airport is, and whether or not the airlines use it, your airport may have an instrument landing system. If you ever hear someone talking about an ILS, that is what they are referring to. An ILS is a piece of equipment that sends out an



electronic signal to help guide a pilot in the air to the end of the runway. It is actually made of several pieces of equipment that are placed along the side and near the end of the runway. Some airports now have something called an MLS, which is a lot like an ILS. If you see an orange and white checkered building near a runway with an antenna next to it, or some bright red bars on poles near the end of the runway, that's the ILS.

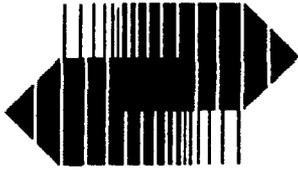
The ILS (and the MLS) is one kind of electronic aid to help pilots. There are a lot of other aids as well. Your airport may have a VOR, or an NDB. The runway may have VASI's or PAPI's. The runway ends may have some flashing lights called approach lights. All

these names can become confusing, but don't worry, you don't have to remember them. What you should remember is that when driving near these pieces of equipment, especially the electronic signal equipment,



you must stay out of the protected areas around them to avoid interfering with their signals. If a road or taxiway is close enough to an ILS to affect it, there should be an ILS holding position sign like we talked about earlier to show you where to stop. If there isn't an airport map at the back of this guide, or if it doesn't show the restricted areas (called "critical areas"), ask your airport manager to show you on the map where they are located.





## WHAT KIND OF AIRPORT DO YOU WORK AT?

There are three different types of airports. Airports that are used by the military (which we won't be talking about in this guide), airports that are used only by general aviation (privately owned airplanes) and airports that are used by both general aviation and the airlines. There is another type of airport, called a heliport, that is used only by helicopters, but we'll consider that a general aviation airport.

### GENERAL AVIATION

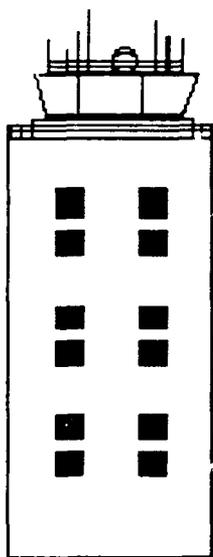
Most airports in this country are general aviation airports. General Aviation is defined as everything but the military and the commercial airline aircraft. GA aircraft range in size from the small propeller driven planes up to the larger jets similar to those used by the airlines.

### AIR CARRIER

Air carrier airports are the ones that the airlines use. An air carrier airport may have just one small commuter airline that comes in a few times a day, or it may have hundreds of airline flights a day.



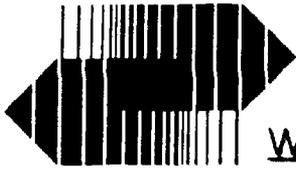
### DOES YOUR AIRPORT HAVE AN AIR TRAFFIC CONTROL TOWER?



Some airports have an Air Traffic Control Tower on the airport which directs the airplanes in the air and on the ground. Controllers in the tower use radar and other equipment to guide aircraft and provide safe separation between them. If you aren't sure if your airport has a control tower, ask your employer.

If your airport has a tower, it is called a 'controlled' airport whenever the tower is open. That means that anyone wanting to fly into or out of the airport must first get permission from the controller. An aircraft on the ground must also get permission from the controller to be on the runway or taxiways. (Controllers call these areas 'movement areas'.) As an operator of a vehicle or piece of equipment, if you ever have to go onto a runway or taxiway, their associated safety areas or any other part of the movement area, you must get the controller's permission first. The airport map that your manager provided with this guide should identify the movement areas for your airport.

When the tower is closed or if there is no control tower, the airport is called uncontrolled. Procedures to follow for going onto the runway at a controlled and uncontrolled airport are discussed in the next section.



## WHAT IF I HAVE TO GO ON A RUNWAY OR TAXIWAY?



There may be times when your work requires you to go onto a runway or taxiway. It may be for maintenance work such as sweeping, snow removal or mowing along the edge of a runway, or to tow a disabled aircraft. If you have to go onto a runway or taxiway, or onto the safety areas along the sides of them, you must do certain things.

### AT AN UNCONTROLLED AIRPORT



An airport is called "uncontrolled" when it does not have an air traffic control tower or the tower is closed. At an uncontrolled airport you don't have to get a controller's permission before going onto a runway or taxiway, but it's a good idea to get the airport manager's permission first. If possible, carry an air-to-ground radio tuned into the airport's common traffic advisory frequency (usually called the UNICOM), and using proper radio procedures, which we'll go into later, say where you are and what you will be doing, especially when you are about to cross a runway. If you can't carry an air-to-ground radio, let someone in authority (the airport manager) know where you will be, and for how long. When you get near the runway-taxiway system, SLOW DOWN. Look both ways, and then look UP for aircraft



that are taxiing, landing or taking off. Always yield the right of way to any aircraft, and give them plenty of room to pass by you. If the aircraft is on the same taxiway as you are and is headed in your direction, back up and move out of their way. If you are about to cross or go onto a runway, look both ways and then

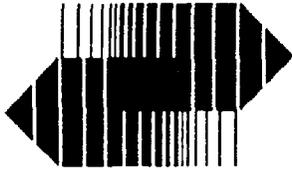
look again. If an aircraft that is about to land is close enough that you can see it, stop and wait for it to land and go past you before going onto the runway. If you can't see both ends of the runway from where you are, go to a place where you can before crossing. Whenever possible, cross at the end of a runway. If your vehicle has a rotating beacon, use it whenever you are on a taxiway or runway. If you are going to be on the runway for a long time (for example - snow removal), ask the airport manager to consider closing the runway. (Only someone with the proper authority, like the airport manager, can close a runway, so don't try to do this yourself.)

### AT A CONTROLLED AIRPORT

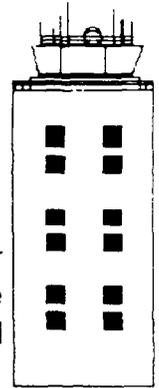


If you work at an airport with a control tower you must get the controllers permission before going onto the movement area which includes the runway or taxiway, or onto the protected areas next to them. Again, whenever possible, try to cross a runway at its end. Turn on your vehicle's rotating beacon if it has one.





## RADIO COMMUNICATIONS



### HOW TO TALK TO THE TOWER

At a controlled airport, you must get permission from the air traffic controller to go onto a runway or taxiway. To get permission, you must use the same procedures and terminology that pilots use. These are the steps you should follow;

- 1** use an air-to-ground radio with the airport's ground control frequency on it. Ask your employer what the ground control frequency is, and make sure your radio is tuned to that frequency. Each vehicle should have a call sign identifying the vehicle (like "Companyname one"). This call sign may be displayed on the dash board of the vehicle. You should know what the call sign for your vehicle is.
- 2** know the proper phrases that controllers and pilots use. (Note: Controllers do not use the 'ten' codes such as ten-four.)
- 3** know what you are going to say before you call the controller. If you are uncomfortable talking on the radio, practice a few times by yourself before calling the controller.
- 4** use the proper sequence in calling the controller. Before you start talking on the radio, make sure that no one else is already talking on that frequency. Then, if the radio is clear, you should:
  - a) say who you are calling, then who you are. "**(Name of Airport) Ground, this is (Your vehicle call sign).**"
  - b) wait for the controller to respond. It may take the controller a little while to call you back if they are very busy. When the controller calls back "**(Your vehicle call sign), this is (Name of Airport) Ground.**", tell the controller who you are again, where you are, and what you want to do. "**(Your vehicle call sign) is on the west apron by XYZ Aviation and would like to proceed down taxiway Alpha and cross runway 12-30 to the east side.**" Then wait for the controller to answer you.
  - c) the controller will either approve or deny your request, or issue special instructions. "**(Your vehicle call sign), proceed down taxiway Alpha and cross runway 12-30.**" Or "**(Your vehicle call sign), proceed down taxiway Alpha and hold short of runway 12-30.**" Acknowledge that you have heard the controller's instructions. "**Roger, (Your vehicle call sign).**" If the controller gives you special instructions (such as hold short), repeat the instructions briefly to the controller to show that you have heard and understand the order. "**(Your vehicle call sign), Roger, Hold short of runway 12-30.**" Page 10 goes over the phrases that controllers use. You should know these phrases and what they mean before going onto any runway or taxiway.
  - d) once you have acknowledged the controller, follow the instructions he/she just gave you.

That's all there is to it. It's not so hard once you get use to it. (We've also included a short instruction sheet on page 20 for you to cut out and place in your vehicle to help you remember what to do.) Also, if you're ever unsure what the controller said, or if you don't understand an instruction, ASK THE CONTROLLER TO REPEAT IT. "**(Your vehicle call sign), Say again.**" The controller would much rather repeat something to you than to have you go some place you shouldn't and cause an accident.

## PHRASES PILOTS, CONTROLLERS, AND GROUND VEHICLE OPERATORS USE



### WHAT IS SAID

### WHAT IT MEANS

Acknowledge	Let me know you have received and understand this message.
Advise intentions	Tell me what you plan to do.
Affirmative	Yes
Confirm	My version is ... is that correct?
Correction	I made a mistake. This is what I should have said.
Go ahead	Continue speaking your message.
Hold	Stay where you are.
Hold short	Stop at the hold line at the intersection of the taxiway and the runway. Do not proceed onto the runway.
How do you hear me?	How well is this radio working?
Immediately	RIGHT NOW.
Negative	No, or permission not granted, or that is not correct.
Out	The radio conversation is ended and no response is expected.
Over	My radio transmission is ended and I expect a response.
Proceed	You are authorized to begin or continue moving.
Read Back	Repeat my message to me.
Roger	I have received all of your last transmission.
Say again	Repeat what you just said.
Speak slower	Speak slower.
Stand by	Wait a moment, I will call you back.
That is correct	The understanding you have is correct.
Unable	I can't do it.
Verify	Request confirmation of information. Also, check and transmit correct information.
Wilco	I have received your message, understand it, and will comply.

### LIGHT SIGNALS

Air traffic controllers have a backup system for communicating with pilots if the aircraft's radios stop working. The controller has a light gun in the tower that sends out different colored lights to tell the pilot what to do. If you are ever working on a runway or taxiway and your radio quits working, you should turn your vehicle toward the tower, start flashing your headlights and the controller will signal you with the light gun. The signals, and what they mean, are listed below. These signals are also described on page 20 so they can be cut out and posted in your vehicle.

### IF THE LIGHT IS

### IT MEANS

Steady green	ok to cross runway or taxiway
steady red	stop
flashing red	move off the runway or taxiway
flashing white	go back to where you started
alternating red and green	use extreme caution

## THE AVIATION ALPHABET

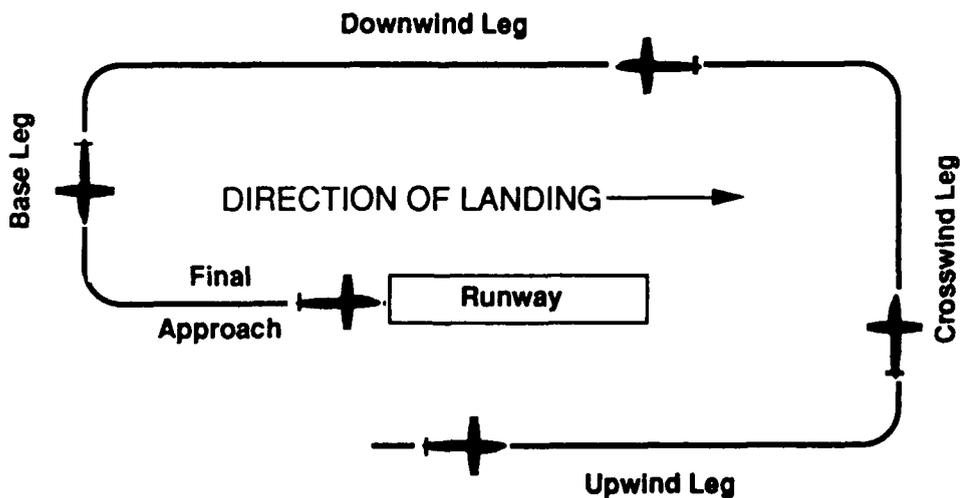
Because some letters have similar sounds, like B and P, the aviation industry uses the following words to reduce confusion. For example, Taxiway B would be referred to as Taxiway Bravo on the radio.

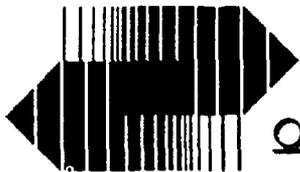
Instead of saying	<u>say</u>	instead of saying	<u>say</u>
A	Alpha	N	November
B	Bravo	O	Oscar
C	Charlie	P	Papa
D	Delta	Q	Quebec
E	Echo	R	Romeo
F	Foxtrot	S	Sierra
G	Golf	T	Tango
H	Hotel	U	Uniform
I	India	V	Victor
J	Juliet	W	Whiskey
K	Kilo	X	Xray
L	Lima	Y	Yankee
M	Mike	Z	Zulu

**ABCDEFGHIJKLMNOPQRSTUVWXYZABCDEFGHIJKLMNOPQRSTUVWXYZ**

## TRAFFIC PATTERNS

Aircraft approaching a runway for landing follow a pattern. In most cases, the pattern is a rectangular box with the pilot making all turns to the left. (Check with your airport manager to find out what traffic patterns are used at your airport.) Each side of the pattern has a name, as shown in the diagram. Pilots use these names to report their position on the radio when they are in the traffic pattern. Familiarity with these names will help you locate an aircraft when the pilot reports his/her position on the radio.





## OTHER IMPORTANT THINGS

### TRASH AND ROCKS CAN BE A REAL PROBLEM!



Trash can be sucked into a jet engine and cause it to quit, which could be deadly if the aircraft is just starting to takeoff. Trash can puncture tires, and dent or puncture wings and other parts of an aircraft, making the aircraft unsafe.

Rocks can be just as serious. A rock sucked into a jet engine can shred parts of the engine in seconds. A rock caught by a propeller can damage the propeller, as well as become a deadly projectile that can hurt anyone standing nearby. In aviation language, the damage caused by rocks and other debris is called 'FOD' - foreign object damage.



You can help make your airport a safer place by following these basic rules:

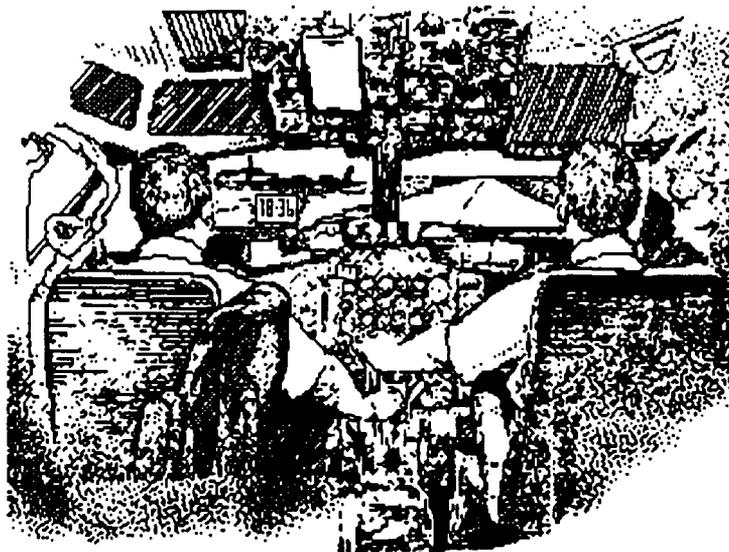
Put all your trash in a covered container that won't be blown over. Get in the habit of picking up any trash and rocks lying around on the ground. Keep an eye out for nails, bolts and other small metal pieces that can puncture tires easily. Also pick up plastic bags instead of letting them blow across the field. Always try to avoid tracking mud and rocks on to the pavement surfaces.



### VEHICLE/AIRCRAFT ACCIDENTS

Several collisions between vehicles and aircraft happen each year, and each of them could have been avoided by using some common sense precautions. Aircraft have the right of way, so it is up to you to stay out of their way. Give the aircraft plenty of room to pass by you. The pilot has a limited view from the cockpit. (In a large airplane, a pilot's view of ground areas immediately in front and adjacent to the sides of the aircraft is limited and to any areas behind the wings is nonexistent.)

Never assume that the pilot sees you and will wait to let you go first. If you must work near or next to a parked aircraft, approach the aircraft slowly and remain far enough away from it that you do not block its path or the path of other vehicles, especially fueling trucks. Look UP also, so that you don't hit any overhanging wingtips. If you do accidentally hit an aircraft, or another vehicle or other property, stop immediately and report it in accordance with your airport's rules and regulations.

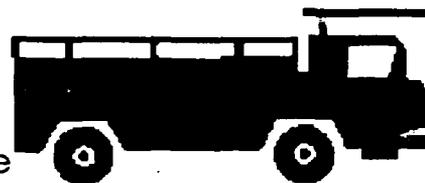




## HOW TO REPORT AN EMERGENCY

Each airport has its own rules and regulations about how to report an emergency. Ask your employer for the procedures to follow to report an emergency at your airport. The most important thing to remember is to TELL SOMEONE (preferably the airport manager or someone in charge), whether you see an emergency happen or you are involved in one, so that the proper emergency personnel can be called for help.

## AIRCRAFT RESCUE AND FIREFIGHTING (ARFF)



Some airports have specially trained firefighters at the airport for aircraft rescue and firefighting. It is important for you to know where the fire station is (if your airport has one). If you see a fire truck driving with its flashing lights on, pull over to where you will be out of the truck's way and do not proceed until it is well clear of you. Ask your employer if your airport has ARFF and if it does, where the station is located.



## SECURITY



When most of us think about security and airports, we think about hijackers and terrorists. But airport security involves much more than protecting against these hostile acts. We must protect the airport against the everyday small problems, too. Aircraft are much more likely to be stolen or vandalized than they are to be hijacked. The person who gets lost and drives on the wrong place is just as big a threat to the safety of the airport as the terrorist.



Depending on the type and size of the airport you work on, your airport's security system may be as simple as a fence or it may include items as complicated as computer controlled automatic gates with television screen monitors. At large air carrier airports, security may



be provided by the airport's police department or a contractor hired just for that purpose. At smaller airports, the airport manager or the FBO manager may be responsible for security. But regardless of who is responsible for providing the overall security for the airport, each person who works on the airport is responsible for making the security plan work. If you see a gate left open and unattended - close it, and then report it to the airport manager or airport security. If you see a strange vehicle on the apron that doesn't look like it belongs there, or appears lost, stop it and offer assistance or directions. Or, if your airport has a security department, contact them for help. If you work at an air carrier airport the airport manager has a complete security plan for the airport. Be sure you know what your responsibilities are. If you are uncertain, ask your employer for a copy of the sections that apply to you and your work area.





## NIGHTTIME DRIVING -IT LOOKS SO DIFFERENT!



If you haven't seen your airport at night yet, the first time may be surprising. If your airport's runways and taxiways aren't lighted, the airport may look like a big black emptiness. If the runways and taxiways are lighted, the airport may look like a confusing array of blue, white, red and green lights.



It's much easier to get lost or confused when driving on the airport at night. Your vision changes at night so that the lights may seem to blur together. If you have to drive at night, it's a good idea to take



someone who is familiar with how the airport looks at night with you the first couple of times. If that's not possible, allow yourself a little extra time to get to wherever you are going, and drive slower than you normally would. Watch for signs and markings like those we talked about earlier. And if you're not absolutely sure, ASK someone.



## BAD WEATHER DRIVING - WHEN IT'S SNOWING, RAINING, OR JUST PLAIN LOUSY OUTSIDE



Have you ever been in a 'whiteout' - when the wind is blowing the snow so badly that you can't see ten feet in front of you? If you have, then you know bad weather can be a real hazard to try to drive in. Snow, rain, freezing rain, and even fog can affect the operation of the airport as well as affecting your work. Here are a few precautions to remember when driving in bad weather:



*Give yourself plenty of time to get wherever you are going.*



*Drive slower than you normally would.*



*If your vehicle has a rotating beacon, use it - it helps others see you.*



*If possible, plan your route to avoid steep or slippery areas.*



*Tell someone which route you are going, and when you'll be back.*



*Test the brakes, headlights and windshield wipers on the vehicle before you leave.*



## SPECIALIZED EQUIPMENT



### **SNOW REMOVAL EQUIPMENT**



The airport manager is responsible for the overall operation of the airport, which includes maintaining the runways in a safe condition. Snow removal may be a part of that job. If you are one of the people who are responsible for clearing the runways, there are a few things you should remember.

Keep alert. Just because you have permission to be on the runway to remove snow doesn't mean someone else might not make a mistake, either another vehicle or an aircraft. If your airport has a control tower, let the controller know where you are every five minutes or so. (They might not be able to see you if the weather is bad.) If your airport doesn't have a tower, or the tower is closed, but you have an air-to-ground radio in your vehicle, turn to the common traffic advisory frequency (usually called UNICOM), and announce where you are and what you are doing every few minutes or so. Let someone in authority know where you are and when you will be back. And make sure your vehicle is in good operating condition before you go out onto the runway.

### **MOWERS AND OTHER MAINTENANCE EQUIPMENT**



Snow removal isn't the only job the airport manager has to take care of. Grass has to be cut, the pavement occasionally needs to be swept and lights and other equipment need repairing. If you are the person who has to do these things, then you will be working on or next to the taxiways and runways, and you need to be extra careful. When working in these areas, follow the information given in the previous section "What if I have to go on a runway or taxiway?"

### **FUEL TRUCKS AND SERVICE VEHICLES**



Your job may require you to fuel or service aircraft. If so, you probably will never need to go onto a runway or taxiway. However, some accidents have occurred because the driver (who normally only drove on the apron and roadways) became confused or wasn't paying attention and accidentally drove onto the runway or taxiway? Other accidents have occurred on the ramp areas where the driver was authorized to drive, either because the pilot and/or driver failed to see each other and didn't stop in time, or because a moving object (either a plane or a vehicle) ran into a parked one. So follow the rules we talked about earlier, as well as your own airport's rules and regulations.



## WHAT IF I MAKE A MISTAKE?

As hard as we try not to, all of us make mistakes once in a while. What will happen to you if you make a mistake while operating a piece of equipment or a vehicle on the airport? That depends on the type of mistake you make, whether any one is hurt or property damaged, and the airport's policy.

The owner of the airport, whether it is a city, state, airport authority, or private owner has certain rules anyone who is on the airport must follow. Ask your employer for a copy of these rules, and then read and obey them. The rules can cover a wide range of subjects, depending on the size and complexity of the airport. Breaking any of the rules may be punishable by a fine or other penalty.

It is up to the representative of the owner of the airport (usually the airport manager) to determine what rules have been broken and what the punishment will be. Most airports look at each mistake on a case by case basis. At a minimum, you and your company would be responsible for any injury or property damage.

If you operate a vehicle or piece of equipment on the airport, it is your duty to report ANY accident, even minor dents or scratches, to your employer, and in accordance with your airport's rules and regulations. Even a small dent in the wrong place on an aircraft can make that aircraft unsafe to fly. Please, do your part to help make the airport a safe place. 





## HOW MUCH DO YOU REMEMBER?



- 1) The red and white sign next to the runway is called a runway hold position sign. If I am next to this sign, it means
  - a. that I am about to go onto the protected area next to the runway.
  - b. that I should follow the sign to get to the parking apron.
  - c. nothing to me, it's only there for the pilot's use, not mine.
  
- 2) Two solid yellow stripes followed by two broken yellow stripes is the marking for a runway hold line. A hold line means:
  - a. all aircraft must stop and be cleared before going onto the runway.
  - b. everyone, including vehicles, must stop unless authorized to proceed onto the runway.
  - c. that I am about to go next to some electronic signal equipment.
  
- 3) Runway markings are
  - a. white.
  - b. yellow
  - c. red
  
- 4) Taxiway markings are
  - a. white
  - b. yellow
  - c. red
  
- 5) A 'controlled' airport is one that has an Air Traffic Control Tower.
  - a. true
  - b. false
  
- 6) FOD is caused by
  - a. bad weather conditions
  - b. the airport manager
  - c. trash and debris
  
- 7) If I have to cross a runway, I should try to do so
  - a. at the end
  - b. in the middle
  - c. wherever I want
  
- 8) If the air traffic controller signals me with a flashing red light, I should
  - a. stop
  - b. move off the runway or taxiway
  - c. ignore the signal as it is for aircraft only

### ANSWERS:

1. a 2. b 3. a 4. b 5. a 6. c 7. a 8. b

YOUR AIRPORT LOOKS LIKE THIS:

(If this page is blank, ask your employer for  
a copy of your airport's map.)

YOUR AIRPORT'S RULES AND REGULATIONS ARE:

(If this page is blank, ask your employer for a copy  
of your airport's rules and regulations.)

OTHER INFORMATION YOU SHOULD KNOW:

OTHER INFORMATION YOU SHOULD KNOW:

OTHER INFORMATION YOU SHOULD KNOW:

-----Cut this out and place in your vehicle-----

TALKING TO THE TOWER

**What to do**

Initially

when the controller calls you back

the controller will approve, deny or  
issue a special instruction

**What to say**

who you are calling, who you are

who you are, where you are, what you  
want to do

acknowledge that you have heard the  
controllers response and will obey

LIGHT SIGNALS

**If the light is**

Steady green

steady red

flashing red

flashing white

alternating red and green

**It means**

ok to cross runway or taxiway

stop

move off the runway or taxiway

go back to where you started

use extreme caution