The Radio Active Pilot
Part 1: Using Radios Legally

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Abstract - In Part 1 of this series on radios and paragliding, we describe the rules and regulations for using USHGA radio frequencies and the process for obtaining a special skills signoff. A description of radios and how to use them is provided. A brief introduction to amateur radio is provided along with the advantage of holding such a license. Special attention is given to the legal aspects of using radios.

During your first flight you probably heard a little voice in your head saying, "You're doing fine. …That's good. … A little more brake. … Weight shift to the right. … That's it. … Get out of your harness. … Get ready to flare. … Flare! … Well done!" Actually, that wasn't an imaginary voice; it was most likely your instructor coaching you. We have radios to thank for providing us with a terrestrial copilot.

Even if those days have passed since you needed a co-pilot to help you land, most pilots will agree it was reassuring to have someone help at a new site or during difficult landings. When you find yourself far from the LZ after an unexpected change in conditions, having a radio to call for aid is reassuring. Without radios, flying competitions, cross-country flights, instruction, and other activities would be more difficult and less safe.

Despite the ubiquitous use of radios in flight, most of us take radio communication for granted. So much so, that many pilots do not follow USHGA or Federal Communications Commission (FCC) rules. In this series of articles, I'll address the rules, regulations and procedures to follow when operating a radio. We'll cover the special skills signoff needed to legally transmit on USHGA authorized frequencies and suggest getting an amateur radio license to provide additional flexibility.

AUTHORIZATION - DON'T LEAVE HOME WITHOUT IT

One of the questions on the P4 written exam I took asked if FCC or USHGA authorization is required to legally transmit on USHGA frequencies. It shouldn't come as a surprise, but just in case, "Yes Virginia, authorization is required". The keyword here is "transmit". It is not illegal to receive, only to transmit without authorization. This means pilots can listen to flying instructions without needing a license. For example, if your instructor gives you guidance using a radio, he/she requires authorization, not you.

Authorization typically takes one of two forms: a USHGA special skills signoff, or an amateur radio license. The signoff is granted after a pilot passes a 24-question exam. The *USHGA Radio Authorization Study Guide*, which is accessible on the web at http://www.ushga.org/forms/radio.pdf, includes everything you need to prepare for the exam. The guide provides the rules, regulations, and procedures to follow when operating. Embedded within the study guide are the answers to the questions. Reading the four-page guide should provide you with the necessary information to pass the exam. After passing it, the recommendation of an observer/instructor, along with a one-time $15 payment must be submitted to the USHGA. A new member card is awarded showing special skills for portable authorization (PA) and/or vehicular authorization (VA).

Portable authorization provides the user with the right to use a small handheld transceiver. The term "transceiver" is a contraction of "transmitter" and "receiver". It means the radio can transmit as well as receive. Vehicular authorization allows the user to operate larger mobile transceivers that are normally mounted within a vehicle and connected to an antenna mounted on the car's roof or trunk. Vehicular authorization is the preferred type of radio to use for those doing cross-country flights or events that need

a radio equipped chase vehicle. The higher power provided by these radios, along with a better antenna, significantly increases radio coverage.

The introduction to the USHGA special skills signoff study guide states:

> *The Federal Communications Commission on March 16, 2001 granted to the United States Hang Gliding Association, a radio station license in the IB business radio service for an unlimited number of vehicular and portable units in specified quantities. These radios are licensed for use on 151.505, 151.625, 151.925, 151.955, and 158.40 MHz transmitting with a power limit of up to 50 watts. The call sign issued to the USHGA was WPRY 420.*

The USHGA frequencies are within the business band, which is shared by other services. For this reason, there is often congestion. With a little persistence, you can find a frequency that is less used, but due to the nature of the service, you can't be assured the frequency will remain unused. Unfortunately, the higher a pilot flies, the wider the area of coverage and the more likely one is to find an interfering station from a very distant location. This may be the prime reason that many pilots choose to transmit illegally on the nearby 2-meter amateur radio band. If you want to use the amateur radio band, you need a license. In part 2 of this series, we will show you just how easy that is.

Once you are authorized, there are many procedures that must be followed. For example, you must identify yourself using the USHGA call sign, WPRY 420. Identification is required during each transmission or at least once every fifteen minutes during continuous transmissions. I have been a pilot for several years and have yet to hear this procedure used correctly. It is pretty simple when you get used to it. Other procedures are equally easy to follow and are spelled out in the study guide.

BUYING A RADIO

To transmit on USHGA frequencies, you need a business band radio. It is common for pilots to purchase amateur radio equipment and transmit on 2-meter frequencies, or modify the equipment and transmit on USHGA business frequencies; both are illegal.

To transmit legally, you need to purchase a business band radio, which is very different than the 2-meter amateur radio transceivers that many pilots use. Business bands radios are typically larger, more expensive, and more difficult to purchase than amateur radio equipment. However, this does not justify illegal use of amateur radio equipment. Unfortunately, it is fairly common for pilots to purchase and use amateur radio equipment without a license.

If you walk into an amateur radio store or order a 2-meter transceiver on-line, it is doubtful the salesperson will ask for your amateur radio callsign or proof of holding a valid license. Remember, there is nothing illegal about purchasing the equipment or using it to receive. The illegal part comes when you transmit.

Many pilots use a portable radios called Handy Talkies (HT) for communication on USHGA frequencies. The 2-meter amateur band extends from 144 to 148 MHz and comes close to USHGA frequencies, but attempts to transmit on USHGA channels will fail. To get around this, some pilots modify the equipment. The modification may be easy, but that does not make it legal.

Virtually anything that can cause radio interference must go through a process called FCC "type acceptance". This process is both lengthy and costly to the manufacturer. During type acceptance, sophisticated measurements are made to assure the radio will not cause interference. Modifying equipment can result in the equipment not meeting technical specifications, negating FCC type acceptance. On a practical note, modification will also void any manufacturer warranty. While a radio modification is tempting, it should not be considered an option.

To transmit on USHGA frequencies legally, a commercial radio must be used. Remember, USHGA frequencies are business class frequencies, hence the need to use commercial, rather than amateur radios. ICOM (http://www.icomamerica.com) and Vertex Standard (http://www.vertexstandard.com/) are two of several manufacturers that make commercial radios. Each manufacturer offers handheld mobile radios, sometimes called "channelized radios", that can be programmed to operate on USHGA frequencies. The programming is a one-time process that is performed without modifying the radio's hardware. These

commercial radios have been specifically manufactured for this purpose; as such, they are the preferred radio for USHGA special skills signoff pilots.

Figure 1 is an example of a business band radio. A key characteristic of a business band radio is its simplicity. One look at the unit shows there are few controls. Buttons are provided to change channels and volume and not much more. The lack of features is not an omission, but a critical part of the design. The target market is people needing simple point-to-point communication.

USING A BUSINESS BAND RADIO

The simplicity of a business type radio leaves little for discussion in most applications. However, for a paragliding pilot that must use his/her hands constantly, operating the radio can be a distraction. Voice Operated Transmit (VOX) is a feature that allows the pilot to control transmissions merely by speaking. However, in practice this is a poor solution. Wind noise, and in-air audible communication between pilots will cause unnecessary transmissions.

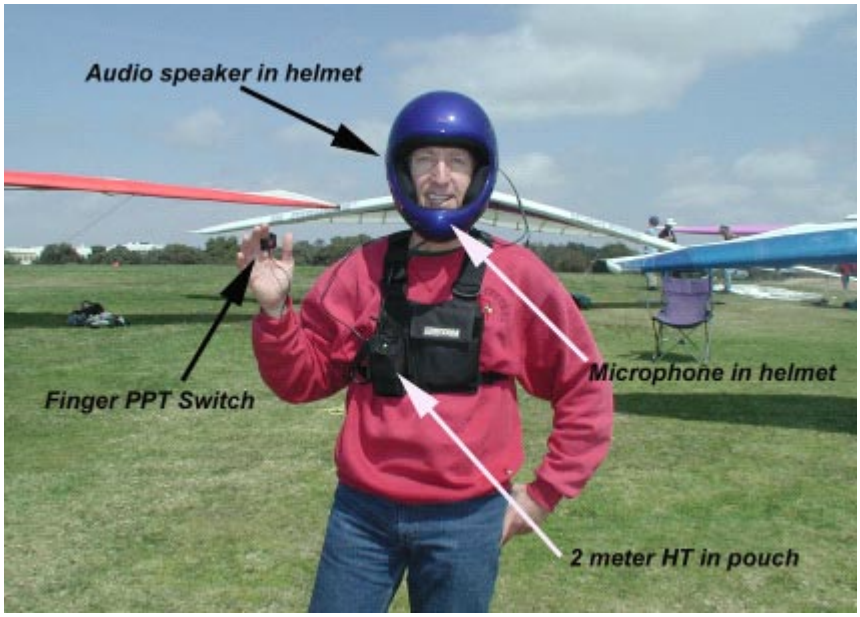
Figures 2 and 3 show a radio accessory cable designed to make operation easy. The cable plugs into the transceiver. A finger pushbutton allows the pilot to control transmissions, and a small speaker placed in the helmet provides for comfortable listening.

CONCLUSION

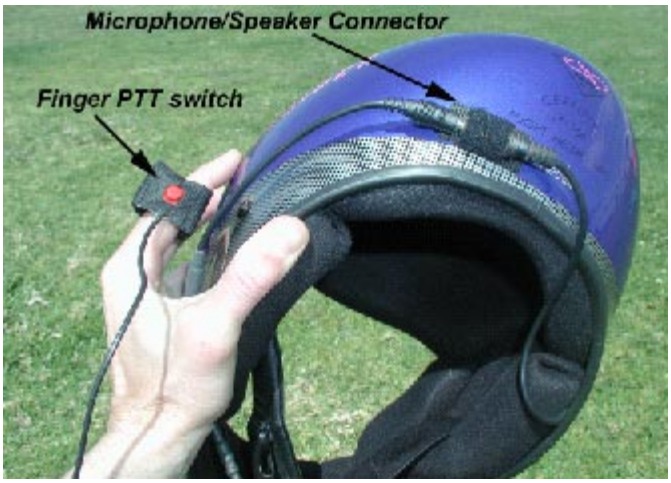
In closing I would be remiss if I didn't mention communication alternatives such the Family Radio Service (FRS). These radios have limitations, but are a good solution if you decide not to pursue a radio license. They have become very popular in the past few years especially on ski slopes and other places family members need to keep in contact. The radios are inexpensive, small, and easy to use. The limitation is poor coverage. Fortunately, this is typically not a problem at flying sites where pilots are in close proximity to each other. However, for cross-country flying or competitions, a FRS radio would be grossly inadequate.

In this first installment on radios and paragliding, we have concentrated on clarifying a few points when it comes to using radios while flying, especially what is legal and what is not. With that knowledge, I hope you will pursue getting your USHGA signoff and use the procedures correctly. If you want an amateur radio license, then stay tuned, that is the subject of next month's topic. We'll discuss how to get your license and the advantages that amateur radio offers.

Part 1 - Figure 1. The paucity of controls and features of this business radio is in keeping with its intended purpose of providing the business user with voice communication over a limited number of channels. Photo courtesy of ICOM America Inc.



Part 1 - Figure 2. The author, ready for aeronautical mobile communication using a hands-free system for control.



Part 1 - Figure 3. Close up of the helmet showing the finger push to talk (PTT) switch and connector to interface with the speaker and microphone inside the helmet.