# Say again, please

## A Pilot's Guide to Radio Communications

**Seventh Edition** | Bob Gardner

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## A Pilot's Guide to Radio Communications

Bob Gardner

7th Edition

AVIATION SUPPLIES & ACADEMICS, INC.
NEWCASTLE, WASHINGTON

*Say Again, Please: A Pilot's Guide to Radio Communications*
Seventh Edition
by Bob Gardner

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None of the material in this book supersedes any operational documents or procedures issued by the Federal Aviation Administration, aircraft and avionics manufacturers, flight schools, or the operators of aircraft.

The flight and radio talk examples used throughout this book are for illustration purposes only, and are not meant to reflect all of the possible incidences and communications that may occur in actual flight, nor does the author suggest by using existing facilities that the flight example given covers all possible parameters of an actual flight to or from those facilities. The airport photographs and chart excerpts are not for navigational purposes; refer to the current charts and the Chart Supplement U.S. when planning your flight.

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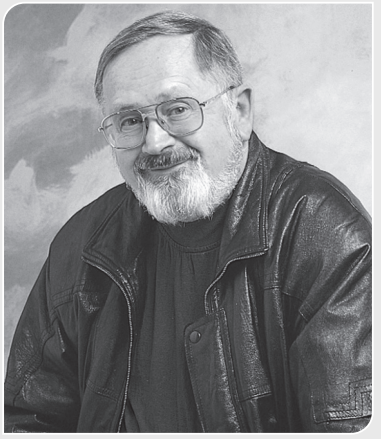
Chapter **Seven**

## Class C Airspace



## About the Author

Bob Gardner began his flying career as a hobby in Alaska in 1960 while in the U.S. Coast Guard.

Bob's shore-duty assignments in the USCG were all electronic/communications based. He served in the Communications Division at Coast Guard Headquarters and was Chief of Communications for the Thirteenth Coast Guard District. He held a Commercial Radiotelephone Operator's license and an Advanced Class Amateur Radio Operator's License.

By 1966, Bob accomplished his Private land and sea, Commercial, Instrument, Instructor, CFII and MEL. Over the next 16 years he was an instructor, charter pilot, designated examiner, freight dog, and Director of ASA Ground Schools.

Bob held an Airline Transport Pilot Certificate with single- and multi-engine land ratings; a CFI certificate with instrument and multi-engine ratings; and a Ground Instructor's Certificate with advanced and instrument ratings. In addition, Bob was a Gold Seal Flight Instructor and was awarded Flight Instructor of the Year in Washington State. To top off this impressive list of accomplishments, Bob was also a well-known author, a journalist, an airshow lecturer, and a long-admired member of the aviation community.

Books by Bob Gardner:

*The Complete Private Pilot* and *The Complete Private Pilot Syllabus*
*The Complete Multi-Engine Pilot*
*The Complete Advanced Pilot*
*The Complete Remote Pilot* (with David Ison)
*Say Again, Please—A Pilot's Guide to Radio Communications*

## Introduction

We live in a technological age. It is possible to fly without radios or electronic aids to navigation and rely solely on the Mark I eyeball, but there is no question that safety is enhanced when pilots can locate one another beyond visual range. The avionics industry continues to provide pilots with improved products that make communication easier and more reliable, but technology alone is not enough—the user must feel comfortable with the equipment and the system.

We all feel comfortable with the telephone, and an increasing number of pilots feel comfortable with radios that operate in the citizen's or amateur radio bands. However, if there is a controller on the other end of the conversation many pilots freeze up. The goal of this book is to increase your comfort level when using an aircraft radio by explaining how the system works and giving examples of typical transmissions.

A brief word of explanation. I am a flight instructor, and flight instructors talk, and talk, and talk. It is impossible for me to shut off my flight instructor instincts and convert myself totally into a writer. You will pick up on this right away because I repeat myself. Over 30 years of instructing I have learned that if something is repeated in different contexts it will be remembered, so you can count on the same information showing up in more than one chapter. That is not sloppy editing or carelessness, it is good instructional technique. Also, some types of airspace change classification when the tower closes down or the weather observer goes home—there will be some overlap as I discuss each situation in the chapter on each type of airspace.

## Conventions

Numbers are not spelled out in this text; the *AIM* says that numerals are to be pronounced individually: 300 is spoken as "three zero zero," runway 13 as "runway one three," etc. I know that I can count on you to make the mental conversion. Altitudes are handled differently, as you will learn in Chapter 3. Also, controllers do not say, "degrees," when assigning courses and headings, so neither will I.

In radio communication, the different classes of airspace are spoken as their phonetic equivalents (again, *see* Chapter 3), without the word "class":

***Cessna 1357X is cleared to enter the Charlie surface area . . .***

In the text, however, they will be referred to as Class B, Class G, etc.

## Editor's Note

The examples of radio talk between pilots, controllers, and other communications facilities in this text are printed in a bold and italic, serif typeface. These are also identified by small labels, which are sometimes abbreviated, as visual aids to the reader to show who is talking. Definitions for these labels can be found in Appendix A, "Communications Facilities."

Example:

**Pilot:** ***Cessna 1357X requests runway 23.***

## Acknowledgements

The author wishes to acknowledge the assistance of the following experts in reviewing the text for accuracy and completeness:

Suzanne Alexander, Manager, Boeing Field Tower
Jim Davis, Plans and Procedures, Seattle-Tacoma TRACON
Terry Hall, American Avionics, Seattle
Mic Ogami, Seattle Automated Flight Service Station

***Note:*** Regarding the examples used in this book—The National Aeronautics and Space Administration (NASA) commissions contractors to search the NASA database for lessons to be learned from accidents and pilot reports. Also, NASA publishes *Callback*, a free monthly newsletter that provides its subscribers with selected incidents from the Aviation Safety Reporting System (ASRS). Except for those few cases where I received an anecdote directly from an air traffic controller, the examples in this book come from NASA sources.

*Callback* is available online in HTML and PDF formats at: asrs.arc.nasa.gov/publications/callback.html.

Chapter **One**

# The ABCs of Communicating

## The Pilot-Controller Partnership for Safety

Aviation communication is a team effort, not a competition between pilots and controllers. Air traffic controllers are just as anxious as you are for your flight to be completed safely. They will cooperate with you whenever they can do so while still remaining *consistent with safety*. They are not the equivalent of the stereotypical law enforcement officer just waiting for you to do something wrong. They hate paperwork as much as anyone, and filing a violation against a pilot starts an avalanche of forms and reports. On the other hand, they have a tremendous amount of responsibility and can be severely overloaded with traffic, which means you can't expect a controller to ignore everyone else in order to give you special treatment.

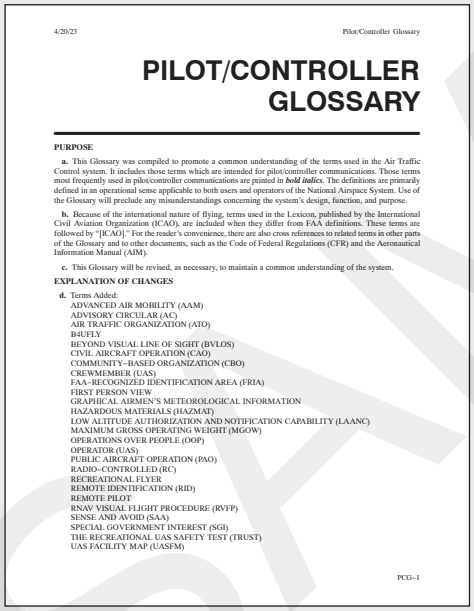
Inherent in the teamwork concept is equality. Yes—controllers can and will give you instructions that you must follow (unless it is unsafe to do so), but they are not aviation police with books of tickets just waiting for you to make a mistake. They are on your side. Like all of us, they have bad days, so don't read too much into a controller's tone of voice. And don't ask for permission (i.e., do not use the word "permission"). That sets my teeth on edge. Instead just say, for example, "Request taxi instructions," "Request 10 degrees left for weather," "Request direct Bigtown Municipal," and the like.

Many pilots are reluctant to use the radio because they feel they are imposing on the controller. They should put themselves in the controller's seat: There are 20 targets on the scope and the controller knows the altitude, course, and intentions of 19 of them because they are on instrument flight plans or are receiving radar flight following services. For the 20th target, the controller knows only its altitude and present direction of flight (VFR flight plans are not seen by the air traffic control system). Will that target change altitude and/or course and create a conflict? There is no way for the controller to know, and thus the unknown target imposes a greater workload on the controller. Don't be that target.

Some pilots worry about talking to air traffic control (ATC) because they "don't want to bother the controller." Controller's pay levels are based in part on traffic count, so by failing to communicate you hit the controller in the pocketbook. They welcome your call.

## Doing Things by the Book

The controller's actions are prescribed in FAA Order JO 7110.65, which applies to all air traffic organization (ATO) personnel and anyone using ATO directives. This publication tells controllers exactly what phraseology to use in virtually every situation, and woe to controllers who have had a slip of the tongue when they sit down with a supervisor to jointly monitor tapes during a quarterly evaluation. That is not to say that the controller operates in a procedural straitjacket. If you don't understand what a controller has said, or do understand but don't know what you are being told to do, just say, "I don't understand," or words to that effect. The controller won't be out pounding the pavement, because the intent of the communication was to extend a helping hand and make your life a little easier.



4/20/23 Pilot/Controller Glossary

**PILOT/CONTROLLER GLOSSARY**

**PURPOSE**

**a.** This Glossary was compiled to promote a common understanding of the terms used in the Air Traffic Control system. It includes those terms which are intended for pilot/controller communications. Those terms most frequently used in pilot/controller communications are printed in ***bold italics***. The definitions are primarily defined in an operational sense applicable to both users and operators of the National Airspace System. Use of the Glossary will preclude any misunderstandings concerning the system's design, function, and purpose.

**b.** Because of the international nature of flying, terms used in the Lexicon, published by the International Civil Aviation Organization (ICAO), are included when they differ from FAA definitions. These terms are followed by "[ICAO]." For the reader's convenience, there are also cross references to related terms in other parts of the Glossary and to other documents, such as the Code of Federal Regulations (CFR) and the Aeronautical Information Manual (AIM).

**c.** This Glossary will be revised, as necessary, to maintain a common understanding of the system.

**EXPLANATION OF CHANGES**

**d.** Terms Added:

ADVANCED AIR MOBILITY (AAM)
ADVISORY CIRCULAR (AC)
AIR TRAFFIC ORGANIZATION (ATO)
B4UFLY
BEYOND VISUAL LINE OF SIGHT (BVLOS)
CIVIL AIRCRAFT OPERATION (CAO)
COMMUNITY–BASED ORGANIZATION (CBO)
CREWMEMBER (UAS)
FAA–RECOGNIZED IDENTIFICATION AREA (FRIA)
FIRST PERSON VIEW
GRAPHICAL AIRMEN'S METEOROLOGICAL INFORMATION
HAZARDOUS MATERIALS (HAZMAT)
LOW ALTITUDE AUTHORIZATION AND NOTIFICATION CAPABILITY (LAANC)
MAXIMUM GROSS OPERATING WEIGHT (MGOW)
OPERATIONS OVER PEOPLE (OOP)
OPERATOR (UAS)
PUBLIC AIRCRAFT OPERATION (PAO)
RADIO–CONTROLLED (RC)
RECREATIONAL FLYER
REMOTE IDENTIFICATION (RID)
REMOTE PILOT
RNAV VISUAL FLIGHT PROCEDURE (RVFP)
SENSE AND AVOID (SAA)
SPECIAL GOVERNMENT INTEREST (SGI)
THE RECREATIONAL UAS SAFETY TEST (TRUST)
UAS FACILITY MAP (UASFM)

PCG–1

**1-1.**
The "Pilot/Controller Glossary" available at faa.gov/air_traffic/publications/. ▲

As a pilot, you do not have a manual of canned phrases that are expected to meet every situation. The *Aeronautical Information Manual* (*AIM*) contains a section on communication procedure, and if you read it (and you should) you will receive guidance on the best way to get your message across to the controller.

Both the *AIM* and the FAA Order JO 7110.65 contain the "Pilot/Controller Glossary." The intent of the glossary is to ensure that certain words have the same meaning to both the pilot and the controller. Before you ask your instructor a question like "What does 'resume own navigation' mean?" look it up in the "Pilot/Controller Glossary." There are very few terms used in normal aviation communication that do not appear in the glossary.

Historical sidelight: The "Pilot/Controller Glossary" didn't exist before 1974. It became apparent only after a major airline accident that some phrases meant one thing to controllers and something entirely different to pilots, and the glossary was born. A very good reason for you to familiarize yourself with the "P/C Glossary" in the *AIM*.

## Can't We All Just Get Along?

An important part of the teamwork concept is negotiation. Many pilots, both novices and old hands, think that a directive from an air traffic controller must be obeyed without question. Those pilots have forgotten that the Federal Aviation Regulations make the pilot-in-command of the airplane solely responsible for the safety of the flight. A controller cannot direct you to do something that is unsafe or illegal. You must remember that you are almost always in a better position to determine the safety of a given action than is the controller.

For example, let's assume that you are flying in Class B airspace (to be defined later). In that type of airspace the controller can give you specific altitudes and/or headings to fly; you are required by 14 CFR §91.123 to comply with those instructions. When the controller says, "Turn right to 330," and you can see that to do so would take you too close to a cloud, it becomes your responsibility to say, "Unable due to weather." After all, the controller can't see clouds on the radar screen and has no way of knowing that you would be turning toward a cloud. 14 CFR §91.3 says that you are the final authority as to operation of your aircraft, and this rule supersedes all others.

Another example: You have just touched down on the runway and the controller says, "Turn right at the next taxiway." If you are rolling too fast to make the turn without wearing a big flat spot on your main landing gear and overheating the brakes, it is your responsibility to say, "Unable." If you are really busy with the airplane, don't say anything until you can reach for the microphone without losing directional control.

Other situations where negotiation might be used include being assigned a landing runway that requires a lot of taxiing to get to your destination or, in light winds, a departure runway that takes you in a direction that you don't want to go. Simply say,

**Pilot:** ***Cessna 1357X requests runway 23.***

(Instead of runway 14, for example.) If the change can be accomplished without affecting either your safety or that of other flights, your request will be granted. There are almost as many exceptions to the rules as there are rules, but too many pilots simply go by the rules without attempting negotiation.

## Mic Fright

We are all afraid of saying the wrong thing, especially when dozens of other people are listening. Aviation magazines frequently print stories of humorous communication mistakes or misunderstandings. In aviation, it is far more important to say something than to keep quiet and proceed into a potentially tight situation—especially when traveling at 2 miles a minute.

Call-in talk shows are quite common on both radio and television, and the callers are in the same situation as you are when you pick up the microphone in your airplane as a "first-time caller"—thousands of people will be able to hear their *er*s and *uh*s. The difference is that their safety and that of others does not depend on their making that call—yours does.

## Technobabble Not Spoken Here

Use plain English. "Tell me what you want me to do," might not appear in the *AIM*, but if it is necessary to use that phrase, it gets the job done. The following suggestion will be repeated later more than once, because it is important: Listen to your radio. Other airplanes will be talking to air traffic control (ATC), getting weather reports, or communicating with advisory services. The information they are receiving might be useful to you and make it unnecessary for you to make a transmission (or allow you to drastically shorten your transmission). Go to any small airport (one without a control tower) with a VHF receiver that covers the aviation frequencies and just monitor the airport's Common Traffic Advisory Frequency (CTAF)—ask one of the local pilots if you aren't sure what the CTAF for that airport is. You will hear a dozen airplanes reporting that they are landing or taking off on runway 14 (for example), and then a strange voice will come on the frequency and ask, "What runway is in use?" That pilot hasn't learned to listen.

**Sectional Aeronautical Chart Symbol:**
The airport's Common Traffic Advisory Frequency (CTAF) is indicated by the C/circle symbol. ▲

***Note:*** Advisory Circular 90-66 contains instructions for communication at airports without control towers.

That VHF receiver is your best source of information on how to communicate as a pilot. Get a copy of the *Chart Supplement U.S.*, which contains the Airport/Facility Directory (A/FD) for your area, and look up the frequencies that are used by the local airports and air traffic control facilities. Look in the *Chart Supplement* Section 4 for Air Route Traffic Control Center (ARTCC) frequencies, then tune in and listen to how the airliners communicate when

en route. You will hear lots of good examples and a few alarmingly bad examples. You may not be able to hear both ends of the communication unless you live within line-of-sight distance of the ground station's antenna, but a visit to a local tower-controlled airport will eliminate that problem.

When you are surfing the web, spend some time at liveatc.net. You will be able to listen to controller–aircraft traffic at a number of facilities nationwide and internationally.

While you are at your computer, go to faa.gov/ and locate FAA Order 7110.65. (This can be done through the search feature or by selecting "Regulations" from the menu and then "Orders and Notices.") This directive tells controllers what to say and how to say it, and they are required to follow its dictates. This is important to you because you will see that controller transmissions follow a fixed format for each situation; only things like headings, altitudes, and facility names change. With this in mind, you will know what to expect in each situation. However, if it becomes apparent to the controller that the approved phraseology is not getting through to you, the controller is free to use plain language. By the same token, you are free to say, "I don't understand what you want me to do," if that is the case. Most of this ATC order will not apply to you, but review it anyway, it is a treasure trove of information and an excellent reference.

No matter what your instructor says, you can't say something "wrong" on the radio. Read *AIM* 4-2-1; in it, you will find this gem: "Since concise phraseology may not always be adequate, use whatever words are necessary to get your message across." With experience, we all catch on to the lingo, but failure to use specific phraseology is not a big deal. The Airman Certification Standard for Private Pilot does require the applicant to use standard phraseology but a quick look at the *AIM* reveals that, while it tells you how to report headings, altitudes, and speeds and provides the phonetic alphabet for pronunciation of letters and numbers, there is not much *required* phraseology. Read Advisory Circular 90-66 as a better source of information for this.

Blown away by the whole idea of talking to controllers? Go to youtube.com/user/AirSafetyInstitute to get a controller's take on it. There are several videos, and you should watch them all. Search "Ask ATC" and watch a playlist of pilots' questions for controllers about communications. You may also want to check out the AOPA (Aircraft Owners and Pilots Association) program called "Say it Right," available at aopa.org/training-and-safety/online-learning/online-courses/say-it-right. You do have to be a member of the AOPA to take it. In it are illustrated many, if not all of the lessons in this book.

**Fee Status**

| | |
|---|---|
| 26) Is the Applicant/Licensee exempt from FCC application fees? | ( ) Yes No |
| 27) Is the Applicant/Licensee exempt from FCC regulatory fees? | ( ) Yes No |

**General Certification Statements**

1) The Applicant/Licensee waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and requests an authorization in accordance with this application.

2) The Applicant/Licensee certifies that all statements made in this application and in the exhibits, attachments, or documents incorporated by reference are material, a

3) Neither the Applicant/Licensee nor any m

4) The Applicant/Licensee certifies that neit Federal benefits pursuant to Section 53 possession or distribution of a controlle **exempted under Section 1.2002(c) of t** for the definition of "party to the applicatio

5) Amateur or GMRS Applicant/Licensee ce significant environmental effect (see th (available at web site http://wireless.fcc.g

6) Amateur Applicant/Licensee certifies that (available at web site http://wireless.fc amateur service section of OST/OET Bull

**Certification Statements For GMRS Applica**

1) Applicant/Licensee certifies that he or sh

2) Applicant/Licensee certifies that he or sh

3) Applicant/Licensee certifies that he or s and 467.700 MHz is not permitted near throughout Canada and harmful interfere

4) Non-Individual Applicants/Licensees cer height, location of fixed transmitters, nur

**Certification Statements for Ship Applicants**

1) Applicant/Licensee certifies that they a owner or operator of the vessel, a state 301 of the Communications Act.

2) This application is filed with the under described herein, and that apart from th the vessel is in full compliance with all a

**Signature**

28) Typed or Printed Name of Party Authorized

First Name:

29) Title:

Signature:

**Failure to Sign This Application M**

WILLFUL FALSE STATEMENTS MADE ON THIS Code, Title 18, Section 1001) AND / OR REVOC 312(a)(1)), AND / OR FORFEITURE (U.S. Code, Ti

**FCC 605 Main Form**

**Quick-Form Application for Authorization in the Ship, Aircraft, Amateur, Restricted and Commercial Operator, and General Mobile Radio Services**

Approved by OMB
3060 - 0850
See instructions for public burden estimate

1) Radio Service Code:

**Application Purpose** (Select only one) ( )

2) **NE** – New **RO** – Renewal Only **WD** – Withdrawal of Application
**MD** – Modification **RM** – Renewal / Modification **DU** – Duplicate License
**AM** – Amendment **CA** – Cancellation of License **AU** – Administrative Update

| | |
|---|---|
| 3) Does this filing request STA (Special Temporary Authorization)? If 'Y', attach the required exhibit as described in the instructions. | ( ) Yes No |
| 4) If this request is for an Amendment or Withdrawal of Application, enter the file number of the pending application currently on file with the FCC. | File Number |
| 5) If this request is for a Modification, Renewal Only, Renewal / Modification, Cancellation of License, Duplicate License, or Administrative Update, enter the call sign (serial number for Commercial Operator) of the existing FCC license. If this is a request for consolidation of DO & DM Operator Licenses, enter serial number of DO. Also, if filing for a ship exemption, you must provide call sign. | Call Sign/Serial # |
| 6) If this request is for a New, Amendment, Renewal Only, or Renewal Modification, enter the requested expiration date of the authorization (this item is optional). | MM DD |
| 7) Does this filing request a Waiver of the Commission's Rules? If 'Y', attach the required showing as described in the instructions. | ( ) Yes No |
| 8) Are attachments (other than associated schedules) being filed with this application? | ( ) Yes No |

**Applicant/Licensee Information**

9) FCC Registration Number (FRN):

10) Applicant/Licensee legal entity type: (Select One )
☐Individual ☐Corporation ☐Unincorporated Association ☐Trust ☐ Government Entity
☐Consortium ☐General Partnership ☐Limited Liability Company ☐ Limited Liability Partnership
☐Limited Partnership ☐Other (Description of Legal Entity)

| | | | |
|---|---|---|---|
| 11) First Name (if individual): | MI: | Last Name: | Suffix: |

12) Entity Name (if other than individual):

13) If the Licensee name is being updated, is the update a result from the sale (or transfer of control) of the license(s) to another party and for which proper Commission approval has not been received or proper notification not provided? ( ) Yes No

14) Attention To:

| | | | |
|---|---|---|---|
| 15) P.O. Box: | And/Or | 16) Street Address: | |
| 17) City: | 18) State: | 19) Zip Code/Postal Code: | 20) Country: |
| 21) Telephone Number: | | 22) FAX Number: | |
| 23) E-Mail Address: | | | |

**Ship Applicants/Licensees Only**

24) Enter new name of vessel:_____

**Aircraft Applicants/Licensees Only**

25) Enter the new FAA Registration Number (the N-number):_____
**NOTE**: Do not enter the leading "N".

**FCC 605 – Main Form**
**April 2014 - Page 1**



# 1-2.

FCC license application, required only for operations outside the U.S. ▲

## Licensing

Federal law does not require U.S.-registered airplanes to have a Federal Communications Commission (FCC) radio station license unless international flight is contemplated, i.e., an FCC license is not required for U.S. operations.

To use an installed aircraft radio in the United States, you don't have to have any kind of operator's license. Travel to Canada or Mexico, however, and you will be expected to carry a Third Class Restricted Radiotelephone operator's license. To receive this authorization, go to the FCC website at fcc.gov/licensing-databases/forms, where you can download Form 605, and follow the instructions. An FCC commercial license is even better than a Third Class Restricted license, but an amateur radio license is no good on aircraft frequencies. Keep in mind that you won't even get into a hassle about an operator's license unless you are outside of the good ol' U.S. of A. and subject to another country's laws. To my knowledge, neither the Canadian Mounties nor the Mexican Federales are enforcing this requirement.

Handheld transmitter-receivers (also called transceivers) are very popular for emergency use. If you are flying an airplane with its own station license, that license covers the handheld. You will use the airplane registration number as an identifier. If you want to use a handheld in an airplane without a station license, however, you will have to apply to the FCC for a mobile license, which will assign an identifier to the handheld—something like "N12345MOB."

Don't look to the Federal Aviation Regulations for anything about how radios are to be used—that is the sole province of the FCC.

## Hello, Operator?

The use of phones, tablets, and other mobile devices to connect with cellular networks on airline flights is prohibited by the FAA and FCC. The FAA does however allow for the use of these devices while in "airplane mode," which prevents a mobile device from connecting to a cellular network on the ground. Therefore, if the aircraft is WiFi enabled certain features on these devices may still be used.

Can you use your cell phone on the ground to call for gas or file a flight plan? Absolutely. While on an air carrier, however, even if you want to use it on the ground, you may find that the flight attendants will not permit you to do so. The regulations make the captain the final authority on the use of portable electronic devices, and there are documented instances of cell phones interfering with air carrier avionics while in the receive mode.

This restriction applies only to those phones operating in the 800 MHz band. Cell systems operating on other frequencies are not affected.

## Drones

Drones, or small uncrewed aircraft (sUA), are those aerial vehicles weighing less than 55 pounds and operated without the possibility of any onboard human intervention. Drones will typically operate at and below 400 feet above ground level (AGL), sometimes higher if being operated around a tower or building. Most all airports are "no drone zones" unless prior permission has been obtained. If a drone is operating in controlled airspace, like Class A, B, C, D, or the lateral boundaries of surface area Class E, prior authorization must be obtained. Therefore, if a drone is operating within controlled airspace or around an airport, it is likely that a Drone NOTAM will have been issued, and ATC may advise you of potential drone operations in the area. This is not always the case though, as there are many instances of drones operating in airspace without authorization. Drones operating in uncontrolled airspace do not require permission to be there, so you should always keep your eyes peeled when operating at altitudes under 1,000 feet AGL. While drones are required to yield right of way to all other air traffic, you should keep your distance and report any drone activity to ATC or advise of that activity on CTAF.

**Pilot:** ***Paine Tower, Piper 70497, I have a visual on drone traffic about 3 miles north of the approach end of 16R at around 1,000 feet MSL.***

# Say again, please

## A Pilot's Guide to Radio Communications

Bob Gardner

Talking on an aviation radio and understanding air traffic control (ATC) instructions can be one of the most intimidating aspects of flight training. In *Say Again, Please* Bob Gardner explains how the ATC system works and teaches pilots what to say, what to expect to hear, and how to interpret and react to clearances and instructions. His conversational-yet-concise writing style will help increase your comfort level when using an aircraft radio. Filled with examples of typical radio transmissions that explain how ATC works, as well as simulated flights that clearly demonstrate correct communication procedures in each class of airspace, this book will have you well on your way to speaking "pilot/controller" in no time.

This hands-on book covers the following:

- The ABCs of communicating
- Understanding radio equipment
- Communication etiquette and rules
- VFR, IFR, and emergency communication procedures
- Air traffic control facilities and their functions
- Airspace definitions
- Pilot/controller communication terms and phrases

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