UAS 1011-51

Operations

Lesson 5a: Radio Communications Procedures

Operations: Objectives

- To determine that the applicant is knowledgeable in radio communication procedures.
- To determine that the applicant is knowledgeable in airport operations.
- To determine that the applicant is knowledgeable in sUAS emergency procedures.
- To determine that the applicant is knowledgeable in aeronautical decision-making.
- To determine that the applicant is knowledgeable in the physiological factors affecting remote pilot performance.
- To determine that the applicant is knowledgeable in sUAS maintenance and inspection procedures.

Radio Communications Procedures

1. Airport operations with and without an operating control tower.

2. The description and use of a Common Traffic Advisory Frequency (CTAF) to monitor manned aircraft communications.

3. Recommended traffic advisory procedures used by manned aircraft pilots, such as self- announcing of position and intentions.

4. Aeronautical advisory communications station (UNICOM) and associated communication procedures used by manned aircraft pilots.

5. Automatic Terminal Information Service (ATIS).

6. Aircraft call signs and registration numbers.

7. The phonetic alphabet.

8. Phraseology: altitudes, directions, speed, and time.

Why do I need to know this?

- Because you can, under certain circumstances, i.e. with permission, fly in controlled airspace.

- There are other aircraft in these areas and you need to know what they are doing **AND** ATC needs to know where you are and what you are doing.

- In this case you need to know the correct procedures for contacting ATC.

- Whenever you are going to be flying in controlled airspace you will need to contact ATC <u>90 days</u> before you fly. At that time you will need to tell them where you will be flying AND ask them how they prefer that you contact them during your flight. i.e. by Radio using the ATC Frequency **OR** by phone. Where would you find this information?

  <u>On the Sectional chart or the Chart Supplement U.S.</u>

- Radio Communications from ATC provide improved situational awareness when operating in the vicinity of an airport.

- But you must understand the "aviation Language inorder to make sense of what you are hearing.

Note on Communications

- NOTE: Aircraft (UAS) operations conducted under Part 107 are not subject to the equipment requirements of Part 91.

- That means that unless your ATC authorization requires you to have two-way radio communications, you do not need one. If you anticipate flying in controlled airspace near a B, C, or D airport. It is a good idea to have one as a tool to mitigate risk.

Airport Operations WITH
An Operating Control Tower

Air Traffic Control towers provide a safe, orderly and expeditious flow of traffic in and around the vicinity of an airport.

The standard aviation format of radio communications is:

1. Who you're calling
2. Who you are (call sign)
3. Where you are
4. What you want

Manned Aircraft Example

- "Heathrow ground, Bonanza 8677 Quebec, on west apron, with information Tango, request taxi to the active runway."

- Translation:

  "Heathrow ground" (Who they are talking to.)

  "Bonanza 8677 Quebec" (Who are they. = 8677Q)

  "on west apron, with information Tango"
      (Where they are.)

  "request taxi to the active runway"

      (What they want to do.)

So what do I say when talking to the Tower?

- When seeking permission from ATC to fly in controlled airspace near an airport ask them what they want you to do.
- You will have limited communication when you are operating at 400' or below since it is very unlikely that there will be any manned aircraft flying at that altitude.
- ATC will tell you:
  - What to say.
  - When to say it.
  - And what radio/phone calls you need to make to them.
- There may not be anything required by ATC but you need to ASK.

Facility Types

To facilitate efficient communication the type of facility with whom you are communicating is shortened.

Facility	Call Sign
Airport UNICOM	"UNICOM"
FAA Flight Service Station	"Radio"
Airport Traffic Control Tower	"Tower"
Clearance Delivery Position (IFR)	"Clearance"
Ground Control Position in Tower	"Ground"
Radar or Non-Radar Approach Control Position	"Approach"
Radar Departure Control Position	"Departure"
FAA Air Route Traffic Control Center	"Center"

Example of Radio Communications – Facilities

- To call the Airport Traffic Control Tower at the Augusta airport, you begin your radio communication by saying, "Augusta Tower."

- If you're contacting the FAA Air Route Traffic Control Center in Atlanta, you begin your radio communication by saying, "Atlanta Center."

Two-Way Communication with ATC

- Unless otherwise authorized, two-way radio communications with Air Traffic Control are required for landings or takeoffs at all tower controlled airports regardless of weather conditions.

- In other words at B, C and D airports.

- When you're identifying yourself over the radio, you should state the aircraft type, model or manufacturer's name, followed by the digits/letters of the registration number, aka "N-number" or "tail" number.

- So first you'd state the name and type of facility you are calling, such as "Miami Tower." And then, when you're identifying yourself, you could say something like "Small Unmanned Aircraft System 388," where "388" represents the last three alphanumerics of your registration number." Then you'd want to go on and describe where you'll be operating relative to the airport and what your intentions are ("sUAS operations up to 400ft AGL within ½ mile of your location").

Airport Operations WITHOUT An Operating Control Tower

If you will be flying near an airport without a tower you may want to use a radio to notify any other pilots in the area that you are there.

You will want to notify them of:

1. Who you are (call sign)

2. What you are flying (drone or *).

3. Where you are.

4. What altitude you are flying.

Airport Operations WITHOUT An Operating Control Tower

Three ways of communicating about your intentions and to obtain airport and traffic information when flying near and airport w/o
a tower.

1. By communicating with a Flight Services Station (FSS)

2. By communicating with a UNICOM operator

3. By making a self-announce broadcast

Most airports provide completely automated weather, radio check capability and airport advisory information on an automated UNICOM system. These systems offer a variety of features, typically selectable by microphone clicks on the UNICOM frequency.

The Common Traffic Advisory Frequency (CTAF)

- The key to monitoring manned aircraft communications near an <u>airport without an operating control tower</u> is selecting the right radio frequency, the Common Traffic Advisory Frequency (CTAF).

- CTSAF is a frequency designated for pilots to communicate with each other directly, air-to-air, while operating to or from an airport without an operating control tower.

- On a Sectional Chart, the CTAF frequency is displayed before the Ⓒ symbol.

e.g. 122.7 Ⓒ

What is the CTAF Frequency for the Allendale CO airport on this Sectional Chart?
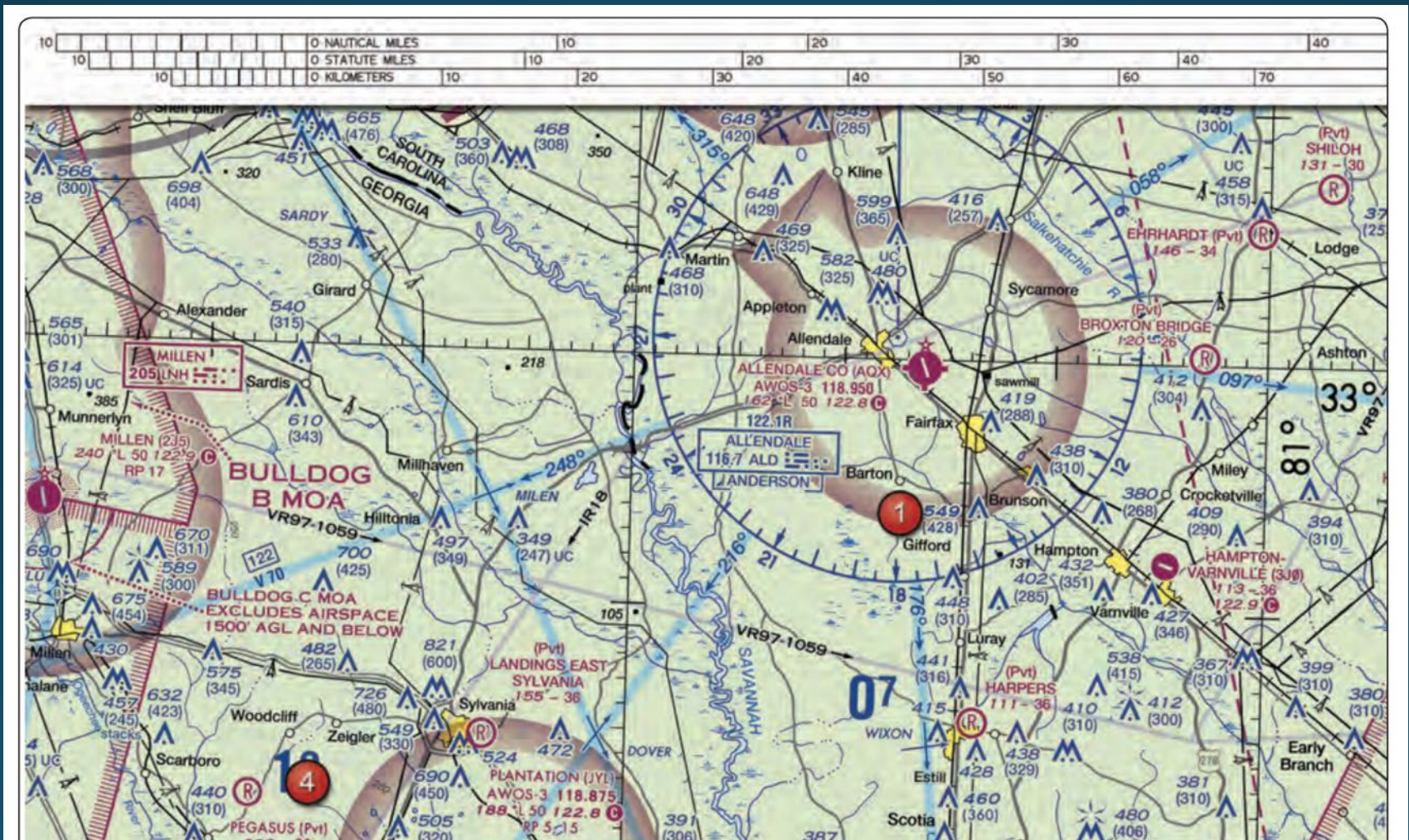
Phonetic Alphabet - You need to learn this it is on the exam!

Number	Pronunciation	Number	Pronunciation
0	ZE-RO	7	SEV en
1	WUN	8	AIT
2	TOO	9	NIN er
3	TREE	Decimal	DAY SEE MAL
4	FOW er	Hundred	HUN dred
5	FIFE	Thousand	TOU SAND
6	SIX		

Word	Pronunciation	IPA from ICAO	Word	Pronunciation	IPA from ICAO
A - ALFA	AL fah	ˈælfɑ	N - NOVEMBER	no VEM ber	noˈvembə
B - BRAVO	BRAH voh	ˈbrɑːˈvo	O - OSCAR	OSS car	ˈɔskɑ
C - CHARLIE	CHAR lee OR SHAR lee	ˈtʃɑːli or ˈʃɑːli	P - PAPA	pah PAH	pəˈpɑ
D - DELTA	DELL tah	ˈdeltɑ	Q - QUEBEC	keh BECK	keˈbek
E - ECHO	ECK oh	ˈeko	R - ROMEO	ROW me oh	ˈroːmiˑo
F - FOXTROT	FOKS trot	ˈfɔkstrɔt	S - SIERRA	see AIR rah	siˈerɑ
G - GOLF	golf	gʌlf [sic]	T - TANGO	TANG go	ˈtængo [sic]
H - HOTEL	hoh TEL	hoːˈtel	U - UNIFORM	YOU nee form OR OO nee form	ˈjuːnifɔːm or ˈuːnifɔrm [sic]
I - INDIA	IN dee ah	ˈindiˑɑ	V - VICTOR	VIK tah	ˈviktɑ
J - JULIET	JEW lee ETT	ˈdʒuːliˑˈet	W - WHISKEY	WISS key	ˈwiski
K - KILO	KEY loh	ˈkiːlo	X - X-RAY	ECKS ray	ˈeksˈrei
L - LIMA	LEE mah	ˈliːmɑ	Y - YANKEE	YANG key	ˈjænki [sic]
M - MIKE	mike	mɑik	Z - ZULU	ZOO loo	ˈzuːluː

Character	Morse Code	Telephony	Phonic Pronunciation
A	·—	Alfa	(AL-FAH)
B	—···	Bravo	(BRAH-VOH)
C	—·—·	Charlie	(CHAR-LEE) or (SHAR-LEE)
D	—··	Delta	(DELL-TAH)
E	·	Echo	(ECK-OH)
F	··—·	Foxtrot	(FOKS-TROT)
G	——·	Golf	(GOLF)
H	····	Hotel	(HOH-TEL)
I	··	India	(IN-DEE-AH)
J	·———	Juliett	(JEW-LEE-ETT)
K	—·—	Kilo	(KEY-LOH)
L	·—··	Lima	(LEE-MAH)
M	——	Mike	(MIKE)
N	—·	November	(NO-VEM-BER)
O	———	Oscar	(OSS-CAH)
P	·——·	Papa	(PAH-PAH)
Q	——·—	Quebec	(KEH-BECK)
R	·—·	Romeo	(ROW-ME-OH)
S	···	Sierra	(SEE-AIR-RAH)
T	—	Tango	(TANG-GO)
U	··—	Uniform	(YOU-NEE-FORM) or (OO-NEE-FORM)
V	···—	Victor	(VIK-TAH)
W	·——	Whiskey	(WISS-KEY)
X	—··—	Xray	(ECKS-RAY)
Y	—·——	Yankee	(YANG-KEY)
Z	——··	Zulu	(ZOO-LOO)
1	·————	One	(WUN)
2	··———	Two	(TOO)
3	···——	Three	(TREE)
4	····—	Four	(FOW-ER)
5	·····	Five	(FIFE)
6	—····	Six	(SIX)
7	——···	Seven	(SEV-EN)
8	———··	Eight	(AIT)
9	————·	Nine	(NIN-ER)
0	—————	Zero	(ZEE-RO)

What to Listen for

Manned Aircraft Communication Procedures

- Select the correct UNICOM frequency.
- State the identification of the UNICOM station you are calling in each transmission.
- Speak slowly and distinctly.
- Report approximately 10 miles from the airport, reporting altitude, and state your aircraft type, aircraft identification, location relative to the airport, state whether landing or overflight, and request wind information and runway in use.
- Report on downwind, base, and final approach.
- Report leaving the runway.

Examples of UNICOM Communications

Frederick Unicom, Cessna Eight Zero One Tango Foxtrot, 10 Miles Southeast Descending Through 2,500 Feet, Landing Frederick, Request Wind And Runway Information, Frederick.

- Calling - Frederick Municipal Airport in Maryland
- Aircraft - Cessna Eight Zero One Tango Foxtrot
- Location - 10 Miles Southeast
- Altitude - Descending Through 2,500 Feet
- Landing - Landing at Frederick
- Request Wind Conditions AND Runway Conditions
- Calling Confirmation

Automatic Terminal Information Service (ATIS)

- ATIS broadcasts, which are typically broadcast over a discrete very high frequency (VHF) radio frequency, contain essential information, such as weather information, active runways, available approaches, NOTAM, and any other information required by the pilots.

- Pilots listen to ATIS broadcast information before contacting the local air traffic controller, in order to reduce the controllers' workload and to prepare their flight.

- The RPIC should listen for safety by enhancing situational awareness.

Expectations

- A remote pilot is **<u>not</u>** expected to communicate with other aircraft in the vicinity of an airport, and should not do so unless there is an emergency situation.

- In the interest of safety in the NAS, it is important that a remote pilot understands the aviation language and the types of aircraft that can be operating in the same area as a you are flying.