**PHYS 401: Physics of Ham Radio Lauren Cleeves**

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Amateur radio is not only a fun hobby with which a ham can meet world-wide friends and acquaintances over the airwaves and internet, but also an extremely useful tool in coordinating communications dependably, such as during bicycle races. Hams can organize their efforts to provide rest or fluids to tired bikers or aid in times of emergency, such as during accidents. In fact, during times of extreme emergency, such as during hurricanes and floods when other forms of communication fail, hams are still able to communicate to organize relief efforts. Extreme weather can be unpredictable, and the availability of ham radio can possibly save one stranded biker’s life during an unexpected natural emergency. This makes amateur radio a dependable and useful form of communication in addition to an exciting and open-ended personal hobby.

One of the more entertaining public services amateur radio provides is facilitating direct communications during racing events, including bicycling, ironman competitions, and marathons. Before such events, organizations may request an STA, or Special Temporary Authority/Authorization, from the FCC prior to the event. This allows radio users to operate a communications facility for a defined period of time with first priority so that normal traffic does not disrupt the frequencies during the event. This is a quicker route than the normal licensing procedure, but it is also temporary.

Once such an agreement is set up, the hams are immediately useful in the initial set-up phase of the event, coordinating the basics such as food tents and parking, in addition to station set-up along the racing route. Rest-stops can be miles apart and radio offers direct and open communication between different stops, especially in areas where cell phone reception is unreliable. The event coordinator often has a ham “shadowing” him or her, coordinating communication and relaying messages or directions from the coordinator out across the entire route using a handy talkie with a headset. In addition to the shadow there is also a stationary net coordinator which has higher transmitting power, and he or she can receive lower power transmissions and relay them back out at a much higher power across the course.

In addition to coordinating the set-up phase, hams provide useful services during the event. Amateur radio stations are placed at check-points throughout the race with the intent of providing aid to participants in need. Whether it is water for the dehydrated or more serious injuries such as joint strain or even a broken bone, the hams keep a watchful eye and can, if necessary, instantly relay the information to emergency crews who can respond accordingly. During bike races, some stations can even provide some bicycle repair to broken down bikes.

Such events also provide useful training to hams for actual emergency situations. For example, bicycle races, though typically well-planned, can be very fast paced with a great deal of network traffic being relayed constantly. This simulates the kind of traffic one would hear during a natural emergency where numerous people are trying to make contact at once. This can give a novice ham a feel for what an actual emergency would be like and better trains him or her to deal with such conditions calmly.

Another type of communication during the event is known as SAG (support and gear) communications. This type typically rides along with the leader or the general flow of the race or rides with emergency vehicles to direct them to stranded riders/runners. They also cover parts of the race not covered by check points and can provide transportation to tired or injured participants as well. Typically they use a mobile rig powered via a car adaptor or batteries.

Each type of communication serves a unique purpose and is essential to the guaranteed success of the race, and each provides a great service to the participants and event organizers whether it is with event coordination or emergency aid. Additionally, such events provide excellent emergency “field-training” to prepare hams for the event of actual natural emergencies.

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