

**JUNEAU INTERNATIONAL AIRPORT**

**AIRFIELD GROUND VEHICLE OPERATOR**

**SELF-STUDY GUIDE**

**February 2007**

## I. PURPOSE OF THIS STUDY GUIDE

Every year at airports like Juneau International Airport (“JNU”), ground vehicle incursions, and accidents on the airfield result in property damage, personal injury, and even death. Most of these accidents could have been prevented if safe operating procedures had been followed.

The City and Borough of Juneau, Juneau International Airport, under guidance of the Federal Aviation Administration 14 CFR Part 139, has developed this study guide to familiarize those persons with a need to drive or operate vehicles within the controlled areas and movement areas of the JNU airfield. These established rules and procedures are for the safety of all persons. Failure to comply may result in penalties or loss of ramp driving privileges or revocation of ramp badge.

This Study Guide should be completed by all employees prior to operating vehicles on ramps or aprons in the air operations areas. **It is now required to have annual retraining and testing done prior to badge re-issuance.** The training and testing is required of ALL persons operating vehicles in these areas including pilots, contractors and airport employees. Fixed Based Operators (FBO’s) and Companies on the airfield will be required to review and test their own employees. Once the employee has completed the training and testing, the FBO or Company will send proof of the training (and test) to Airport Security prior to badging.

This Study Guide is a summary of the information provided by Federal regulation and advisory circulars. This is an addendum to the 49 CFR 1542 security badging regulation requirements. Completion of this portion of the driving test must be in conjunction with a current ramp badge; SIDA or Non-SIDA (Part 135).

Additional information and training is required for individuals operating vehicles on taxiways and runways controlled by Juneau Air Traffic Control Tower (ATCT). Please contact the Airport Manager’s Office (789-7821) or Airport Operations & Maintenance Office (789-4001) if your duties require vehicle operation in these areas.

## II. DEFINITIONS

Most of these terms are described in general airport terms, unless otherwise specified uniqueness to JNU.

**121 Operations (121)**- those passenger aircraft operations pertaining to Federal Aviation Administration regulation 14 CFR Part 121; governing domestic, flag, (large commercial) certificated Air Carrier Operations

**135 Operations (135)**- those aircraft operations pertaining to Federal Aviation Administration regulation 14 CFR Part 121; governing commuters or on-demand (small commercial) certificated Air Carrier Operations

**Accident**—a collision between one aircraft or vehicle and another aircraft, vehicle, person, or object that results in property damage, personal injury, or death.

**Aircraft** – for the purposes of this study guide can mean fixed wing aircraft (jet or propeller aircraft), or helicopter.

**Air Operations Area (AOA)**- means a portion of the restricted area of the airport, specified in the airport security program. This area includes aircraft movement areas, aircraft parking areas, aircraft loading ramps, and aircraft safety areas, for use by aircraft regulated under 49 CFR 1544, and any adjacent areas (such as general aviation areas) that are not separated by adequate security systems, measures, or procedures.

**Airside**—those areas of an airport that support aircraft activities.

**Air Traffic Control Tower** – (*ATCT*) agency responsible for controlling movement of aircraft and vehicles in the Movement Areas of the Airport and in the air.

**Apron or Ramp**—a defined area on an airport or heliport intended to accommodate aircraft for the purposes of parking, loading and unloading passengers or cargo, refueling, or maintenance.

**Foreign Object Debris (FOD)** – debris, trash or other objects found on runways, taxiways, and aprons which have the potential to cause aircraft damage.

**General Aviation (GA)**—that portion of civil aviation that encompasses all facets of aviation except air carriers holding a certificate of public convenience and necessity.

**Ground Vehicle**—all conveyances, except aircraft, used on the ground to transport persons, cargo, fuel, or equipment.

**Hold Lines**-two solid yellow lines followed by two dashed yellow lines on the pavement where an aircraft or vehicle must stop and wait, as directed by ATCT, prior to entering an active runway

**Incursion**—any occurrence at an airport involving an aircraft, vehicle, person, or object on the ground that creates a collision hazard or results in loss separation with an aircraft taking off, intending to take off, landing, or intending to land.

**Law Enforcement Officer (LEO)**—any person vested with police power of arrest under Federal, state, county, or city authority and identifiable by uniform, badge and other indication of authority.

**Movement Area**—the runways, taxiways, and other areas of an airport that aircraft use for taxiing, takeoff, and landing, exclusive of loading ramps and parking areas, and that are under the control of an air traffic control tower or the appropriate air traffic control facility or FSS.

**Operator**—*or driver*; any person who is in actual physical control of an aircraft or a motor vehicle or motorized mobile equipment.

**Runway (R/W)**- that area of the Airport specifically used for active take-off and landing of aircraft. The active runway is designated by white painted lines and lighting as described below. *While JNU's float pond is technically a runway, there are no markers, buoys, etc. which denote runway edges or centerline.*

**Security Identification Display Area (“SIDA”)** – that area of the Part 121 Air Carrier operations and Air Cargo operations which requires identification media and strict measures to maintain security.

**Taxiways (T/W)/Taxilanes**—those parts of the airside designated for the surface maneuvering of aircraft to and from the runways and aircraft parking areas.

**Vehicle** – *also ground vehicle and equipment (for the purposes of this study guide)* see “Ground Vehicle”, above.

### **III. AIRSIDE VEHICLE REQUIREMENTS**

#### **General –**

1. Carts or pieces of equipment being towed or carried after darkness must have side and rear reflectors or rear lights.
2. Vehicles must be properly marked, as outlined in FAA Advisory Circular 150/5210-5, *Painting, Marking, and Lighting of Vehicles Used on an Airport*. Vehicle must be identifiable with company name permanently affixed to vehicle with minimum 4” lettering, unless otherwise approved by the Airport.
3. Vehicles must be registered with the Airport Manager’s Office and display a current year JNU permit in order to operate on ramps, aprons, and other restricted areas.
4. Vehicles must be in sound mechanical condition with unobstructed forward and side vision from the driver’s seat, and have operable headlamps and brake lights.
5. Vehicles operating on the movement area or outside of a roadway must be equipped with operating amber rotating beacon or equivalent.
6. All aircraft refueling vehicles and any support vehicle 8- feet or more in width shall be equipped with a flashing amber beacon and flashing front, tail, and clearance lights that are activated at all times when operating on the airside.
7. A vehicle not equipped with two-way radio communications is prohibited from entering runway and taxiway movement areas unless escorted by a vehicle with the appropriate air traffic control facility two-way radio capability.

#### **Fuel Trucks –**

Any fuel truck carrying flammable material (AVGAS, jet fuel, etc.) may not park within 50 feet of any buildings which are not designed to accommodate fueling activities. Fuel trucks must have beacons at all times and ground wires must be utilized. Fuel trucks are subject to FAA fueling requirements, inspections and reports.

## **IV. GENERAL OPERATOR RULES**

Upon completion of this guide and test, the operator shall know the rules and responsibilities associated with driving or operating a vehicle on the JNU airside ramps and aprons. Airside vehicle operator (driver) requirements are as follows:

1. The operator must have in their possession authorization to operate the class of vehicle by an appropriate state-licensing agency and, as applicable, by the operator's employer through a company training/certification program. Operator must notify JNU immediately if their State-issued Driver License has been suspended or revoked.
2. The operator must have in their possession a JNU issued media badge showing authorization to drive on the airfield aprons and ramps.
3. Operator may not lend their badge to anyone for any reason.
4. The operator shall operate the vehicle in a safe manner; observe speed limits prescribed by airport management, and stay within authorized movement areas. No driver may operate a vehicle under the influence of alcohol or any drug that impairs, or may impair, the operator's abilities.
5. The driver may only operate in those areas of the airfield for which they have been badged/authorized. All rules which apply to the operators' badge type accompanying this driving privilege shall be followed and enforced.
6. The operator shall assure the vehicle meets all criteria noted under Vehicle Requirements below, including communications capabilities, for safe operation in the area(s) designated.
7. No operator shall park, or leave unattended, vehicles or other equipment that interfere with the use of a facility by others or prevent movement or passage of aircraft, emergency vehicles, or other motor vehicles.
8. Each vehicle operator using an airport perimeter (security) gate shall ensure the gate closes behind the vehicle prior to leaving the vicinity of the gate. The vehicle operator shall also ensure no unauthorized vehicles or persons gain access to the airside while the gate is open.
9. The operator is responsible for the activities of each vehicle passenger on the airside of the airport.
10. The operator acts in the best interest of the Airport and the safety of those around them. The operator shall report unusual activity, safety hazards, security discrepancies, FOD or concerns that may jeopardize the safety or security of the Airport or persons on the premises.

11. Operator shall report any malfunctioning gate or suspicious persons/vehicles within the fenced area by notifying the Airport immediately.
12. Operator (or operator's company) is responsible for the costs to repair or replace gates or other property on the airport which they, or their escort damage.
13. Operator may provide escort of unbadged person(s) for the purpose of their company business. Operator must be appropriately badged as having escort authority. Operator must remain with their escort **at all times** within the fenced area until they have been escorted outside of the perimeter gate.
14. Airport identification media and access authority are the property of the Juneau International Airport and may be confiscated or de-activated at any time the Airport believes that use an individual may jeopardize the security or safety of the Airport. The Airport may be directed by the Federal Aviation Administration or the Department of Homeland Security (Transportation Security Administration) to limit or close access into all or part of the airport perimeter during times of national emergency, heightened security threat levels or changes to Federal airfield operations.

## V. GENERAL DRIVING RULES

**Speed Limits.** The maximum speed limit on the ramps and aprons is 20 MPH, or as otherwise posted, or as weather, aircraft operations, visibility, pavement conditions (snow/ice), or apron traffic permits. Construction (large) vehicles have a maximum speed limit of 10 MPH on ramps and aprons. Speed limits are strictly enforced.

**Aircraft Right-of-Way. AIRCRAFT ALWAYS HAVE THE RIGHT-OF-WAY.**

Operator must give all aircraft and helicopters space to maneuver in/out of their parking spaces. Moving aircraft, emergency vehicles and passengers enplaning or deplaning aircraft have the right-of-way at all times over vehicular traffic. Vehicle operators must yield the right-of-way. In addition, operators should:

- a. Watch cockpit blind spots—pilots typically cannot see behind or below the aircraft. Watch for turning propellers or accelerated jet blast which indicate that an aircraft may be ready to move.
- b. Avoid jet blast or prop wash, which can blow debris or overturn vehicles.
- c. Be aware and avoid moving propellers that can cause damage, injury, or death.
- d. Be aware of other vehicle movements—you may not hear them approaching due to aircraft engine noise.
- e. Watch for tugs towing baggage carts. A tug may tow up to five (5) carts behind it; allow enough space behind the tug and carts.

**Emergency Vehicles and Snow Removal Operations.** Operator must YIELD to all emergency operations (Aircraft Rescue and Fire Fighting, Ambulance) and Airport snow removal operations.

**Low Visibility and Nighttime Driving.** Low visibility due to fog and snow conditions, and nighttime driving can disorient operators on an airfield. Signs, markings, beacons, reflectors and vehicle lights become more important during these conditions. Slow down and be aware of your location at all times. Increased vigilance of moving aircraft and ramp equipment, personnel and other vehicles is necessary to prohibit accidents. Use your lights, beacons and reflectors, and reduce your speed.

**Roadways.** JNU has two-way painted roadways (solid white lines or zippered lines with a dashed white line in the middle) to designate drive lanes around major aprons and movement areas. Rules of the road apply here; operators must drive on the right side. This is two-way traffic. Again, the aircraft has the right-of-way. Don't assume that a pilot can see you in a roadway. Vehicles are required to use these roadways to transit between locations. Operators must exit and enter roadways at the most expeditious point and avoid driving on aprons and ramps unless necessary to conduct business in these areas. Vehicles that operate on the 135 and 121 ramps outside of the painted roadway MUST HAVE AN AMBER LIGHT BEACON affixed to the top of their vehicle.



*Sample Roadway pictures*



**Parking.** Park properly! Vehicles and equipment may not be parked in the roadways at any time. Vehicles and Equipment may not be parked within 6' (feet) of the airport perimeter fence (inside and outside the fence). Vehicles and equipment may not park within 15' (feet) of a fire hydrant. Vehicles and equipment may not park in front of the public entrances to the terminal or in front of perimeter gates.

**FOD.** Do not allow debris or trash to blow out of your vehicle. These can get sucked up into jet engines or caught in propellers and cause aircraft damage or personal injury from flying FOD. If you see FOD on the ground, stop and pick it up. Keep an eye out for small FOD such as bolts, nails or scraps of metal which can puncture tires and cause damage. Notify the Airport or your supervisor immediately if you notice a lot of FOD or notice FOD in restricted driving areas.

**Bird Strikes, Wildlife and Trash.** Trash that is not properly disposed of may become FOD or may become a bird attractant and eventually cause bird strikes. Besides food, shiny objects and other items may attract birds to an area. Do not feed birds on the Airport property and do not leave items in the back of a vehicle which could attract a bird or other wildlife. Notify the Airport or your supervisor if you see concentrated bird activity, any wildlife on the Airport or persons feeding wildlife/birds. Wildlife and Bird Strikes are a very serious matter at airports around the world and cause many fatal crashes each year.

*Sample Bird Strike photos*



**STOP BARS.** Stop bars are painted at intersections of roadways and areas where aircraft area taxiing to/from the taxiway and ramp/parking. These are areas of concentrated aircraft transiting activity. The stop bars are either a thick painted white line or white and red. Operators are required to stop at these stop bars and look for transiting aircraft; both fixed wing and helicopters. Proceed with caution through these areas and remember: Aircraft have the right-of-way.



**SIDA.** This area surround the Part 121 Air Carrier ground operations and Air Cargo operations. This area is bordered by roadways and stenciled with “SIDA AREA”. *Operators are forbidden to enter this area without displaying proper SIDA identification media and beacons on their vehicles.*



**LEAD-IN LINES.** These are single yellow curved lines which direct the pilot of the aircraft off the runways (at intersections) and direct the path to the terminal jetways on the aprons.

## VI. SIGNAGE AND MARKINGS

Colors and layout of signs and pavement markings are universal at airports and inform pilots, ground crew and operators of their location on any airport. **IMPORTANT NOTE:** *The information provided in this section is for this ramp driving study guide and is in no way conclusive of all the runway and taxiway markings at the JNU airport or other airports. It only highlights those signs and marking which would typically be seen by an operator on this Airport. It is not a conclusive study guide for pilots, FAA personnel or Airport crew whose duties would require them to be in these areas. The pictorials and descriptions of the taxiways and runways are provided for identification purposes only (operators should know not to enter these areas). Most operators will not access these areas or will need additional special training (radio communications) and equipment (radios, beacons, etc) prior to accessing.*

### Taxiways

1. **Signs.** Taxiways are designated by letters or by a letter/number combination such as A, B, B2, or C2. Signs have black lettering and a directional arrow on a yellow background. The arrow indicates the direction to that taxiway, runway, or destination.

*Taxiway Direction Sign sample*



Taxiway Location Signs identify the taxiway on which the aircraft is located. Taxiway signs consist of yellow letters on a black background, bordered in yellow.

## Taxiway Location Signs



- Location signs identify the taxiway on which the aircraft is located.
- Consists of yellow letters on a black background, bordered in yellow.

1. **Lighting.** Taxiways are lighted with blue edge lighting and/or reflectors.

2. **Markings.** Pavement markings on taxiways are always yellow.

*Yellow Taxiway Edge Marking sample*



Runway Hold Position Markings are located across each taxiway that leads directly onto a runway. These markings are made up of two solid lines and two broken yellow lines and denote runway holding position markings. The Runway Hold Position Signs are located adjacent to these markings. *A vehicle operator must not cross from the solid-line side of the marking without first obtaining clearance.*

*Runway Hold Position Markings sample*



## **RUNWAYS**

1. **Designations.** Runways are always designated by a number such as 8 or 26. The number indicates the compass heading of the runway. An aircraft taking off on runway 8 is headed 80 degrees.
2. **Signs.** Mandatory Holding Position Signs for Runways have white numbering/lettering on a red background with a white border. These are located at each entrance to a runway and at the edge of the runway safety area/obstacle-free zone and are co-located with runway holding position markings. *Do not proceed beyond these signs until clearance is given by the appropriate air traffic control facility or enter onto the runway.*

Runway Hold Position Signs are located on taxiways at runway intersections and runway/runway intersections. Do not cross these intersections unless clearance has been given by ATCT.

*Runway Hold Position Sign sample*



## Runway Location Signs



- Identifies runway on which aircraft is located.
- Same color scheme as Taxiway Location Sign.

3. **Lighting.** Runways are lighted with specific colored lights:
  - a. **Runway Edge-lights** are amber starting at 2,000 ft.
  - b. **Runway Centerline Lights** are white except for the last 3,000 feet of the runway, where they begin to alternate red and white. For the last 500 feet of runway the centerline lights are all red.
  - c. **Runway Touchdown Zone Lights** are white.
  - d. **Runway End/Threshold Lights** are split lenses that are red/green.

4. **Markings.** Pavement markings on a runway are white. Solid white lines mark the edge of the runway and broken white lines mark the centerline. R/W number identifiers (8/26) are also painted white on their appropriate ends. The only non-white lines on a runway are yellow lead-in/-off lines that extend from the runway centerline and holdlines for a specific operation known as land and hold short. *While JNU's float pond is technically a runway (R/W 8W/26W), there are no markers, buoys, etc. which denote runway edges or centerline.*



*Runway Pavement Markings sample*

Additionally, on the approach end of each runway, the chevrons are painted yellow. The chevrons are not part of the runway.



## MOVEMENT/NON-MOVEMENT AREAS

Non-Movement Area Boundary Markings consist of **two yellow lines** (one solid and one dashed). The solid line is located on the non-movement area side, while the dashed yellow line is located on the movement area side. A vehicle operator is not to cross from the solid-line side without first contacting the ATCT and obtaining a clearance to operate on the movement area.

### **Movement/Non-movement Area Boundary Lines**



- Marks boundaries of the "Movement Area," and the ramp areas.
- Dashed side= Movement Area
- Solid side= Non-Movement Area
- Aircraft and vehicles operating in Non-Movement Areas are not necessarily in contact with ATC.

## **VII. VEHICULAR ACCIDENTS**

Operators of vehicles involved in an accident on the airport that results in injury to a person or damage to an aircraft, airport property, or another vehicle shall—

1. Immediately stop and remain at the scene of the accident.
2. Render reasonable assistance, if capable, to any person injured in the accident.
3. Report the accident immediately to airport management before leaving the scene, if possible.
4. Provide and surrender the following to any responding airport management personnel: name and address, airport identification card, state driver's license, and any information such personnel need to complete a motor vehicle accident report.



## **VIII. VIOLATION OF RULES (Penalties and Suspension of Driving Privileges)**

Failure to follow proper any of the rules or procedures may result in fines in excess of \$2,500 per incident. Both City and Borough of Juneau and Federal fines may be assessed to violators. Additionally, any person who is not in compliance with these procedures shall be subject to the following consequences:

First Offense: Written warning and possible fine by the Airport. The incident will be recorded and reported to the Airport Manager.

Second Offense: Fine and suspension of airport driving privileges for one month. Personal audience with the Airport Manager to discuss proper procedures and aviation safety issues as related to vehicle traffic around aircraft movement areas. Retraining of the Airfield Ground Vehicle Operator rules.

Third Offense: Fine and revocation of airport driving privileges for one year. Before reinstatement of driving privileges, the individual will be required to take the written operator's examination and demonstrate proper movement area procedures to either the Airport Maintenance and Operations Supervisor or his designated representative.

Subsequent Offenses: Fine and revocation of airport driving privileges at JNU.

***If a security infraction accompanies any of the driving infractions, the individual may have their identification media (ID badge) suspended or revoked, as outlined by Airport Policy. The Airport may revoke an operator's privileges at any time (regardless of any previous offenses) if the violation is severe or the Airport believes that the individual may be a threat to the Airport's safety and security programs.***

## *Addendum to Airfield Ground Vehicle Operator Study Guide*

*(For those operators entering ATCT controlled areas)*

*Testing of this portion of the operator packet requires practical examination. Operators are required to perform communication skills to the satisfaction of Airfield Superintendent or his designee.*

### **Radio Communications**

JNU is a controlled airport. Anyone flying in or out of the airport must first receive permission from the controller. (Late at night, control is transferred to Flight Service Station). Two-way radio communications with the ATCT or FSS must be established and maintained by vehicle operators having authorization to enter runway and taxiway surfaces before entering and operating on these movement areas. Vehicles are prohibited from being operated on the runway or taxiway if radio communications are not established and maintained. Vehicle operators must contact the appropriate air traffic control facility each and every time they proceed onto or leave the movement area prior to proceeding onto a movement area. Vehicle operators must tell the controller three things: **WHO you are, WHERE you are, and WHAT your intentions are.** Do not proceed without confirmation. Vehicle operators must always acknowledge all communications so ground control and other persons know that the message was received. **Vehicle operators must always give aircraft and ground control transmissions priority unless an emergency exists.** Some typical transmissions are as follows:

“Juneau Ground this is Airport 2 at Taxiway Alpha. Request clearance east on runway 8 for a light inspection

**Reply transmissions may be brief, such as:**

- the appropriate air traffic control facility or FSS: “Airport 2, hold short of runway 8.”  
Operator: “Airport 2 holding short of runway 8 .”
- the appropriate air traffic control facility or FSS: “Airport 2 cleared south on runway 8.”  
the appropriate air traffic control facility or FSS “Please expedite, landing aircraft on a 10 mile final for runway 8.”
- Operator: “Airport 2 cleared east on runway 8, will expedite.”
- Operator: “Ground control, Airport 2 is clear of runway 8.

**NOTE:** If you are unsure what the controller has said, or if you don’t understand an instruction, you should ask the controller to repeat it. Good communications only occur when each party knows and understands what the other is saying.

**Common Use Phrases.**

<b>What is said:</b>	<b>What it means:</b>
Acknowledge	Let me know you have received and understand this message.
Advise Intentions	Let me know what you plan to do.
Affirmative	Yes.

Correction	An error has been made in the transmission, and the correct version follows.
Go Ahead	Proceed with your message only.
Hold/Hold Short	Phrase used during ground operations to keep a vehicle or aircraft within a specified area or at a specified point while awaiting further clearance from air traffic control.
How do you hear me?	Question relating to the quality of the transmission or to determine how well the transmission is being received.
Immediately or without delay	Phrase used by ATC when such action compliance is required to avoid an imminent situation.
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.
Read Back	Repeat my message to me.
Roger	I have received all of your last transmission. Does not mean yes
Stand By	Means the controller or pilot must pause for a few seconds, usually to attend to other duties of a higher priority. Also means to wait as in "stand by for clearance." The caller should reestablish contact if a delay is lengthy.
Unable	Indicates inability to comply with a specific instruction, request, or clearance.
Verify	Request confirmation of information.
Wilco	I have received your message, understand it, and will comply with it.

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

<b>A</b> ALFA	<b>H</b> HOTEL	<b>O</b> OSCAR	<b>U</b> UNIFORM
<b>B</b> BRAVO	<b>I</b> INDIA	<b>P</b> PAPA	<b>V</b> VICTOR
<b>C</b> CHARLIE	<b>J</b> JULIET	<b>Q</b> QUEBEC	<b>W</b> WHISKEY
<b>D</b> DELTA	<b>K</b> KILO	<b>R</b> ROMEO	<b>X</b> X-RAY
<b>E</b> ECHO	<b>L</b> LIMA	<b>S</b> SIERRA	<b>Y</b> YANKEE
<b>F</b> FOX-	<b>M</b> MIKE	<b>T</b> TANGO	<b>Z</b> ZULU
<b>G</b> GOLF	<b>N</b> NOVEMBER		

**Lost Communications.** If two-way radio communications fail while a vehicle is operating on runways or taxiways, the appropriate air traffic control facility or FSS will attempt to contact airport management personnel by radio or telephone and inform them of the communications failure. Airport personnel will intercept the vehicle with lost communications and remain with it or escort it from movement areas as necessary. If a vehicle operator becomes aware of two-way radio failure, they will exit the runway and taxiway movement area immediately. The operator will immediately inform the appropriate air traffic control facility of the communications failure, and that men and equipment are clear of the runway and taxiway.