



AIRFIELD DRIVER'S TRAINING HANDBOOK

June 2016



FOREWORD

This guide was compiled from existing San Antonio City ordinances, and general airfield practices. The intent of this guide is to supplement information provided in the Airport Rules and Regulations, and comply with Federal Aviation Regulation (FAR) Part 139.329 concerning the movement of ground vehicles on the airfield.

TABLE OF CONTENTS

SECTION 1 – INTRODUCTION

- 1.1 Purpose 3
 - a) Authority
 - b) Enforcement
- 1.2 Requirements and Fees 3
- 1.3 Prohibitions 3 - 4
 - a) Negligent Operations
 - b) Unsafe Vehicle Operations
 - c) Driving Under the Influence of Alcohol and Drugs
 - d) Unattended Vehicles
 - e) Pedestrian Traffic
- 1.4 Consequences 4
 - a) Revocation of Privileges
 - b) Runway Incursion
 - c) Motor Vehicle Laws
 - d) Right of Ejection

SECTION 2 – AIRFIELD ACCESS

- 2.1 Requirements 4 - 5
 - a) Entry / Exit Points
 - b) Authorized Vehicles
 - c) Escort Procedures
 - d) Top Hat Issuance

SECTION 3 – GROUND VEHICLE OPERATIONS

- 3.1 Procedures 5 - 7
 - a) Right of Way
 - b) Vehicle Lanes
 - c) Perimeter Roadway
 - d) Speed Limit
 - e) Vehicle Parking Areas

- f) Night Driving
- g) Ground Vehicle / Aircraft Interaction
- h) Foul Weather Operations
- i) Driving Near Construction
- j) Guidelines for Safe Driving
- k) Engine Run-ups
- l) Helicopter Operations
- m) Foreign Object Debris (FOD)

- 3.2 Special Vehicle Requirements 7
 - a) Baggage Tugs
 - b) Baggage Carts
 - c) Belt Loaders
 - d) Catering Trucks
 - e) Lavatory Trucks/Carts
 - f) Slow-Moving Vehicles

- 3.3 Vehicle Accidents 7
 - a) Accidents Involving Motor Vehicles
 - b) Damage to City Property

SECTION 4 – DESCRIPTION OF AIR OPERATIONS AREA

- 4.1 General 7 - 9
 - a) Movement Areas
 - b) Non-Movement Areas
 - c) Runways
 - d) Taxiways
 - e) Safety Areas
 - f) Hold Position Markings
 - g) ILS Critical Area Markings
 - h) Apron / Ramp
 - i) Elevated Runway Guard Lights

SECTION 5 – TRAVERSING RUNWAYS AND TAXIWAYS

- 5.1 Requirements 9
 - a) Beacon Required
 - b) Two-Way Radio Required
- 5.2 Communications 10 - 12
 - a) Radio Communication
 - b) Crossing Runway/Taxiway
 - c) Loss of Radio Communication
 - d) Light Gun Signals
 - e) Navigating in the Movement Area

APPENDIX

I – Radio Phraseology	13
II – Phonetic Alphabet	14
III – Glossary	15 - 18

ATTACHMENTS

Attachment 1 – Runway Safety Areas / Obstacle Free Zones	19
Attachment 2 – Airfield Violation Notice of Correction	20
Attachment 3 – Designated Areas	21

SECTION 1 - INTRODUCTION

1.1 PURPOSE

The City of San Antonio Aviation Department has prepared this handbook to provide instruction for those persons operating a vehicle on the Air Operations Area (AOA) outside of tenant leased areas at San Antonio International Airport.

This guide has been prepared to instruct drivers in safe, efficient, and easily-learned methods of interacting with aircraft, Air Traffic Controllers, and other vehicles while on the airfield.

a) AUTHORITY

A vehicle operator must possess a valid Airfield Driver's License when operating a vehicle on the AOA, and must provide this license for inspection when requested by a representative of the Aviation Department.

b) ENFORCEMENT

The Airport Director has authorized Airport Police, Safety and Airport Operations personnel to issue **Citations and/or Airfield Violation Notice of Corrections** for driving violations on the AOA. See **Diagram (Attachment 2)**

1.2 REQUIREMENTS and FEES

The unique environment of the AOA requires specialized training to prevent accidents and ensure the safety of airfield users. Individuals driving on the AOA are required to possess a valid state driver's license, an SAT Security Identification Display Area (SIDA) badge, and an Airfield Driver's License.

It is the responsibility of all tenants operating on the airport to inform their employees and any drivers on their leased area of the Airfield Driver's Training Program, and of the necessity to obtain a license before operating outside of a leased area. Employees who do not have an Airfield Driver's License will not be allowed to

operate a vehicle on the airfield outside of the tenant's leased area.

To obtain an Airfield Driver's License, an employee must attend an Airport-sponsored driver's training class, scheduled in advance, and pass a written test with a score of 90% or greater. To schedule a class, call Airport Operations at 207-3475. Valid State driver's license and SAT Security Identification Display Area (SIDA) badge must be presented at the time of the class. Drivers Training Class fees are as follows:

Non-Movement -	\$20.00
Movement -	\$25.00
License Replacement -	\$10.00
Expired License Penalty -	\$20.00

Employees with access to movement areas and safety areas shall receive initial training, and recurring training every 12 consecutive calendar months thereafter. Federal Aviation Administration (FAA) and Aviation Department personnel with duties requiring access to runways will be required to pass a practical driving exam in the movement area every 12 consecutive calendar months before their airfield driver's license can be obtained or renewed. The practical will be administered by Airport Operations in a vehicle provided by the student.

Employees having access to non-movement areas shall receive the initial training, and recurring training every 24 consecutive calendar months thereafter.

1.3 PROHIBITIONS

a) ***Negligent Operations*** - Vehicles on the AOA must **not** be operated in a negligent or careless manner.

b) ***Unsafe Vehicle Operation*** - No person shall operate a vehicle on the airport which is overloaded, carrying more passengers than the vehicle was designed for, or in excess of the speed limit. No person shall ride on the running board, stand up in the vehicle, or ride with arms and legs protruding from the vehicle, except when the vehicle is designed for such use.

c) **Driving Under the Influence of Alcohol or Drugs** - No person under the influence of alcohol, narcotics, dangerous drugs, or controlled substances shall operate a vehicle on the airport.

d) **Unattended Vehicles** - Unattended vehicles (driver has vacated the immediate premises around the vehicle) must not be left with the engine running. If the driver is not behind the wheel of the vehicle, but still in close proximity performing job duties and the engine is running, **THE WHEELS MUST BE CHOCKED.**

e) **Pedestrian Traffic** - Unnecessary pedestrian traffic on the aprons is discouraged for safety reasons. Properly badged individuals may walk between the gate areas and the baggage claim areas at both terminals, maintaining close proximity to the terminal building. All other pedestrian traffic between apron areas is prohibited unless given prior permission by authorized personnel from the Aviation Department.

1.4 CONSEQUENCES

a) **Revocation of Privileges** – All drivers who are found in violation of the Airfield Driver’s Training guidelines or the Airport Rules and Regulations will be subject to possible revocation of driving privileges on the AOA and possible termination of their Airfield Driver’s License.

First Violation – **Written Warning and/or Refer to Municipal Court**

Upon the date of a driver’s first violation, that driver begins a 12 month “probationary period” within such time further violations will have the following effects:

Second Violation – **Revocation of Driving Privileges and must attend training and/or Refer to Municipal Court and/or Fine.**

Third Violation – **Termination of Driving Privileges and/or Refer to Municipal Court and/or Fine and/or Forfeit of airport badge. Any subsequent non-driving violation could result in forfeiture**

of airport badge and/or Fine and/or Refer to Municipal Court.

Individual driving violations will drop from record after 12 months, in the order of the date when they occurred.

b) **Runway Incursion** – Any person involved in a Runway incursion will no longer be allowed to operate a vehicle on the AOA until deemed eligible by the City Aviation Department.

c) **Motor Vehicle Laws** - All applicable motor vehicle laws in the State of Texas are enforceable on the airport. Any person found guilty of violating the Airport Rules and Regulations shall be subject to a Class C Misdemeanor. Airport written Notice of Corrections or written citations may be issued for violations of the Driver’s Training Program.

d) **Right of Ejection** - Persons failing to comply with Airport Rules and Regulations may be instructed to leave the airport. Failure to comply with a proper order to abide by these rules and regulations and refusal to leave the airport, shall be regarded as trespassing.

SECTION 2 - AIRFIELD ACCESS

2.1 REQUIREMENTS

a) **Entry/Exit Points** - The AOA may be accessed through buildings (i.e. terminals, loading docks, Fixed Base Operator’s (FBO’s), or private hangars), or pedestrian/vehicle gates. Pedestrian traffic may not use vehicle gates without temporary approval granted by the Aviation Director or his designee. The Airfield Driver’s License does not provide access to all vehicle gates. The Airport Security Compliance - Badge Division provides proper badging and access codes for specific work areas. In all cases, the individual must ensure that the gate or door closes fully. Malfunctioning and unattended open AOA access doors or gates must be reported to Airport Communications immediately. These access points should be monitored by Airport Communications and

the individual reporting the open access point until relieved or the access point is secured.

b) *Authorized Vehicles* - All vehicles on the AOA must be marked in a manner approved by the Aviation Department. All vehicles that operate outside of a tenant leased area must be marked with either the company name in 6" high lettering or a logo at least 12" high on both vertical sides of the vehicle. Additionally, insurance requirements established by the Airport must be met in order to drive on the AOA without an escort. Unmarked vehicles on the AOA may be temporarily identified by a numbered "top hat" with SAT logo, issued by Aviation Department personnel.

c) *Escort Procedures* - Escorts are required for all vehicles that do not meet the minimum insurance requirements as established by the City of San Antonio. An escort must be provided by a properly badged individual in an authorized vehicle to and from the AOA entrance, and while the vehicle is on the AOA. First, brief the individual being escorted on aircraft right of way, following distance, hand signals, operable lights and other measures to ensure safety. The escorted person must be under the control of the properly badged person at all times, to and from the AOA.

d) *Top Hat Issuance* - Top hats must be signed for on a daily basis. When a top hat is issued, an authorized vehicle that meets all the requirements for San Antonio International Airport must escort the vehicle.

SECTION 3 - GROUND VEHICLE OPERATIONS

3.1 PROCEDURES

a) *Right-of-way* - Aircraft, emergency vehicles, and pedestrians on the apron always have the right-of-way.

b) *Vehicle Lanes* - White painted roadways have been established on the aprons for use by all ground vehicles. Unless safety dictates, all vehicles traveling on the aprons

are required to use the vehicle lanes until closest to their destination. Only then may they leave the vehicle lane and travel across the open apron.

c) *Perimeter Roadway* - A roadway has been established along the inner perimeter fence line to minimize Runway and Taxiway crossings and to accommodate all authorized personnel and vehicles with proper markings to traverse from one area to another. This roadway has been designated as a non-movement area.

d) *Speed Limit* - The speed limit on aprons, vehicle lanes, and aircraft parking and hangar areas shall not exceed 15 MPH, except for emergency vehicles responding to an emergency. Although it is not posted, the speed limit on the perimeter road is 35 MPH in areas away from tenant ramps. Use caution on the corners, as some turns are severe.

e) *Vehicle Parking Areas* - All tenant vehicles must be parked in their leased areas, or temporarily in an area which does not block an aircraft, vehicle, vehicle roadway, fuel truck, or any entrance/exits. Temporary parking spaces are located near the Terminal A and B baggage claim areas and are marked. Never park a vehicle within the red out-lined envelope at the air carrier terminal gates.

f) *Night Driving* - Driving on the airfield at night requires extra caution. Obstacles, other vehicles, and aircraft are not clearly visible. All vehicles operating after sunset must have and use operating headlights and taillights which are clearly visible from the front and rear. Equipment such as baggage carts that are not equipped with lights must have reflectors or reflective tape on the rear. Additionally, all motor vehicles must have functional brake lights. Drivers must take care not to shine vehicle lights into an aircraft cockpit.

g) *Ground Vehicle/Aircraft Interaction* - There are a number of clues that help drivers determine when aircraft are going to move:

1. Aircraft should have flashing red beacon lights clearly visible when preparing for and/or in motion. Look for these lights on any parked aircraft to anticipate movement.
2. Prior to leaving the gate area, aircraft will be cleared of surrounding ground equipment and wheel chocks, aircraft doors will be closed, and wing walkers may be stationed.
3. At parking areas anticipating an aircraft arrival, ground vehicles, and/or personnel will be positioned a safe distance from the arrival location.
4. Drivers of radio-equipped vehicles should monitor Ground Frequency (121.9) to be more aware of where aircraft are and their destination on the airport.
5. Jet Blast – Maintain a safe distance from moving aircraft. The forces of jet blast far exceed the forces of propeller aircraft. Jet blast velocities are capable of causing serious bodily injury and damage to ground vehicles and other aircraft.

h) Foul/Inclement Weather Operations -

When in foul weather conditions (heavy rain and/or reduced visibility); use night driving precautions, in addition to decreasing vehicle speed to adjust for the reduced visibility and to maintain safe stopping distances. Nonessential vehicle traffic should be suspended until the weather improves.

i) Driving Near Construction - Construction and maintenance are frequent occurrences on the AOA. When near these areas, drivers should watch for any unmarked holes, trenches, or drop-offs.

j) Guidelines for Safe Driving - The following guidelines should be observed while driving on the AOA:

1. Vehicles should pass no closer than 20 feet from a parked aircraft and maintain

- an even greater distance from moving aircraft.
2. If in an enclosed vehicle, nonessential radios should be turned off or at minimal volume, and a window should be opened slightly to aid in hearing approaching aircraft.
3. Vehicle windows, headlights, and taillights should be clean and free of obscuring substances such as dirt and mud to allow for an unobstructed field of vision. Brake lights on all vehicles must be operational.
4. Drivers should constantly scan their field of vision to observe any converging traffic and be prepared to give way. Remember to scan above for landing helicopters.
5. Exercise extreme care at sunrise and sunset, when the sun is at the horizon, as glare can easily obscure other traffic.
6. Exercise care after dark as aircraft lights are easily camouflaged by airfield and building lights.

k) Engine Run-Ups - Before takeoff, smaller aircraft must run their engines at high RPM. This is called a run-up. Strong gusts of air behind the aircraft created by the propeller or engine (prop wash/jet blast) will occasionally fling loose objects in the vicinity quite a distance. The airport has designated maintenance run-up areas in the Movement Area. Extreme caution must be used when operating in these areas.

l) Helicopter Operations - In addition to fixed-wing aircraft, helicopters will takeoff, land and air-taxi (hover) on and above airport runways, taxiways, and aprons. Because of the unique capabilities of helicopters, special precautions must be taken. Most important is to be aware of the main rotor and tail rotor blades which are nearly invisible when turning at high speed. It is best to maintain a safe distance until the engines are shut down and all rotors have stopped turning. Helicopters often only communicate on

Tower Frequency and appear "out of nowhere". Use extra caution in the vicinity where helicopters are known to land and/or park.

m) Foreign Object Debris (FOD) - FOD is debris such as rocks, bits of metal, paper, rubber, or other trash on the AOA which may be easily ingested into a jet engine. Drivers observing FOD on the AOA should stop, remove the debris, and dispose of it properly.

3.2 SPECIAL VEHICLE REQUIREMENTS

There are various types of specialized vehicles on the airfield, many of which have special rules of operation which drivers must obey, in addition to all other Airfield Regulations.

a) Baggage Tugs - Tugs shall not tow more than four baggage carts in one train.

b) Baggage Carts - Baggage carts must have a parking brake engaged when parked unattended.

c) Belt Loaders - Belt loaders must not be driven in the extended position.

d) Catering Trucks - Catering trucks must never drive in the extended position, be backed-up without an observer, make turns at high speeds (due to their high center of gravity), or be parked unattended without wheel chocks in place.

e) Lavatory Trucks/Carts - Lavatory trucks and carts must be continually monitored for leakage of contents.

f) Slow-Moving Vehicles - Due to the slow moving nature of vehicles such as cargo loaders, forklifts and others, these types of vehicles should not be operated on a taxiway or near a runway without an escort from Airport Operations.

3.3 VEHICLE ACCIDENTS

a) Accidents Involving Motor Vehicles - All persons involved in or a witness to an accident, which includes personnel, aircraft, equipment or vehicles, occurring on the airport shall immediately call Airport Communications at **207 – 3433** and remain at the scene. Communications will dispatch an Airport Police Officer and Airport Operations to take your report. Vehicles and property involved in an accident should not be moved (unless immediate safety dictates) until an Airport Police Officer and Airport Operations grants permission to do so.

b) Damage to City Property - The owner or operator of any vehicle, which by reason of improper operations causes any damage to airport property, shall be responsible to the City for such damages.

SECTION 4 - DESCRIPTION OF AIR OPERATIONS AREA

4.1 GENERAL

The AOA is divided into two separate areas: the Movement area (controlled), and the Non-Movement area (non-controlled). **See Diagram (Attachment 3)**

a) Movement Areas - In a movement area, clearance must be obtained from ATCT prior to entrance or movement. Specifically, these controlled areas are runways, taxiways, and safety areas of the airport that are used for taxiing, takeoff, and landing of aircraft, exclusive of aprons and aircraft parking areas.

b) Non-Movement Areas - Clearance is not required from the ATCT in a non-movement area. Non-movement areas are the aprons and parking areas, driving lanes, and perimeter roadways.

c) Runways - Runways are within the movement area. The FAA defines a runway as, "A defined rectangular area of a land airport prepared for the landing and takeoff of aircraft along its length." A runway may be identified by large white number(s)

painted on each end of the runway along with a large, white, dashed centerline.

Taxiways lead to Runways, and holding position signs indicate the taxiway/runway intersection, commonly referred to as a mandatory hold line. The holding position sign is installed in-line with the mandatory hold line, which is painted on the taxiway pavement. The holding position signs are internally lit. Mandatory Surface painted holding position signs are also in place to alert pilots and drivers of the holding position location.

At night and during inclement weather, the runway edges are illuminated by white and/or yellow edge lights and the runway thresholds by bi-directional red/green lights. Runway 12R is a Category II Precision Instrument Runway. It has in-pavement, centerline and touchdown zone lighting. Runway 04/22 has in-pavement centerline lighting only.

d) Taxiways / Taxiway Safety Areas – Taxiways are within the movement area. They are for the movement of aircraft on the airport surface to transition from the runway to parking areas and vice versa. All taxiways are designated alphabetically and have a solid yellow centerline stripe. Where a taxiway approaches a runway, the centerline is enhanced to warn pilots and drivers they are approaching a runway. Where a taxiway abuts an apron, a double yellow line (either dashed or solid) marks the taxiway's edge. The taxiway entrance from an apron is identified by a yellow on black taxiway location sign stating the name of that taxiway (e.g. Taxiway A). Directional signs (black on yellow) show the way to other taxiways by stating the taxiway letter and a directional arrow. At night and during inclement weather, taxiway edges are illuminated by blue edge lights and taxiway guidance signs are internally lit.

Taxiway L at SAT is a high speed taxiway exiting the runway in which northbound traffic is prohibited. This taxiway is also equipped with red taxiway edge and center line lights (northbound) to prevent accidental usage.

The taxiway safety areas at SAT for air carrier aircraft are 171 feet wide or 85.5 feet from each side of the taxiway centerline.

e) Runway Safety Area / Obstacle Free Zone - Safety Areas are defined areas of either a runway or taxiway and the surrounding surfaces that are prepared or suitable for reducing the risk of damage to aircraft in the event of an undershoot, overshoot, excursion from a runway, or the unintentional departure from a taxiway. A safety area is the rectangular area surrounding runways and taxiways. Objects placed in the safety area must be necessary for aircraft operations and be frangibly (break-away) mounted. The *Obstacle Free Zone* is a defined volume of airspace established to provide a greater measure of safety for pilots and their aircraft in the immediate area of the runway. As object clearing and limitation surfaces, the Obstacle Free Zones and Runway Safety Areas preclude taxiing and parked aircraft, or vehicles and personnel from penetrating the surfaces in close to the runway and approach areas.

The entrance into a runway safety area / obstacle free zone from a taxiway is marked by a runway holding position marking and a holding position sign. The edge of the Runway Safety Area / Obstacle Free Zone boundary may be determined by drawing an imaginary line parallel to the runway from the hold position marking at one end of the runway to the hold position marking at the other end of the runway.

Runway end safety areas consist of cleared, drained and graded areas extending beyond the end of each runway. Vehicles may not be positioned in the Runway Safety Area / Obstacle Free Zone of a runway without clearance from ATCT. The holding position markings for Runway 12R-30L are 260 feet from the Runway 12R-30L centerline. The runway end safety area extends 1,000 feet from each end of the runway. The holding position markings for Runway 4-22 are 258 feet from the Runway 4-22 centerline. The runway end safety area extends 1,000 feet from each end of the runway. The holding position markings for Runway 12L-30R are 200 feet from the

Runway 12L-30R centerline. The runway end safety area extends 600 feet from each end of the runway. **See Diagram (Attachment 1)**

f) Holding Position Markings - A runway holding position marking is a set of lines painted on a taxiway used to mark the entrance into the runway safety area. The hold line is a paired set of parallel yellow lines, two solid and two dashed. The dashed lines are always to the runway side of the hold line and should be crossed prior to advising ATCT that you are off of the runway. The solid lines indicate that the hold line should not be crossed or entered from that side without proper clearance from the ATCT. Remember, one is not considered off of the runway until the runway safety area has been cleared.

g) ILS Critical Area Markings - Additional hold lines may be placed before the actual runway safety area in areas known as ILS Critical Areas. During periods of inclement weather or poor visibility when the Instrument Landing System (ILS) is in operation, the ATCT will request traffic to hold at the ILS critical area marking. The ILS critical area marking is paired with an adjacent red and white identifier sign stating "ILS". In times of doubt, it is always better to stop at the ILS critical area marking and contact the ATCT, than to continue.

h) Apron/Ramp - These terms are identical and are often interchangeable. We will use the term apron to eliminate confusion. An apron is a paved area used to accommodate aircraft for the purposes of loading or unloading passengers or cargo, refueling, parking or maintenance. An apron has no specific identifying markings except the yellow lead-in lines (taxi lanes), which aircraft follow when in transit between a taxiway and a parking area. Caution should be used in these areas because aircraft movement can occur without ATCT clearance.

i) Elevated Runway Guard Lights - Elevated runway guard lights supplement the Holding Position Marking and are positioned between

the taxiway edge and the holding position sign. The light consists of two alternating flashing yellow lights mounted horizontally in a yellow colored light fixture. These elevated lights have been positioned to highlight, to the taxiway user, that a runway environment exists on the other side of the lights, and clearance must be obtained from ATCT prior to moving past these lights.

SECTION 5 – TRAVERSING RUNWAYS AND TAXIWAYS

5.1 REQUIREMENTS

Only authorized FAA and Aviation Department employees are permitted to cross a runway, after ATCT clearance has been obtained. The most important thing to keep in mind when operating on runways and taxiways is that these are movement areas, clearance must be obtained from the ATCT, and all instructions must be obeyed. Additionally, it is essential that visual clearance is obtained even if ATCT has provided clearance. **ALWAYS VISUALLY CHECK THE MOVEMENT AREAS ON WHICH YOU ARE ABOUT TO PROCEED, BEFORE DOING SO.** It is a unique environment where mistakes can easily cause a great loss of life and property.

If you have a non-movement driver's license and inadvertently drive onto a taxiway, immediately turn around and leave the area. If you are unsure of where to go, get into the grass, turn your vehicle toward the ATCT, repeatedly flash your headlights, and wait for assistance.

a) Beacon Required – All vehicles operating on the movement area are required to have operating flashing beacons, or be escorted by a vehicle which is so equipped in accordance with FAA standards. Operations and Maintenance beacons are amber, ARFF beacons are red and Airport Police beacons have alternating red and blue lights.

b) Two-Way Radio Required - All vehicles crossing or operating on runways and/or taxiways must be equipped with a VHF radio or VHF portable unit, have ATCT clearance

and prior permission from the Aviation Director or his designee.

Just because a vehicle is equipped with a two-way radio and beacon, it is not allowed to be operated on the movement area without the permission of the Aviation Director or his designee.

5.2 COMMUNICATIONS

This chapter provides guidelines for conversing via radio, with examples of proper radio phraseology and information on what to do if radio communications are lost while in the movement area.

a) Radio Communication - It is advisable to monitor the Tower (**119.8**) and Ground Frequencies (**121.9**) before communicating on the AOA. Since this area can be a busy, abbreviated communication environment, precise effective terminology must be learned and used. The terminology used on the AOA is unique. Citizens Band (CB) terminology or police "10-codes" should never be used when communicating with ATCT. See Appendix I, II & III for listings of common aviation terminology.

When contacting the ATCT via VHF radio, a few simple guidelines must be followed when conversing:

1. Think before speaking. What exactly is to be said? How much "air time" is required? Is there a better communications medium available (e.g., telephone, e-mail, facsimile, etc.)?
2. Listen before transmitting. Courtesy is essential with so many users on the same frequency. Wait until a conversation is finished before transmitting to avoid interrupting other's transmissions.
3. Keep transmissions brief and concise.
4. Speak clearly at conversational speed and volume.
5. Don't be intimidated; novices are often

unfamiliar and require assistance while learning the finer points.

6. Repeat all ground and tower instructions. The following are general guidelines for a typical radio conversation with the ATCT. The same information may be stated a number of different ways; therefore, it is important that the user choose words he/she is comfortable with. Appendix I provides a listing of words commonly used when communicating with ATCT via radio.

1. First, call the controller position and identify yourself by your radio call sign.
2. The controllers will then answer and wait for a reply, or ask you to standby until contacted to go ahead with your message.
3. You may then go ahead, stating, who you are (call sign), where you are on the airfield (location), and where you'd like to go on the movement area (destination).
4. The controller will then reply with an approval to your request or with other instructions.
5. If approved, turn on beacon, repeat the controller's instructions, visually clear yourself, and proceed.
6. Contact the controller again when requesting additional or change in clearance, completion of previous instructions or to inform the controller that you are off a particular surface.

EXAMPLE NO. 1

USER: "San Antonio Ground, Operations 202 (two zero two)."

ATCT: "Operations 202, Ground, Go Ahead."

USER: "Ground, Operations 202 abeam terminal B, request clearance down Taxiway D to M7 Aerospace."

ATCT: "Operations 202 proceed as requested, cross Runways 12R and 12L without delay."

USER: "Operations 202 proceeding as requested and crossing Runways 12R and 12L without delay."

USER: "Ground, Operations 202 off Runway 12R crossing Runway 12L."

ATCT: "Operations 202, Roger."

USER: "Ground, Operations 202 off Runway 12L."

ATCT: "Operations 202, Roger."

USER: "Ground, Operations 202 off all movement areas."

ATCT: "Operations 202, Roger."

EXAMPLE NO. 2

USER: "San Antonio Ground Control, Maintenance 544."

ATCT: "Maintenance 544, Ground, Go Ahead."

USER: "Ground, Maintenance 544 at the West Ramp, request clearance on Taxiway G for sweeping."

ATCT: "Maintenance 544 proceed on Taxiway G, remain clear of all runways, give way to all aircraft, and report clear."

USER: "Maintenance 544 proceeding on Taxiway G, will remain clear of all runways."

USER: "Ground Control, Maintenance 544 clear of Taxiway G."

ATCT: "Maintenance 544, Roger."

Note: To avoid confusion, the phonetic alphabet should be used when transmitting letters of the alphabet. **See Appendix II.**

b) *Crossing Runways and Taxiways* - Crossing active runways and taxiways is the most critical operation on the movement area. Occasionally instructions are misunderstood or clearance was thought to have been obtained, resulting in incursions and close calls with aircraft. Designated runway crossing point requirements have been established to reduce incursions. Taxiways A and D are the designated crossing points for Runways 12R/30L and 12L/30R. Taxiways N/F and D are used for Runway 04/22.

All tug drivers that operate in the movement area are required to have a movement driver's license. All tugs towing aircraft will be required to have an Aviation Department escort when crossing runways. Airport Operations is tasked with providing the escort. Requests will be made to the **Operations Supervisor at 413-4928.** All other tenant vehicles must travel to their destination via the perimeter road or public streets. Advance notification will help prevent delays to your destination.

c) *Loss of Radio Communications* - If radio communication with the ATCT is lost while on the movement area, the following procedure must be followed:

1. If on an active runway, clear immediately at the next available taxiway and move out of the safety area of the runway. Then, obtain recognition by flashing the vehicle headlights in the direction of the Control Tower and proceed upon receiving the appropriate light gun signals or an escort.

2. If on an active taxiway, obtain recognition of the ATCT at the hold bar by flashing the vehicle headlights in the direction of the Tower and proceed only upon receiving proper light gun signals or an escort.

d) *Light Gun Signals* - Light gun signals are intended to convey communications from the ATCT to a vehicle with loss of radio contact. The ATCT will signal using various types and colors, each with their own meaning. All personnel driving on the AOA should be familiar with the

meaning of each signal and be able to follow light gun signals.

your supervisor or from Airport Operations.

Type and Color - Signal Meaning

Steady Green - Cleared to cross or go

Steady Red – Stop

Flashing Red - Clear the Taxiway/Runway

Flashing White - Return to starting point

Alternating Red/Green - Exercise extreme Caution

e) Navigating within the Movement Area - Driving on the runways and taxiways can be confusing and drivers may easily become disoriented. The following guidelines should be used to avoid becoming disoriented and accidentally encroaching on an active runway:

1. Know your location at all times.
2. Pay attention to all guidance signs and know what each means.
3. Watch for runway hold position markings and runway identifier signs.
4. Do not enter a movement area without clearance.
5. Use buildings or objects as reference points.
6. Carry an airfield map and occasionally locate your position and its relation to your reference points. Reference **Attachment 3** for an airfield diagram and for the non-movement areas.
7. When in doubt as to your location, ask the ATCT for progressive instructions, don't try to "fake it."
8. If you are authorized but do not feel capable, ask for additional training from

IT MUST BE EMPHASIZED - THE ONLY PERSONNEL WHO CAN CROSS AN ACTIVE RUNWAY WITHOUT AN ESCORT ARE AUTHORIZED CITY OF SAN ANTONIO AVIATION DEPARTMENT AND FEDERAL AVIATION ADMINISTRATION EMPLOYEES.

APPENDIX I

RADIO PHRASEOLOGY

Acknowledge - Let me know that you have received and understood my message.

Active - Runway currently used for takeoff and landings.

Advise Intentions - Tell me what you plan to do.

Affirmative - Yes.

Clear/Cleared - Authorized as specified.

Disregard - Ignore last instruction or message.

Expedite - No delay in compliance.

Final - Aircraft on approach for landing.

Give Way - Allow traffic to have the right-of-way.

Go Ahead - Proceed with your message.

Hold - Remain in present position, or not to proceed past a specified point.

Immediately - Used when compliance is required to avoid an imminent situation.

Negative - No, permission not granted, or that is not correct.

NORDO - Loss of radio communication (no radio).

Over - My transmission has ended; I expect a response.

Proceed - Authorized to continue.

Progressive - Step-by-step directional instructions.

Roger - I have received your transmission. This phrase will not be used to answer a question requiring a yes or no answer.

Say Again - A request to repeat the last transmission. Usually specify transmission or portion not understood or received.

Standby - The controller must pause for a few seconds to attend to a higher priority. If delay is lengthy, the caller should reestablish contact.

Traffic - Possible conflicting object, vehicle, or aircraft.

Unable - Indicated an inability to comply with a specific instruction, request, or clearance.

Verify - Request confirmation of information.

When Able - Expect compliance at the first opportunity.

WILCO - I have received your message, understood it, and will comply as directed.

APPENDIX II

PHONETIC ALPHABET

A - ALPHA	AL - FAH	N - NOVEMBER	NO - VEM - BER
B - BRAVO	BRAH - VOH	O - OSCAR	OSS - CAH
C - CHARLIE	CHAR - LEE	P - PAPA	PAH - PAH
D - DELTA	DELL - TAH	Q - QUEBEC	KEH - BECK
E - ECHO	ECK - OH	R - ROMEO	ROH - ME - OH
F - FOXTROT	FOKS - TROT	S - SIERRA	SEE - AIR - AH
G - GOLF	GOLF	T - TANGO	TANG - OH
H - HOTEL	HOH - TELL	U - UNIFORM	YOU - NEE - FORM
I - INDIA	IN - DEE - AH	V - VICTOR	VIK - TAH
J - JULIET	JEW - LEE - ETT	W - WHISKEY	WISS - KEY
K - KILO	KEY - LOH	X - X-RAY	EKS - RAY
L - LIMA	LEE - MAH	Y - YANKEE	YANG - KEY
M - MIKE	MIKE	Z - ZULU	ZOO - LOO

APPENDIX III
GLOSSARY

AIR CARGO - Terminal(s) used for the handling of air cargo. AT SAT, West Air Cargo is located west of Terminal B. East Air Cargo is located east of Runway 04/22 along Wetmore Road.

AIR CARRIER - A person who undertakes directly by lease, or other arrangement, to engage in air transportation. This includes an individual, firm, partnership, corporation, company, association, joint-stock association, governmental entity, and a trustee, receiver, assignee, or similar representative of such entities. {See 14 CFR Part 1.1 Federal definitions.}

AIR OPERATIONS AREA (AOA) - The areas on an airport intended for the movement and parking of aircraft.

AIR TAXI - Helicopter movement above the surface but not normally over 100 feet above ground level (hover taxi).

AIR TRAFFIC CONTROLLER - A person authorized to provide air traffic control service.

AIRPORT TRAFFIC CONTROL TOWER (ATCT) - A terminal facility that provides air traffic control services to aircraft operating in the vicinity of an airport or on the movement area.

AIRCRAFT - A device intended for flight through the air.

AIRFIELD - The area inside of the airport perimeter fencing including runways, taxiways, aprons and unpaved areas, excluding buildings.

AIRPORT - An area used for the landing and takeoff of aircraft, including buildings and facilities.

APRON - A defined area on an airport accommodating aircraft for the purposes of loading and/or unloading passengers and/or cargo, refueling, parking, or maintenance.

AVIATION DEPARTMENT - City of San Antonio Aviation Department, the owner and operator of San Antonio International Airport and Stinson Municipal Airport.

AVIATION DIRECTOR - The Chief aviation representative for the City of San Antonio; Aviation Department Director.

BAGGAGE CART - A non-motorized vehicle used to transport baggage or freight, often joined in multiple-cart trains.

BLAST FENCE - A semi-permanent structure for the redirection of jet blast.

CATERING TRUCK - A large scissor-lift vehicle providing aircraft with food service.

DEVIATION - A vehicle or pedestrian that proceeds without proper clearance from ATCT.

DRIVER - Any person responsible for the direct control of a vehicle while the vehicle is in operation.

EMERGENCY VEHICLE - Vehicles of the Police, Fire Department, Operations Section and ambulances responding to an emergency.

ENHANCED TAXIWAY CENTERLINE MARKING - Taxiway centerlines are enhanced, (dashed yellow lines on each side of the centerline) for 150 feet prior to a runway holding position marking as a measure to prevent runway incursions.

FEDERAL AVIATION ADMINISTRATION (FAA) - Charged with regulating air commerce to promote safety and development, achieving the efficient use of the navigable airspace of the United States, promoting, encouraging, and developing civil aviation, developing and operating a common system of air traffic control and promoting the development of a national system of airports.

FEDERAL AVIATION REGULATIONS (FAR) – These are administrative regulations promulgated by the FAA, which include rules governing aircraft, airmen, airspace, air traffic, air carriers, and airports.

FEDERAL INSPECTION SERVICES (FIS) - AGENCIES: U.S. Customs; U.S. Immigration and Naturalization Service (INS); U.S. Dept. of Agriculture (USDA). These organizations are responsible for inspecting all persons and items arriving on international flights.

FIXED BASE OPERATOR (FBO) - An on-airport business providing general aviation services; usually including aircraft parking/storage, aircraft fueling, aircraft rental, flight instruction, and charter services.

FOREIGN OBJECT DEBRIS (FOD) - Any loose object or debris on the Air Operations Area that could be a hazard to air carrier aircraft.

FUEL TRUCK - A specialized vehicle used for dispensing jet fuel or aviation gasoline.

GENERAL AVIATION – All civil aviation except air carriers and large aircraft operations.

GROUND CONTROL (FREQUENCY 121.9) - Air Traffic Control at SAT responsible for traffic on the aprons, taxiways, and runway crossings.

GROUND SUPPORT EQUIPMENT - Equipment used to supply auxiliary needs to parked aircraft (i.e., electricity, catering, and air conditioning, etc.).

HANGAR - Building intended to house aircraft.

HELIPORT - An airport, or an area of an airport, used or intended to be used for the landing and takeoff of helicopters.

HOLDING POSITION MARKING - Set of dashed and solid yellow lines (two each) marking a designated stopping point on a taxiway or entrance onto a runway.

INSTRUMENT LANDING SYSTEM (ILS) - Electronic navigational aids to assist aircraft when landing in poor weather. Consists of an array of two antennae: a localizer antenna located at the runway departure end and a glide slope antenna array located next to the runway touchdown zone.

ILS CRITICAL AREA - Area by ILS antennae array which if entered into during ILS operations, negatively affects the ILS signals.

INCURSION – An occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft. **Categories A, B, C and D.**

JET BLAST - High-velocity exhaust from jet turbine engines which has the power to overturn a vehicle and cause extensive damage or loss of life.

LAVATORY TRUCK/CART - Vehicle designed for the handling of aircraft lavatory waste.

LIGHT GUN - Multi-color signaling device used by ATCT for visual communication.

LOADING BRIDGE - A device used between an aircraft and the terminal building to transfer passengers to and from an aircraft.

MOVEMENT AREA – The runways, taxiways and other areas of an airport that are used for taxiing, takeoff, and landing of aircraft, exclusive of aprons and aircraft parking areas. ATCT clearance is required in these areas.

NON-MOVEMENT AREA - Aprons and parking areas. No ATCT clearance is required in these areas.

NOTAM (Notice to Airmen) - A notice of a timely nature containing information on the establishment, condition, or change in any aeronautical facility, service, procedure or hazard.

OBSTACLE FREE ZONE - a defined volume of airspace established to provide a greater measure of safety for pilots and their aircraft in the immediate area of the runway. This area precludes taxiing and parked aircraft, or vehicles and personnel from penetrating the surfaces in close to the runway and approach areas.

PARALLEL RUNWAYS - Two or more runways at the same airport whose centerlines are parallel. In addition to runway number, parallel runways are designated as L (left) and R (right), or if three parallel runways: L, R and C (center).

PERIMETER ROADWAY - Vehicle roadway established along the inner perimeter of the airport, used to MINIMIZE the need to cross ACTIVE taxiways and runways.

POWER BACK - The process of backing aircraft away from the gate under power using reverse thrust. Creates jet blast in the vicinity.

PUSH BACK - The process of backing aircraft away from the gate not under its own power but being pushed by an aircraft tug.

RAMP - See APRON.

RESTRICTED AREA - The area of the airport inside the perimeter area fence where personnel are required to possess a valid I.D. Badge.

RUNWAY - A defined rectangular area for aircraft takeoff and landing.

RUNWAY IDENTIFIER SIGN - Red and white guidance sign located at the runway entrance from a taxiway, identifying the runway name.

SAFETY AREA - A defined area comprised of either a runway or taxiway and the surrounding surfaces that is prepared or suitable for reducing the risk of damage to aircraft in the event of an undershoot, overshoot, or excursion from a runway or the unintentional departure from a taxiway. Any structure inside this area must be frangibly mounted, designed to breakaway at a height not to exceed 3 inches.

SIGNAGE - six types of signs on the AOA:

1. Mandatory Instruction
2. Location
3. Direction
4. Destination
5. Information
6. Runway (distance remaining in thousands of feet)

STERILE AREA - The area past the security checkpoint inside the terminal concourse.

TAXIING - The process of aircraft moving under power on the airport surface.

TAXILANE - Non designated paved area, within the non-movement area used by aircraft for taxiing.

TAXIWAY - Designated paved area for aircraft movement in the movement area.

TENANT - Party which leases a building or other space from the Aviation Department.

TERMINAL - A building for the movement of passengers in transit between ground and air transportation. Provides ticketing, baggage handling, and other passenger services.

TOW - The movement of an aircraft on the airport surface by a ground vehicle.

TOWER CONTROL (frequency 119.8) - Air Traffic Control at SAT, responsible for traffic on the runways, aircraft landing and taking off, and airborne traffic within the airport vicinity.

TUG - Tractor for use on the airfield. Small types tow small aircraft and baggage carts while large tugs tow large aircraft.

VEHICLE - Every device, excluding aircraft, by which any person or property may be transported or drawn, including bicycles.

VEHICLE LANE – White painted roadways on aircraft aprons for vehicle travel.