Majors Field Amateur Radio Club
Greenville, TX

Volume 3, Issue 1
January 2015

AIRWAVES

INSIDE THIS ISSUE:

Special points of interest:

- Club Officer Elections are completed. Please support your new officers.
- Page 5 and 6 has various club assets for sale.
- Page 7 – FCC Considered 4-Meter band (70-70.5MHz) for Amateur Service.
- Web site updated with past AirWaves newsletters on a new TAB.

AirWaves Correction

Here at AirWaves, we try to be accurate, objective and inclusive with all of our article content. However, in our last edition (Sep 2014) of the AirWaves, we left off an important contributor to the LGames article. This is to set the record straight.

On the caption to one particular photo, we accidently left off Shadow Operator Joe Lum – KE5ZBL. Joe was the Shadow for TWO's Matt Arnold. Matt worked the registration table among other things at the Start/Finish area. I failed to mention Joe on the caption of the last newsletter picture. So, here is Joe at work.

Than

s, Joe! ■

Joe Lum - KE5ZBL as Shadow 2

WD5GSL/R 2-Meter Repeater Back on the Air

Majors Field - December 28th

On Monday, December 8th, the WD5GSL/R 2-Meter repeater had no readable modulation. This went on for two weeks until we had a chance to get out to the repeater and work on it. Upon arriving on Thursday, December 18th, the power was cycled, which allowed it to work over night. However, by Friday morning, it was back to its old tricks again. Since the cabinet was locked and nobody had the key, we waited a little further. Finally, David Hunter – KC7CEX caught a facilities lock smith out at the MSTF and persuaded him to open one side of the cabinet for us. New combo locks are installed to help alleviate the need for keys.

On Sunday, December 21st, the cover of the transmitter was removed and the problematic potentiometer identified through finger press. It was the Mod Adjust pot, R104, a 10K Ohm trim pot used to adjust the overall modulation. This trim pot was quite noisy and scratched violently when I pressed upon it, without moving the pot wheel. After gauging the position of this pot, I worked it back and forth in order to allow the contact to clean up a bit. After a few seconds of this, the wheel was returned to its former position. That solved the problem quite well.

About a week later, on Saturday, December 27th, the modulation once again went out. On Sunday, December 28th, John Nelson Jr. - N0DFW helped in an effort to fix it once more.

If we continue to have troubles with this trim pot, I'll work with our club trustee, Jonathan Brown - WB5KSD, to see if we can work a more permanent solution. ■

Club Work Day Cleaned Up Shack and got UHF Repeater Back On Air

With the new construction at the MSTF complex, some extra room is needed for temporary storage while the MSTF kept projects going during this construction period. In response to the request by MSTF management, we scheduled a "work day" in order to shore up our club shack area and dispose of unnecessary surplus items that have accumulated in the club trailer.

On Saturday, November 1st, 2014, Victor Paul – WB0TEV, John Nelson Jr. – N0DFW and Michael Ketchum – K5MDK met to clean up the equipment and clear out the desks. One whole rack of equipment and a large storage cabinet was setup to hold all club items worth keeping. Some items were disposed of or left for cleaning crews to dispose, while several specific items were identified for surplus sale. After all was done, the shack looked pretty nice and the space is now usable.

After accomplishing that mission, we then proceeded to contact security to gain access to the radio closet in the Fire Station. David Kessinger had installed our club UHF antenna on top of a telephone pole behind the Fire Station and ran coax to the room for our UHF repeater. All that was needed was to identify the antenna cable, hook it all up and test it. In a short period of time, we had the repeater back on the air. However, the signal strength is not good enough to make it to Sulphur Springs to connect with the North Central Texas Connection linked repeater system. ■

Club Officer Election Results

The Majors Field Amateur Radio Club held its Annual Business Meeting on December 18th. There were 6 members present. The Nominations for officers were made at the November 20th meeting as follows:

- President – Michael Ketchum – K5MDK
- Vice President – Stephen Dennison – W5SMD
- Secretary/Treasurer – John Nelson Jr – N0DFW

Mark Bushnell made a motion to accept the candidates with a single vote of acclamation. The motion was seconded by Mark Rice and passed unanimously, thus accepting these candidates as next year's officers.

The meeting continued with discussion for possible club activities, which included the formation of a VE Team to provide lessons and testing within the company; organize a technology fair with a hamfest in Greenville; and also a project to create a 10 meter remote HFpage 5

A Word of Thanks to our Outgoing Officers

As I have served as President of this club for the last year and a half, I want to thank our officers for their help and efforts as we rebooted the club.

Samuel Mize – KF5SSM has served as club Vice President and has presided over many of our meetings. Samuel has also been vital in sending out email announcements and newsletters. He created an e-mail list of interested Amateur Radio operators and club members in order to help keep everyone informed of club events and happenings.

For the last two years, **Robert Draper – KF5SSQ** has served the club as our Secretary Treasurer. He initiated our first collection of club dues in many years and has kept the books for the club.

My sincere thanks go to these two men for their help the last two years. I would like to ask everyone to give their complete support to our two new officers as we enter a new year for the Majors Field Amateur Radio Club.

Michael Ketchum – K5MDK ■

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 3

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 – KC7CEX. The book is available on-line for free and can be located by Googling the title and the author's last name. Now, part 3…

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2. Ground-Wave Propagation

Ground wave works only with vertical polarization. One side of the antenna is the metal vertical radiator and the other side of the antenna is the earth ground. The surface wave in the air travels faster than the part of the wave flowing through the ground. The surface of the earth is curved like the curved part of a racetrack. On the curved track, a car on the outside of the track has to travel faster than the car on the inside lane to stay even, and the two cars travel in a curved path. Although the wave in the air travels faster than the wave on the ground, the two parts of the wave cannot be separated. Because of this, the radio wave also travels in a curved path that follows the curvature of the earth.

The AM broadcast stations use ground wave propagation during the day and skywave propagation at night. Since radio waves at lower frequencies conduct better through the ground, an AM broadcast station on 540 kHz will be many dB stronger than a station on 1600 kHz, if both run the same power. This fact is important in understanding why ground mounted verticals do not work as well at high frequencies as they do on the broadcast band.

3. Direct Wave or Line of Sight Propagation

Antennas located on high structures can "look" over the horizon and "see" the receiving antennas. Because refraction is involved, direct waves travel 20% farther than light waves due to scattering of radio waves by the environment. Trees and other foliage are invisible to HF radio waves. Direct wave propagation is possible at all frequencies, but this mode of propagation is seldom used on our high frequency bands, but it is the usual propagation mode used by repeaters and others on VHF and UHF. If you watch TV on an outside antenna or on a "rabbit ears antenna," you are receiving the signal by direct wave propagation.

4. Propagation by Refraction

Refraction occurs when the lower part of a wave travels slower than the top part of the wave because the wave is passing through two media. These media can be two layers of air at different temperatures or they can be air and a solid. One form of refraction is caused by a radio wave passing over a hill or ridge being bent as it passes over the obstruction. This is known as "knife edge refraction." Another form of refraction occurs when layers of air of different temperatures bend the radio waves around the horizon.

This is called tropospheric ducting. This mode of propagation makes long distance contacts possible at VHF frequencies. Tropospheric ducting does occur on 10 meters and lower frequencies and is noticeable when other forms of propagation are absent. On high frequency bands, many hams mistakenly call tropospheric ducting and direct wave "ground wave."

5. Skywave Propagation

Skywave propagation occurs when radio waves are reflected from the ionosphere. Practically all HF communication is done by skywave. In the ionosphere, the waves are really refracted twice, and they just appear to be reflected. The reflections are frequency sensitive, meaning each ham band reflects differently from the others. Low frequencies, such as 80 meters, reflect mainly from the lower levels of the ionosphere and the reflected signal comes nearly straight back down. This causes 80 meters to propagate to points from local out to more than a few hundred miles in the daytime. At night, when the D layer and E layer are absent, signals striking the ionosphere at lower angles may propagate many thousands of miles on 80 meters. On the bands from 20 to 10 meters, high angle signals pass straight through the ionosphere and do not reflect back down to the nearby stations. The low angle signals on these higher bands reflect from the ionosphere near the horizon and return to the Earth some miles away. The in-between region cannot hear the transmitted signals nor can you hear signals coming from this region. The in-between region is called the "skip zone." Only when the ionosphere is weakly ionized do you have a skip zone on 80 meters.

Understanding Antennas For The Non-Technical Ham – continued

Another interesting type of skywave propagation seen on the higher HF bands is called chordal hop propagation seen frequently in trans-equatorial (TE) propagation, which is propagation crossing the equator. When this occurs, signals entering the ionosphere are trapped inside the F2 layer then they are finally refracted back to earth across the equator thousands of miles away. There is no propagation between the signal entry point and the exit point. This is skip in the extreme. On many occasions, we have worked stations far away across the equator in the southern part of South America and stations in between could not be heard. We have frequently worked VQ9LA in the Chagos Archipelago located in the Indian Ocean. The path to The Chagos Archipelago is across Europe and the Middle East and finally across the equator to his location in the Indian Ocean. One time when he was working Europe and North America at the same time, we could not hear the European stations because our path to him was via chordal hop propagation. Another way of describing chordal hop propagation is to call it ionospheric ducting.

Skywave propagation sometimes produces an effect called "backscatter." What happens is the radio waves that strike the ionosphere, instead of only reflecting father away from the transmitting station, part of the signal reflects backwards toward the transmitting station. Stations that are too close to hear each other by direct wave can communicate by the backward reflecting waves. Both stations that communicate by backscatter must point their directional beam antennas in the same direction although their direction toward each other may be at some other azimuth. Backscatter will confuse front-to-back measurements of directional beam antennas. This is because, when you turn the back of the antenna toward the station you are hearing, you may be able to hear him on backscatter from a direction opposite from him. You will be hearing him from the ionized atmospheric cloud in the opposite direction. During intense solar magnetic storms, when aurora occurs at high latitudes, stations are able to communicate by backscatter on VHF and UHF by both stations pointing their directional beams toward the aurora. This will be due north for stations in the Northern Hemisphere and due south for stations in the Southern Hemisphere. Audio from aurora backscatter will have a "wispy" sound.

6. Greyline Propagation

Greyline propagation occurs when the sun is low in the sky near dawn or dusk, although we have seen greyline propagation occur as early as two hours before sunset or as late as two hours after sunrise. It is often used to work stations on the other side of the world on 160 and 80 meters. For example, at certain times of the year when it is approaching sunset here in the States, the sun will have just risen in Asia or Australia and vice-versa. At that time, radio waves propagate along the semidarkness path that encircles the Earth called the greyline. Both locations must be in the greyline in order to make 2-way contacts. The tilt of the Earth makes the position of the greyline change as the seasons change. Greyline propagation occurs between any two locations for a brief period of a few weeks. Afterwards, different places fall into the greyline. For several weeks in the fall of the year, an interesting example of greyline propagation occurs in the southeastern part of the U.S. On 3915 kHz, the BBC outlet in Singapore can be heard for about an hour before sunset coming in by greyline propagation. Stations to the east hear it before we do. Stations farther to the west can hear the fading signals after it fades out here because the greyline moves as the earth rotates. For those hearing it, the signal fades in, it peaks, and it slowly fades out.

7. Long Path Propagation

Long path propagation occurs when signals propagate the long way around the world. It can occur on any band. It usually occurs from stations on the opposite side of the world from you. We have worked South Africa via long path by beaming northwest early in the morning on 20 meters. When this happens, we are working him long path through the nighttime side of the earth. Since at all times half the Earth has daytime and half the Earth has night, long path propagation is determined by whether the signal is propagated through the nighttime path or daylight path. Sometimes the daylight path will bring in stations by long path propagation and at other times the darkness path provides long path propagation. One night on 20 meters, we heard a station in India coming in short path and long path simultaneously, but the short path was stronger. At the same time, California was working India by long path and they could not hear him short path. They were working him through the daylight path, and he was stronger here on the East Coast via the nighttime path.

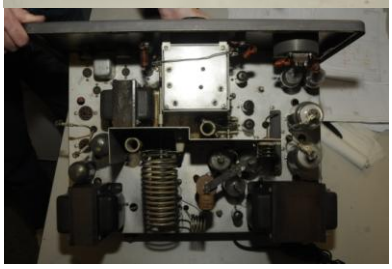
8. 160-Meter (1.8-2.0 MHz) Propagation

Each amateur band propagates signals differently. The 160-meter band is our only MW band and it acts similar to the broadcast band. It is primarily a nighttime and wintertime band as it suffers from high summertime

Continued on Page 7

Club Radio Equipment For Sale

E.F. Johnson Viking Valiant HF Transmitter



Modes: AM/CW (SSB optional*)
Bands: 160 - 10 meters
Input Power: 200 watts (AM), 275 watts (CW/SSB)
VFO: Internal
Power Supply: Internal
Final Tubes: (3) 6146 parallel
Modulator: (2) 6146 push-pull
New Price: $349.50 (kit) / $439.50 (wired)
Years Produced: 1955-62
Size: 11 5/8" high x 21 1/8" wide x 17 3/8" deep
Weight: 83 lbs.
*SSB Possible with special exciter, not included

Heathkit DX-40 Crystal HF Transmitter

The DX-40 is an transmitter, featuring increased power, clean keying characteristics and stability made possible by the efficient circuit design. An ideal rig for the novice who intends to operate on phone as soon as he gets his general-class ticket, yet needs a CW rig in the meantime. Experienced hams also will find the DX-40 appealing since it provides the phone and CW facilities desired in a low-power rig.

Heathkit HG-10 HF VFO

The Heathkit HG-10 VFO (Variable Frequency Oscillator) was sold as a kit. It uses a 6CH8 as a series-tuned Clapp oscillator and cathode follower and a 0B2 as voltage regulator. Output is 5 volts RMS open circuit.

Please contact
Victor Paul – WB0TEV
to make an offer
on any of these items.

Club Radio Equipment For Sale – continued

HAL DS2000 KSR
Analog RTTY or CW terminal with demodulator

The Hal DS-2000 KSR teletype communications terminal will send and receive Baudot RTTY at 60, 66, 75, 100 and 132 wpm. It also does ASCII 110 and 300 baud. The DS2000 also transmits Morse code (1-175 wpm). Morse receive is available via the MR2000 option. Video output is 24 lines, 72 character per line (5x7 dot matrix). Monitor IS included in this deal.

Please contact
Victor Paul – WB0TEV
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on any of these items.

Heathkit /Zenith H19 terminal with dust cover

The Heathkit H19 terminal was introduced in August, 1980 at a price under $1,000. It can be utilized with all commonly available computer systems and provides the most advantageous features for data entry, editing, inquiry, and transaction processing – wherever you need a top-of-the-line, general-purpose terminal.

The H19 is ideal for high speed data entry. The 12" diagonal CRT gives you a crisp, clear video image. And the H19's keyboard follows the standard typewriter keyboard layout for operator ease. ANSI and DEC-VT52 compatibility.

Understanding Antennas For The Non-Technical Ham – continued

static (QRN). Most hams that use this band for nearby contacts use horizontal dipoles or inverted-V antennas. Some hams use vertical antennas on this band to work distant stations (DX). These DX contacts are made in the fall and wintertime at night via F layer or greyline propagation when the static levels are low. Dipoles and inverted-V antennas do not work well for DX on this band.

Continued next month

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4 Meter Band for Amateur Radio Part 97 Service is Denied

Washington DC - September 17, 2014
The Federal Communications Commission reviewed a petition for rulemaking that will provide for a new 4-meter band for Part 97 Amateur Radio Service rules. Glen E. Zook - K9STH of Richardson, Texas made the proposals to the FCC on March of 2014 that would provide for Amateur use from 70.0 MHz through 70.5 MHz.

Given that there are 4 full-power TV stations and 110 low-power and TV Translator stations currently in use on channel 4 nationwide, the commission decided against this petition. You can read more about the decision in Docket DA 14-1347 and ARRL news link: http://www.arrl.org/news/fcc-turns-down-petition-to-create-a-4-meter-band-in-the-us

by Michael Ketchum - K5MDK

Calendar

2015

January

15	SVARA Meeting at 7:00pm at Hunt Regional Hospital
24	NWS Skywarn Basic/Adv Training Collin College Preston Ridge C105 Frisco at 8:30am
29	MFARC Meeting PD North Conference Room at 11:45am

February

19	SVARA Meeting at 7:00pm at Hunt Regional Hospital
21	NWS Skywarn Basic/Adv Training Grandville Arts Center Garland at 9:00am
26	MFARC Meeting PD North Conference Room at 11:45am
26	NWS Skywarn Basic Only Training F.Warren Civic Center Greenville at 6:30pm

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

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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
444.625 MHz (+) PL 151.4 Hz
Temporary Antenna Position Limits Range Currently

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