

# VDFP General Aviation Firefighting for Structural Firefighters

**VIRGINIA DEPARTMENT OF FIRE PROGRAMS**  
Aviation Firefighting for Structural Firefighters



Chapter 3  
Communications

COMMUNICATIONS

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**Learning Objectives**

- Understand the correct radio procedures for talking to pilots or airport personnel
- List examples of the aviation phonetic alphabet
- Give examples of commonly used aviation phrases and terms
- Identify the purpose of an emergency locator transmitter and how it operates

COMMUNICATIONS

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**Learning Objectives**

- Illustrate the differences between communication procedures at airports with active control towers versus communication procedures at airports without operating control towers
- Explain the purpose of the light gun used by the air traffic controller
- Identify the different types of service provided by airports that use radio communications

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# VDFP General Aviation Firefighting for Structural Firefighters

<b>Introduction</b>	<b>COMMUNICATIONS</b>
<ul style="list-style-type: none"><li>• Airport and aircraft communications are highly dependent on the use of radios that can transmit and receive human voices</li><li>• The radio procedures are significantly different from what firefighters routinely use</li><li>• Think first, transmit second!</li></ul>	
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<b>Aircraft Radio Procedures and Phraseology</b>	<b>COMMUNICATIONS</b>
<ul style="list-style-type: none"><li>• Procedure<ul style="list-style-type: none"><li>– There is a specific procedure to use when communicating over an aircraft radio</li><li>– This procedure is reversed from what many fire departments use!</li><li>– Identify who you wish to speak to first, then identify yourself<ul style="list-style-type: none"><li>• “Leesburg Ground Control, Engine 1”</li></ul></li></ul></li></ul>	
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<b>Aircraft Radio Procedures and Phraseology</b>	<b>COMMUNICATIONS</b>
<ul style="list-style-type: none"><li>• Procedure<ul style="list-style-type: none"><li>– GA aircraft use a registration number (N number) as a call sign<ul style="list-style-type: none"><li>• The “N” number is the identification number on the fuselage of the aircraft</li><li>• “N” is the letter assigned to the US, each county has it’s own unique letter</li></ul></li></ul></li></ul>	
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# VDFP General Aviation Firefighting for Structural Firefighters

## Aircraft Radio Procedures and Phraseology

COMMUNICATIONS

- Phonetic Alphabet
  - Words used to clarify meaning that correspond with letters of the alphabet
  - This alphabet is an international standard and may be different from what local jurisdictions are already using

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ALPHABET LETTER	PRONOUNCITATION	ALPHABET LETTER	PRONOUNCITATION
A	Alpha <small>(el-fah)</small>	H	Hotel <small>(hoh-tel)</small>
B	Bravo <small>(brah-voh)</small>	I	India <small>(in-dee-ah)</small>
C	Charlie <small>(char-lee)</small>	J	Juliatt <small>(jev-lee-ett)</small>
D	Delta <small>(del-tah)</small>	K	Kilo <small>(key-koh)</small>
E	Echo <small>(eck-oh)</small>	L	Lima <small>(lee-mah)</small>
F	Fox-trot <small>(foks-trot)</small>	M	Mike <small>(mike)</small>
G	Golf <small>(golf)</small>	N	November <small>(no-ven-ber)</small>

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ALPHABET LETTER	PRONOUNCITATION	ALPHABET LETTER	PRONOUNCITATION
O	Oscar <small>(oss-cah)</small>	V	Victor <small>(vik-tah)</small>
P	Papa <small>(pah-pah)</small>	W	Whiskey <small>(wiss-key)</small>
Q	Quebec <small>(kwee-beck)</small>	X	X-Ray <small>(ecks-ray)</small>
R	Romeo <small>(rom-me-oh)</small>	Y	Yankee <small>(yang-key)</small>
S	Sierra <small>(see-air-rah)</small>	Z	Zulu <small>(zoo-loo)</small>
T	Tango <small>(tang-go)</small>		
U	Uniform <small>(you-nee-form)</small>		

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# VDFP General Aviation Firefighting for Structural Firefighters

NUMBER	PRONOUNCITATION	NUMBER	PRONOUNCITATION
1	Wun	8	Ait
2	Too	9	Nin-er
3	Tree	0	Zero
4	Fow-er		
5	Five		
6	Sicks		
7	Sev-en		

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<p><b>Aircraft Radio Procedures and Phraseology</b></p> <ul style="list-style-type: none"> <li>• <b>Phraseology</b> <ul style="list-style-type: none"> <li>– Aviation working language that uses jargon, technical phrases, and slang</li> <li>– One way to become familiar with some aviation phraseology is to listen to local air traffic frequencies on a scanner</li> <li>– Some phrases such as “Wilco”, “Over”, and “Out”, while real are more common in movies than in actual use</li> </ul> </li> </ul>	COMMUNICATIONS
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<p><b>Aircraft Radio Procedures and Phraseology</b></p> <ul style="list-style-type: none"> <li>• <b>Phraseology</b> <ul style="list-style-type: none"> <li>– A           <ul style="list-style-type: none"> <li>• <b>Active runway or just The active</b> <ul style="list-style-type: none"> <li>– Runway currently in use for takeoff and landing</li> </ul> </li> <li>• <b>Altitude</b> <ul style="list-style-type: none"> <li>– The altitude that general aviation pilots refer to is not the height or altitude above the ground (AGL), it is the altitude above mean sea level (MSL)</li> </ul> </li> <li>• <b>Approach control or just Approach</b> <ul style="list-style-type: none"> <li>– The air traffic controller that handles aircraft that are coming into the controller’s airspace and flying towards the airport</li> </ul> </li> <li>• <b>Approach End</b> <ul style="list-style-type: none"> <li>– The end of the runway the aircraft generally first comes into contact with when landing or taking off</li> </ul> </li> </ul> </li> </ul> </li> </ul>	COMMUNICATIONS
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Aircraft Radio Procedures and Phraseology

COMMUNICATIONS

• Phraseology

- B
  - Base leg
    - The flight path at a right angle to the landing runway off the approach end
- C
  - Clearance or Clearance Control
    - Authorization by air traffic control for aircraft or ground vehicles to proceed as requested
  - Crosswind leg
    - When the aircraft is off the departure end of the runway and 90 degrees to the downwind leg

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Aircraft Radio Procedures and Phraseology

COMMUNICATIONS

• Phraseology

- D
  - Departure control or just departure
    - The air traffic controller who handles aircraft that are generally headed away from the airport in the controller's airspace
  - Departure end
    - The end of the runway aircraft generally cross last when taking off
  - Downwind leg
    - The course parallel to the runway that is opposite to the final approach course. The runway is to the left of the aircraft in the standard traffic pattern. The downwind leg is 90 degrees to the base leg, the next step in the traffic pattern

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Aircraft Radio Procedures and Phraseology

COMMUNICATIONS

• Phraseology

- E
  - ETA
    - Estimated time of arrival
  - Expedite
    - "Prompt compliance is required"
- F
  - Final
    - Also know as "final approach"
  - Final Approach
    - The descending straight line path to the approach end of the active runway

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Aircraft Radio Procedures and Phraseology

COMMUNICATIONS

• Phraseology

– H

- Hold your position or just Hold
  - When given this instruction by ATC, do not move until given clearance. Sometimes you will be given instructions to hold at a location, such as specific taxiway/runway intersection, before you get there. Make sure you know where "there" is. If unsure ask!

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Aircraft Radio Procedures and Phraseology

COMMUNICATIONS

• Phraseology

– I

- Immediately
  - When the ATC tells you to do something and includes the word "immediate", you have to comply now, without question. Immediate is sometimes confused with "expedite"
- Instrument Flight Rules (IFR)
  - The rules of flight used when the pilot is flying the aircraft by relying on various instruments in the cockpit as primary reference

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Aircraft Radio Procedures and Phraseology

COMMUNICATIONS

• Phraseology

– L

- Low Approach
  - When the aircraft overflies a particular runway or part of the airport without the intention of landing

– M

- Mayday
  - International distress signal

– N

- Nonstandard traffic approach
  - When flying the nonstandard traffic pattern, the airport is to the **right** of the aircraft except on takeoff/upwind leg and the final leg

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**Aircraft Radio Procedures and Phraseology**

**COMMUNICATIONS**

- **Phraseology**
  - S
    - **Standard traffic pattern**
      - When flying the standard traffic pattern, the airport is to the **left** of the aircraft except on the takeoff/upwind leg and the final leg

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**Aircraft Radio Procedures and Phraseology**

**COMMUNICATIONS**

- **Phraseology**
  - T
    - **Takeoff leg**
      - Also known as the upwind leg. The climbing, straight path off the departure end of the active runway
    - **Terminal**
      - The building where passengers can gather prior to boarding a flight or after disembarking

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**Aircraft Radio Procedures and Phraseology**

**COMMUNICATIONS**

- **Phraseology**
  - U
    - **Upwind leg**
      - Also known as the takeoff leg. The climbing straight path off the departure end of the active runway
  - V
    - **Visual Flight Rules (VFR)**
      - These rules apply when the pilot is flying the aircraft using visual references

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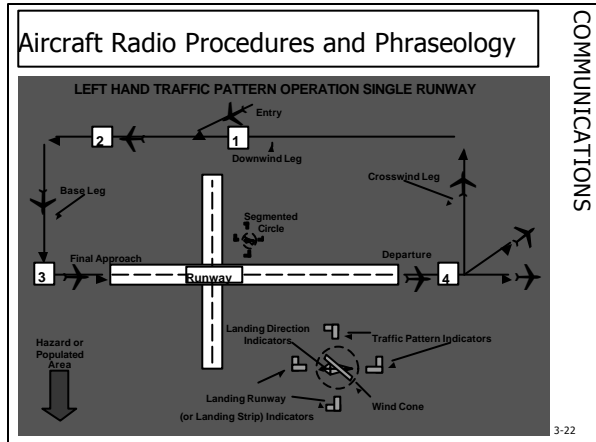
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COMMUNICATIONS

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### Aircraft Radio Frequencies

- General aviation airports and aircraft use radio frequencies in the 118.000 MHz to 135.975 MHz range
- To find local frequencies contact your local airport operator or obtain a copy of the Airport Facility Directory (AFD) for your area
- Visit the Virginia Department of Aviation Web Site to attain information about your local airport: [www.doav.virginia.gov](http://www.doav.virginia.gov)

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COMMUNICATIONS

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### Radio Communications

- Not all aircraft are equipped with radios
- Safety! Eyes to the skies to look for aircraft in the air and eyes to the ground to look for signs of movement on airport property is everyone's responsibility

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COMMUNICATIONS

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<b>Radio Communications</b>	COMMUNICATIONS
<ul style="list-style-type: none"><li>• Airports with Operating Control Towers<ul style="list-style-type: none"><li>– A number of services using radio include:<ul style="list-style-type: none"><li>• Approach/Departure Control</li><li>• Ground Control</li><li>• Clearance Control</li><li>• Automatic Terminal Information Services (ATIS)<ul style="list-style-type: none"><li>– A recorded message that may provide current details about the airport operation (wind, runway in use, etc.)</li></ul></li></ul></li><li>– May be operating on many or combined frequencies</li></ul></li></ul>	
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<b>Radio Communications</b>	COMMUNICATIONS
<ul style="list-style-type: none"><li>• Airports without Operating Control Towers<ul style="list-style-type: none"><li>– Common Traffic Advisory Frequency (CTAF)<ul style="list-style-type: none"><li>• Referred to as "Traffic", allows pilots to announce their intentions (takeoff, landing, approaching the airport, etc.)</li><li>• Fire/Rescue can monitor and announce intentions when responding to emergencies on the airfield<ul style="list-style-type: none"><li>– i.e. "Airport Name Traffic, Fire/Rescue 1423 at terminal and driving on taxiway alpha to the approach end of runway 7"</li><li>– Always report clear or runway or taxiways</li></ul></li></ul></li></ul></li></ul>	
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<b>Radio Communications</b>	COMMUNICATIONS
<ul style="list-style-type: none"><li>• Airports without Operating Control Towers<ul style="list-style-type: none"><li>– Universal Communications Radio Frequency (Unicom)<ul style="list-style-type: none"><li>• Like CTAF however the airport also has people and equipment that monitor and talk to aircraft providing weather and other important data</li><li>• Fire/Rescue could use this similar to CTAF and it's recommend to contact the airport operator for familiarization and training</li></ul></li></ul></li></ul>	
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<p><b>Radio Problems at Airports with Tower Operations</b></p> <ul style="list-style-type: none"> <li>• Safety! Remember, at an airport with an active control tower, nothing moves including emergency vehicles, until the controller gives permission!</li> <li>• If the event of radio failure ATC can use a light gun to signal aircraft or ground vehicles</li> </ul>		<b>COMMUNICATIONS</b>
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<p><b>Radio Problems at Airports with Tower Operations</b></p>		<b>COMMUNICATIONS</b>
—————	STEADY GREEN: Cleared to cross, proceed, or go	
—————	STEADY RED: Stop!	
-----	FLASHING RED: Clear the taxiway/runway	
-----	FLASHING WHITE: Return to starting point on airport	
—————	ALTERNATING RED/GREEN: Exercise extreme caution	

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<p><b>Radio Problems at Airports with no Operating Tower</b></p> <ul style="list-style-type: none"> <li>• If there is no tower, no controller, and no light gun and your radio is dead be extremely vigilant at keeping aware of any movement on the ground and in the air</li> <li>• Pilots will generally have a plan and follow accepted procedures for entering the airport's traffic pattern or moving in the airport environment</li> </ul>	<b>COMMUNICATIONS</b>
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Emergency Frequencies

- 121.5 MHz is the aviation emergency frequency
- Used when pilots are flying and are unsure of who to contact

COMMUNICATIONS

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Emergency Frequencies

- Emergency Locator Transmitter (ELT)
  - A device carried on many aircraft which is a portable radio that has it's own power supply
  - When activated it transmits a continuous emergency signal that can be received by anyone with a radio tuned to 121.5 MHz
  - Can be activated manually and automatically by an impact circuit
  - FAA specialist and other government agencies can find crashed aircraft by using ground based triangulation methods

COMMUNICATIONS

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Emergency Frequencies



COMMUNICATIONS

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# VDFP General Aviation Firefighting for Structural Firefighters

## Direct Fire Department-to-Pilot Communications

- Sometimes firefighters may speak directly over the radio
- May be a very tense situation for the pilot depending on the severity of the situation
- Fire personnel must be familiar with phraseology and terminology
- If talking to a pilot and air traffic control, ATC has priority

COMMUNICATIONS

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## Direct Fire Department-to-Pilot Communications

- Be brief and concise
- Consider the relevancy of the dialogue and questions
- Only one person should be designated to communicate to the pilot
- Remember! The pilot has to fly the plane!

COMMUNICATIONS

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## Direct Fire Department-to-Pilot Communications

- If working an incident or accident at an airport that effects air traffic, it may be necessary to broadcast a warning to other aircraft
- Coordinate with the airport operator who may have to issue a Notice to Airmen (NOTAM) to advise other aircraft and officials of the status of the airport

COMMUNICATIONS

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# VDFP General Aviation Firefighting for Structural Firefighters

## Summary

- Be familiar with aviation radio communications procedures and phraseology
- Know the differences between controlled and uncontrolled airports
- Be aware of the basics to communicate effectively
- Contact your local airport for additional operational information

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