Majors Field Amateur Radio Club
Greenville, TX

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AIRWAVES

L Games 5K Run ran safely due to the help of HAMs

Tuesday September 9th –Greenville, Texas

L-3 Communications has traditionally participated with the Corporate Challenge, which is a set of games where corporate teams complete for bragging rights and money raised goes toward worthy charities. However, there has been much concern due to the fact that these games take place in the Dallas Fort Worth area, making it logistically difficult for the folks from L-3. This year, however, the staff at the Total Wellness Organization have decided to put together their own smaller version of the Corporate Challenge and call it the LGames. Instead of corporate teams, the teams will consist of employees of various geographical sectors of the plant. The kickoff event will be a 5K run that took place on Tuesday, September 9th at 6:00pm.

When word got out about the event, there was a resounding response. The number of participants overwhelmed the TWO staff. However, for the 5K run, the Majors Field Amateur Radio Club realized that more hands and eyes would be needed in order to make this event safe for everyone involved. After meeting with Chance Young of the TWO, we organized a public service event where HAM volunteers would act as course guides and also provide oversight of any incidences that might come up during the event. The response from the club and those from the Sabbine Valley Amateur Radio Association were very good. We had 12 volunteers, which exceeded our minimum of 5 operators needed to cover the course.

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Special points of interest:

- Page 5 – Ham Radio Outlet to open a store in Plano soon.
- Web site updated with past AirWaves newsletters on a new TAB.

Annual Summits on the Air Activity Weekend

September 13th and 14th

North America SOTA Activity Weekend 2014 is a casual event involving tiny battery-powered radios on mountain summits. It is not a contest but is intended to introduce "Summits on the Air" to newcomers with home stations who try to work summit operators during one or two days. There are no rules regarding power levels, modes or number of bands worked, but please be courteous when more than one station is trying to talk to a SOTA operator on a summit. The SOTA operators have just climbed mountains as high as 14,000 feet; they use low power; and they typically don't receive on split frequencies.

Check SOTAWATCH.org to spot who is on which mountain. Summits are numbered, and you can hover your cursor over the number to see the name and point value for each summit. Expect the website to show activity near 7.032, 7.185, 10.110, 14.342, 18.095, 18.155, 21.350, 24.905, 24.955, 28.420, 146.52, 446.00, and 61 Khz up from the bottom of 20, 15 and 10 meters CW. Participants are invited to collect points toward certificates and trophies offered by the twelve-year-old international SOTA group (SOTA.org.UK). As we learned in past years, this is a barrel of fun for both hill climbers and home operators. See you then.

For Sale – Samlex SEC-1223 13.8V 23Amp supply

I have a new in the box switching power supply that I purchased from Universal Radio. The cost of returning/stocking fee made me decide to keep it and try to do a private sale. I paid $115.00 for it, asking $95.00 OBO
Contact Jae – K5JAE at 903.413.9216

Understanding Antennas For The Non-Technical Ham – Part 2

Each month for the next year or so, I'll be printing excerpts of a book by Jim Abercrombie – N4JA on antenna design. This was a splendid suggestion by David Hunter – KC7CXI. The book is available on-line for free and can be located by googling the title and the author's last name. Now, part 2…

The dipole antenna is made of a wire broken in the center and where broken, each half of the wire connects to an insulator that divides the wire in two. Two wires from the voltage source, which is the transmitter, are connected across the insulator. On one side of the dipole, the current in the form of moving electrons flows first from the voltage source toward one end of the dipole. At the end, it reflects toward the voltage source. The same thing occurs on the other half of the wire on the other half cycle of alternating current. An antenna that is the right length for the current to reach the far end of the wire just as the polarity changes is said to be resonant. Because electricity travels at 95% the speed of light in a wire, the number of times the polarity changes in one second (frequency) determines how long the wire has to be in order to be resonant.

III. POLARIZATION OF ELECTROMAGNETIC WAVES

Electromagnetic waves travel away from the wire in horizontal, vertical, slanted, or circular waves. If the antenna wire runs horizontal or parallel to the earth, the radiation will be horizontally polarized. A wire or conductor that runs at right angles to the earth produces vertical radiation. A slanted wire has components of both horizontal and vertical radiation. Crossed wires connected by proper phasing lines that shift the phase from one wire to the other wire by 90 degrees will produce circular polarization. Amateurs working orbiting satellites at VHF, UHF, and microwave frequencies use circular polarization.

When your high frequency signals are reflecting off the ionosphere, it isnt important if the other stations antenna has the opposite polarization from yours (the polarization does matter for line of sight communication). The reflected polarized waves passing through the ionosphere are slowly rotated causing fading signals (QSB). The reason the polarization of antennas is most important is that it determines the angle of radiation. Horizontally polarized antennas at ordinary heights used by hams produce mostly high angle radiation and weaker low angle radiation, but this doesnt mean there is no low angle radiation. It is there but is weaker than high angle radiation. However, you must put a horizontally polarized antenna up more than one-wavelength high to get a strong low angle radiation. One wavelength is 280 feet on 80 meters, 140 feet on 40 meters, and 70 feet on 20 meters. High angle radiation works nearby stations best and low angle radiation works distant stations (DX) best. A vertically polarized antenna produces mostly low angle radiation, with its high angle radiation being weak. For this reason, vertical antennas do not work as well as horizontal antennas do at ordinary heights for working stations less than about 500 miles away.

IV. FREQUENCY

The number of times the polarity of an AC voltage changes per second determines its frequency. Frequency is measured in cycles per second or Hertz (Hz). A thousand cycles per second is a

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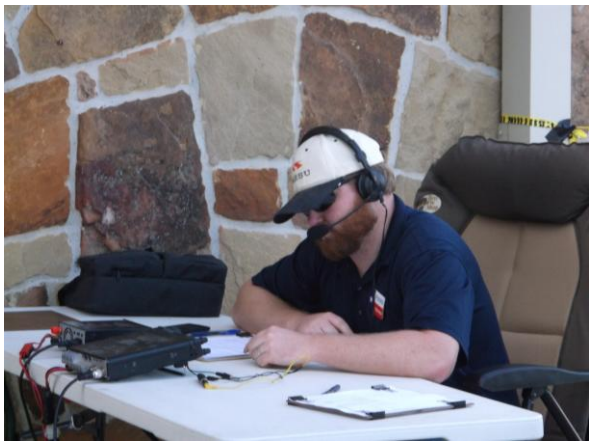
L Games 5K Run ran safely due to the help of HAMs – continued

With such a response, the positions were expanded to provide the best possible use of resources and good visual coverage of the runners, including a liaison with the EMT who will be stationed at the event.



Stephen Denison - W5SMD at Net Control

With all of the planning complete and volunteers committing to help, the time quickly approached. When Tuesday evening arrived, it was hot, but not scorching hot, as on other days in September. Runners began to assemble at the TWO when Stephen Denison – W5SMD began to setup his table and radio set for Net Control operations. When 5:30pm arrived, the group of volunteer operators had huddled around Stephen's station for the briefing. After the briefing, each of the volunteers manned their station. The 5K Run started at 6:00pm with the "Master" group; those who run fast. At 6:05pm, the rest of the participants started their run. We had no incidences or injuries. The event wrapped up around 7:00pm.

Wendee Kukuwich - TWO Staff and Mark Rice - KK5MR at Rest Stop 1

The staff of the TWO really felt that the Ham operators did a great job. The operators exceeded their expectations in providing support to the 5K as well as encouragement to the participants. A letter was forwarded to the operators that expressed the appreciation of the TWO staff.

Runners from the first group starting the race.

There are other LGames events planned, such as softball and volleyball. However, there are no other events that may require a safety and welfare net, such as the 5K, yet. In the mean time, we're available and ready to help if the need should arise again.

Jae Stutzman- K5JAE and son Nathaniel - K5NJS at Dangerous Intersection

Kelley Miller - K5KTX as Shadow 1 on Chance Young

Understanding Antennas For The Non-Technical Ham – continued

kilohertz (kHz). One million hertz is a Megahertz (MHz). The only difference between the 60 Hz electric power in your house and radio frequencies (RF) is the frequency, but 60 Hz electricity in a wire also produces electromagnetic radiation just like radio waves. Useful radio waves start at 30 kHz and go upward in frequency until you reach the infrared light waves. Light is the same kind of waves as RF except light is at a much higher frequency. Light waves are used like radio waves when they are confined inside fiber optic cable. Above the frequencies of light are found x-rays and gamma rays. The radio bands: The Long Wave Band (LW) starts at 30 kHz and goes to 300 kHz. The Medium Wave Band (MW) is from 300 kHz to 3000 kHz or 3 MHz. The High Frequency Band (HF) is from 3 MHz to 30 MHz. The Very High Frequency Band (VHF) is from 30 MHz to 300 MHz. The Ultra-High Frequency Band (UHF) is from 300 MHz to 3000 MHz or 3 GHz. Above these frequencies are several microwave bands which are defined as the Super High Frequency Band (SHF).

V. THE IONOSPHERE AND MODES OF HF PROPAGATION

The Ionosphere

In the upper air around fifty miles and higher where the air molecules are far apart, radiation from the sun strips electrons from oxygen molecules causing the molecules to become ionized forming the ionosphere. The ionized oxygen molecules and its free electrons float in space forming radio-reflecting layers. Ionization of the ionosphere varies by the time of day, seasons of the year, and the sunspot cycle. The strength of ionization also varies from day to day and hour to hour. Since the height of the ionosphere varies, the higher the ionized layer becomes, the farther the skip will be. We will define skip in section 5 of part V.

The part of the earths atmosphere called the ionosphere is divided into three layers. The three layers are, from lowest to highest, the D layer, the E layer, and the F layer. Each layer has a different effect on HF radio propagation.

Being at a lower altitude, the D layer molecules are squeezed closer together by gravity than those in higher layers, and the free electrons reattach to the molecules easily. The D layer requires constant radiation from the sun to maintain its ionization. Radio waves at lower frequencies such as the frequencies of the AM broadcast band cannot penetrate this layer and are absorbed. The higher frequency signals are able to pass through the D layer. The D layer disappears at night causing AM broadcast stations to reflect from the higher layers. This is why AM broadcast signals only propagate by ground wave in the daytime and they can be received from great distances at night. Like the broadcast band, the D layer absorbs signals on 160 and to a lesser extent 80 meters during the day making those bands go dead. During solar flares, the D layer becomes ionized so strongly that all high frequency radio waves are absorbed, causing a radio blackout.

E-layer propagation is not well understood. Being at a lower altitude than F layer, the E layer is responsible for summertime short skip propagation on the higher high frequency bands. The skip zone is around 1000 miles, but at times when the E-cloud covers a wide area in the summer, double hops can be seen. A double hop occurs when the signal reflects from the ionosphere, then returns to the ground, reflects from the ground back to the ionosphere where it is reflected back to the ground. A double hop can propagate the signal 2000 miles or more. The E-layer forms mostly during the day, and it has the highest degree of ionization at noon. The E layer like the D layer disappears at night. Even so, sporadic-E propagation can and does form at night. There is a minor occurrence of sporadic E propagation during the wintertime. On rare occasions, sporadic E propagation can surprise you by occurring anytime regardless of the sunspot cycle or the season of the year.

The F layer is the highest layer and it is divided into two levels: F1 and F2. At night the F1 and F2 merge into one layer. During the day, the F1 layer doesnt play a part in radio propagation, but F2 does. It is responsible for most high-frequency long distance propagation on 20 meters and above. However, the F layer makes it possible for you to work DX on the lower bands at night. Sunspots are responsible for the ionization layers and in years with high sunspot numbers, worldwide contacts can be made easily on 10-20 meters by F2 layer propagation. In years of low sunspot numbers, working distant stations is difficult on those bands. Consequently, ten and fifteen meters will be completely dead most days and twenty meters will go dead at night. In years of low sunspot numbers DX contacts are easily made at night on 160, 80, and 40 meters. The sunspot numbers increase and decrease in 11-year average

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Understanding Antennas For The Non-Technical Ham – continued

cycles.

Since the curvature of the earth averages about 16 feet every 5 miles, an object 5 miles from you on perfectly flat earth will be 16 feet below the horizon. Because light travels in straight lines, you cannot see objects beyond the horizon. Radio waves travel in straight lines, but there are ways to get them beyond the horizon. This is referred to as propagation.

Continued next month

Ham Radio Outlet To Open Store In Plano, TX

Ham Radio Outlet, the worlds largest Amateur Radio product and accessories retailer, announced a new retail Super Store in Plano, TX. This new store will include a multi-thousand foot retail floor plan, which will stock and have on display a vast selection of amateur radio products and accessories. Included within the facility will be a large demonstration area, which will have many of the current amateur radio products connected to antennas for use and display.

For more details, check out the announcement at:

http://www.hamradio.com/news_announcements.cfm

Calendar

2014

1/1 ~ 12/31 ARRL Centennial QSO Party. W1AW WAS portable operations and points contest. http://www.arrl.org/centennial-qso-party for more info.

September

11 SVARA Meeting

19~21 Plano Balloon Festival. http://sites.google.com/site/pbfcommssupp/

20~21 10 GHz and UP Contest Round 2

20 Cotton Patch Challenge Contact Stephen Denison – W5SMD at goclimbarock007@hotmail.com

25 MFARC Meeting

October

17~19 Jamboree On The Air (JOTA) http://www.scouting.org/jota.aspx

REGULAR ACTIVITIES

Daily DFW Early Traffic Net (NTS) at 6:30pm 146.88 – PL 110.9Hz

Daily DFW Late Traffic Net (NTS) at 8:30pm 146.72 – PL 110.9Hz

Daily DFW CW Traffic Net (NTS) at 7:00pm and at 10pm on 3541 KHz www.k6jt.com

Thurs Sabine Valley Amateur Radio Association Net Every Thursday night at 7:00pm on the K5GVL/R 146.780 MHz (+) PL 114.8Hz

Friday **Majors Field Amateur Radio Club Talk-In Net** Every Friday morning on your way in to work on the WD5GSL/R 147.160 MHz (+) PL 100.0Hz

MAJORS FIELD AMATEUR RADIO CLUB

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We're on the Web!

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Your article submissions are welcomed. Please submit to Michael@Ketchums.info

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Club Station

Club Station: TBD

VHF Repeater: WD5GSL/R
147.160 MHz (+) PL 100.0 Hz
Friday Morning Talk-In Net

UHF Repeater: WD5GSL/R **(CURRENTLY OFF AIR)**
444.625 MHz (-) PL 151.4 Hz

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