



Pilot's Radio Communications Guide

**The comprehensive radio
communications guide for
VFR & IFR pilots.**

4th Edition

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*“...the safety of the operator is more important than any other point.
Greater prudence is needed rather than greater skill.”*

— Wilbur Wright, 1901

Purpose of this guide: This guide is meant to help pilots with their Radio Communication skills. As a review and reference for all pilots, it strives to present the information to keep you current. I would love to hear from you regarding your experience with this guide. Often pilots comment about the right way, the wrong way, and the FAA way. The result is most pilots chose the “practical way” which is a combination of all three. I caution all pilots to err on the side of the “safe way” so that you do not become a statistic.

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Ten Commandments for Safe Flight

Author Unknown

1. Thou shalt abstain from the intersection takeoff for, verily, the runway behind thee, as the altitude above thee, cometh not to thine aid when thou needest them.
2. Thou shalt not linger on active runways lest thou become like unto ground sirloin.
3. Ignorest thou not thy checklists for many are the switches, handles, gauges & other demons awaiting to take cruel vengeance upon thee.
4. Thou shalt cast thine eyes to thy right and also to thy left as thou passeth through the firmament lest thy fellow pilots bring flowers to thy widow and comfort her in other ways.
5. Buzzeth not, for this shall surely incur the wrath of thy neighbors and the fury of the FAA shall be called down upon thy head.
6. Thou shalt be ever mindful of thy fuel lest there be nothing in thy tank to sustain thee upon the air and thy days be made short.
7. Trust not thine eyes to lead thee through the cloud lest the Archangel Gabriel await thee therein.
8. Thou shalt not trespass into the thunderstorm lest the tempest rend the wings from thy chariot and cast thee naked into the firmament.
9. Put not thy trust in weather prophets, for when the truth is not in, then they shall not accompany thee among thy ancestors.
10. Often shalt thou confirm thine airspeed on final lest the earth rise up and smite thee.

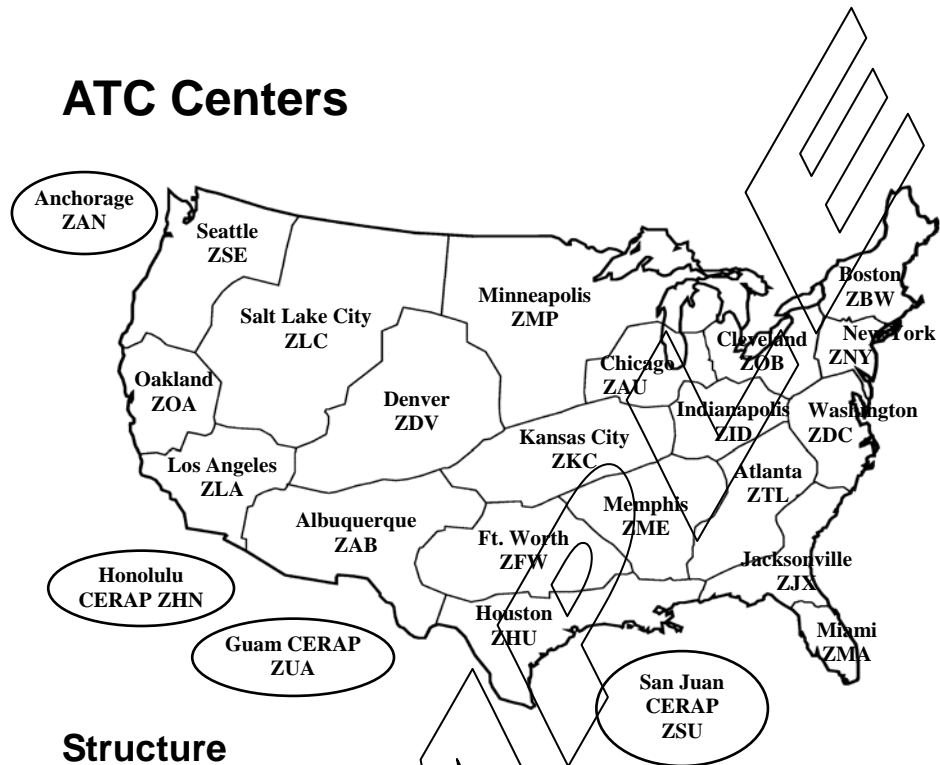
"Flying was a very tangible freedom in those days, it was beauty, adventure, discovery -- the epitome of breaking into new worlds."
— Anne Morrow Lindbergh (1906-2001)

ATC Services

Topics:

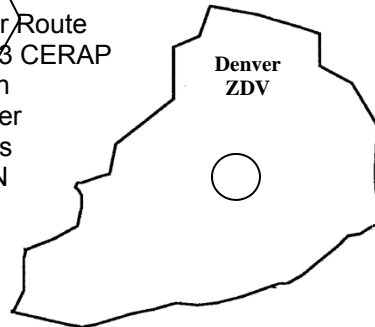
Radio Frequency Spectrum
Radar Services
Transponder Usage
Transponder Phraseology
ATC's Top 9 Pet Peeves
How to Immediately Improve Your Radio Technique
ATC Responsibilities
Separation & Flow Control
Professionalism
General Rules of Radio Communication

ATC Centers



Structure

The chart above depicts 21 ARTCC (Air Route Traffic Control Center) or "Center" and 3 CERAP (Combined Center and Radar Approach Control) areas. To the right is the Denver center's airspace. The circle depicted is "Denver Approach" which is a TRACON (Terminal Radar Approach Control) for Denver International Airport and the surrounding area. Each "Center" has at least one TRACON and usually several to handle the traffic into and out of the large metropolitan areas. Additionally there are some ATC facilities called RAPCONs. For example, Seymour Johnson AFB has a RAPCON (Radar Approach Controller). You can think of this as a mini-TRACON. All of these areas are subdivided in endless numerous ways. These subdivided areas are called "sectors" and are created based on workload so that an individual controller is not overloaded by the traffic within his sector.



*"I owned the world that hour as I rode over it . . .
Free of the earth, free of the mountains, free of the clouds,
but how inseparably I was bound to them."
— Charles A. Lindbergh (1902-1974)*

Radio Communications FAR Review

Topics:
IFR Lost Communications
Radio Communications
Required Reports
Light Gun Signals

such as glide slope failure, loss of one of the two course indicators, or loss of RAIM capability while executing an approach.

FAR 91.130 Operations in Class C airspace

- Each person operating an aircraft in Class C airspace must meet the following two-way radio communications requirements.
- SAME AS CLASS D AIRSPACE BUT PERTAINING TO CLASS C AIRSPACE

FAR 91.131 Operations in Class B airspace

- No person may operate an aircraft within Class B airspace except in compliance with
 - FAR 91.129 (class D airspace) and the following rules.
 - FAR 91.131 Operations in Class B airspace
- The operator must receive an ATC clearance from the ATC facility having jurisdiction for that area before operating an aircraft in that area.

Taxi Instructions

- Pilots should always read back the runway AND intersection assignment when taxi instructions are received from the controller.
- Pilots required to read back any hold short instructions, particularly those concerning runways. Always include runway numbers AND intersections.
- Controllers are required to confirm any runway hold short assignments and you are required to read them back.

Light Gun Signals, FAR 91.124

	Ground	Air
Steady Green	Cleared for Takeoff	Cleared to Land
Flashing Green	Cleared to Taxi	Return to Land
Steady Red	Stop	Give Way
Flashing Red	Taxi Clear of Runway	Do not Land
Flashing White	Return to Ramp	Not Used
Alternating Red/Green	Warning-Use Caution	Warning-Use Caution

*"The engine is the heart of the airplane,
but the pilot is its soul."
— Sir Walter Alexander Raleigh*

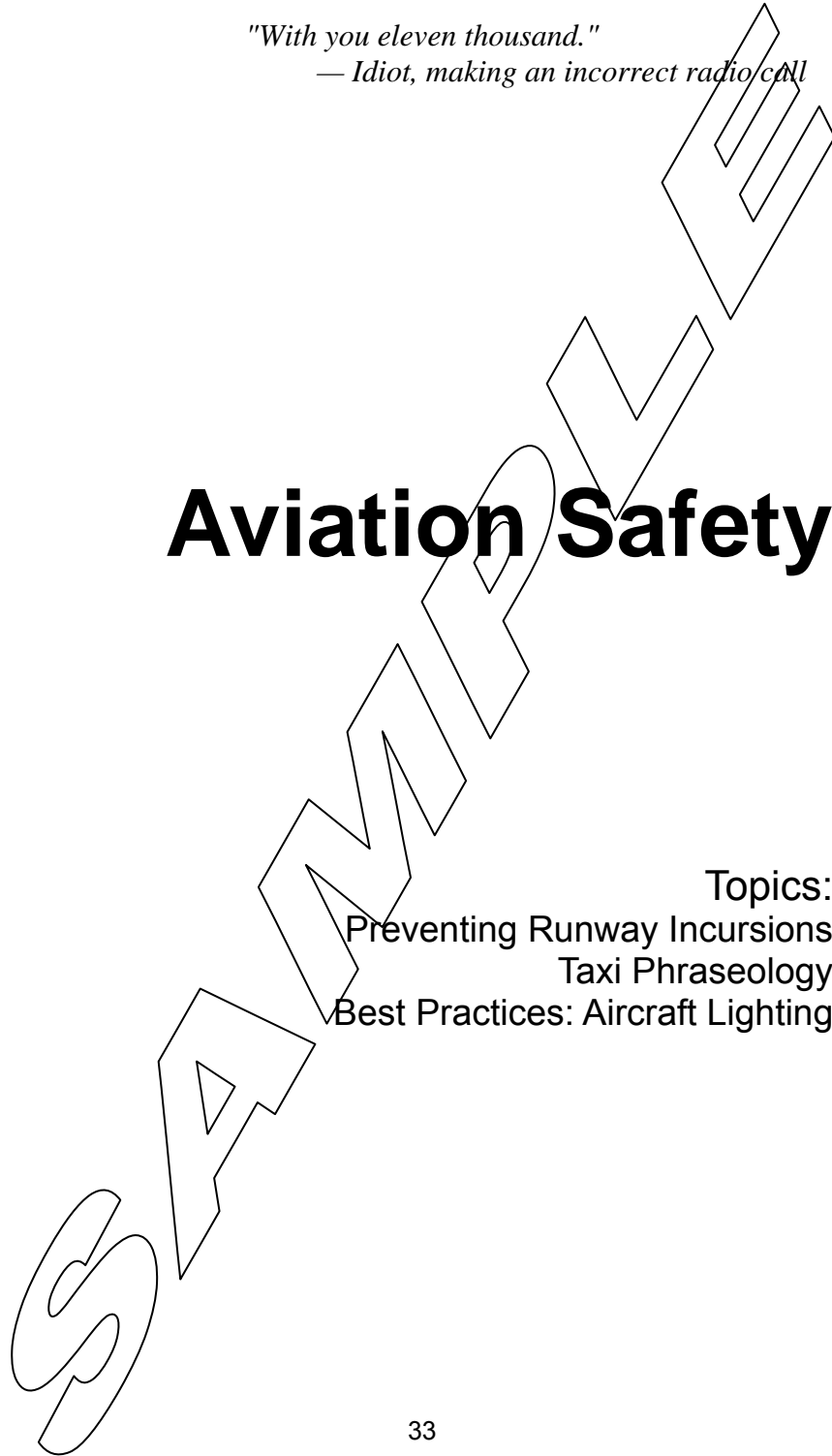
Clearances

Topics:
Obtaining Clearances
Clearance Format
Clearance Phraseology
FARs on Clearances

SANM

*"With you eleven thousand."
— Idiot, making an incorrect radio call*

Aviation Safety



Topics:
Preventing Runway Incursions
Taxi Phraseology
Best Practices: Aircraft Lighting

*“Make as small a nuisance of yourself as possible
and you’re more likely to get what you want.”*

— Paul Berge, Controller, Pilot, Writer at IFR

Radio Phraseology

Topics:

Non-Towered Airport Operations

Towered Airport Operations: Takeoff & Landing

Transitions Through Airspace: Class B, C, & D

Entering Class C or Class D

Calling FSS & Flight Watch

How to Request VFR Flight Following

IFR Flight: Who do I talk to?

IFR Radio Phraseology

Enroute: What does it mean...

Arrival: STARs, Cruise, Holding

Approach Clearances

Tower: What does it mean...

Approach: What does it mean...

Entering Class C or Class D

To enter Class C or Class D airspace, you must establish contact:

Class C

Aircraft: "Daytona Approach,
Skyhawk 631DS"
Approach: "Skyhawk 631DS,
Daytona Approach"

Class D

Aircraft: "Henderson Tower,
Skyhawk 631DS"
Tower: "Skyhawk 631DS,
Henderson Tower"

If you hear:

"Aircraft calling Franklin Tower, Stand by"

Then you have not established contact and must remain clear of the airspace.

Calling FSS

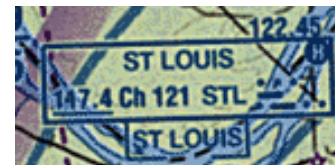
Aircraft: "Seattle Radio, Skyhawk 123AB
receiving on Port Angeles RCO 122.6"



Aircraft: "San Diego Radio, Skyhawk
123AB on 122.1 receiving Oceanside
VOR"



Aircraft: "St Louis Radio, Skyhawk 123AB
on 122.45. (Note that the VOR Frequency is
underlined meaning 'No Voice' - you can't use 122.1
here and expect to receive the FSS on 117.4. You
will only be able to pick up HIWAS on this freq.)



Often times, you can reach FSS on 122.2, a very common frequency.

When FSS answers, remember the basics:

Who you are, Where you are, What you want

Calling Flight Watch

Flight Watch (also known as Enroute Flight Advisory Service) is available above 5000AGL from 6am to 10pm (local) on 122.0 Mhz. Use the local ATC name to call:

Aircraft: "Minneapolis Flight Watch, Skyhawk 123AB"

Clearance: What does it mean...?

- “Advise when ready to copy full route clearance.” This means that the routing on the flight plan you filed was not accepted and you will be given a lengthy new route. If you accept the clearance, be sure that you look at it on your navigational charts prior to taxi.
- What if you miss your clearance void time? Be sure that you contact clearance delivery or FSS where you got the clearance and ask for another. You will be given a new clearance.

Amended Clearance

Departure: “Skyhawk 631DS I’ve got an amendment to your clearance, advise when ready to copy.”

Aircraft: “Ready to copy. Skyhawk 631DS”

Departure: “Skyhawk 631DS Cleared to Montgomery radar vectors to GOTBY then V7, Fly heading 190, Maintain 5000..

Aircraft: “Cleared Montgomery radar vectors to GOTBY then V7, 190, Maintain 5000.

Departure: “Readback correct.”

Pilot flies heading 190 and checks the new routing and finds it’s a much shorter route.

ATC Clearance

C—Cleared to MGM AF

R—Route BHM3 V521

A—Altitude 5000 / _____

F—Frequency 123.8

T—Transponder 4604

Enroute Handoff

Departure: “Skyhawk 631DS Contact Montgomery Approach at 124.0.”

Aircraft: “Skyhawk 631DS”

Pilot switches frequency.

Aircraft: “Montgomery approach, Skyhawk 631DS level 5000”

Approach: “Skyhawk 631DS Montgomery Altimeter 30.01”

Aircraft: “30.01 631DS”

Pilot keeps track of all handoffs and heading/altitude assignments:

Heading	Altitude	Frequency
190,V7	5000	123.8
		124.0

“Talking and flying are mutually exclusive activities”
— Hank Canterbury, *Writer*

Emergencies

SAM

Topics:
How ATC Responds
Radio Failures
Pilot Intercept Signals

*“What freedom lies in flying, what Godlike power it gives
to men . . . I lose all consciousness in this strong immortal
space crowded with beauty, pierced with danger,
— Charles A. Lindbergh (1902/1974)*

Appendices

Topics

- A. Personal Minimums Checklist
- B. Metric Conversion Tables
- Clearance & Flight Plan Forms