

Lanierland ARC W4ABP Newsletter

September 2005

President's Corner

Terry Jones, W4TL

Well, the past weeks have been very busy for several members of LARC especially those that are also involved with the Georgia Baptist Communications Unit. Hurricane Katrina really put several to work in short order. The communications unit was deployed to Mississippi on August 30 and remained operational at various locations until September 23 when we had to withdraw because of Hurricane Rita closing in too close to Bay Saint Louis. Those that participated either deployed to the field or helped man the NA4MB relay station, which operated out of the Chattahoochee Baptist Association office here in Gainesville. Some even pulled double duty by working the relay station and going into the field, some going twice. To me this demonstrates total commitment at its finest. A special thanks to all that responded in any way to help.

Most of you probably know that I have decided not to seek re-election as President of LARC for 2006. After nine years as your president, it is time for me to step down and let someone else "guide the ship." My term has been fun as well as challenging. I, as anyone else in a leadership role, have made mistakes and perhaps not pleased everyone with my leadership, but in looking back I have no regrets as I see where LARC is today. I have tried to focus and guide the direction of LARC in total commitment to public service communications and good "old fashioned friendship and camaraderie." LARC has some of the finest amateurs in this part of the country and individuals capable of professionally managing the affairs of the club. Support your new officers because, believe me, they need your encouragement. Please pray for Ruth and me as we start a new direction in our lives and my parting words to you is "keep looking for ways to improve LARC's commitment to serve God, your community and your country; if you do this, you will not become stagnant in your direction."

(continued next column)

It has been a pleasure to serve as president of such a fine organization and I look forward to sitting on the "back its row" and watch LARC continue to grow in its commitment to public service.

Your friend,
Terry, W4TL

Club Meeting Information

The monthly club meeting is the 4th Tuesday of the month at the Fire Mountain Restaurant on Browns Bridge Road in Gainesville. We gather at 1800 for dinner. The meeting starts at 1900. The October meeting will include nominations for the next slate of club officers. The November meeting will be the elections for the 2006 officers.

Repeater Info

The club has several repeaters located on Wakua Mountain.

146.670 (-) 131.8 Hz
224.840 (-) open
444.950 (+) 131.8 Hz

Upcoming Hamfests

contributed by Roger Gibson, W4RLG

Date	Location
Oct. 8	Augusta, Ga
Oct. 15	Rome, Ga
Nov. 5-6	Lawrenceville, Ga Ga. Section Conv.
Nov. 12	Montgomery, Al. Ala. Section Conv.

OSCAR Today

(Orbiting Satellite Carrying Amateur Radio)
Doyle Gnatt, KI4KLQ



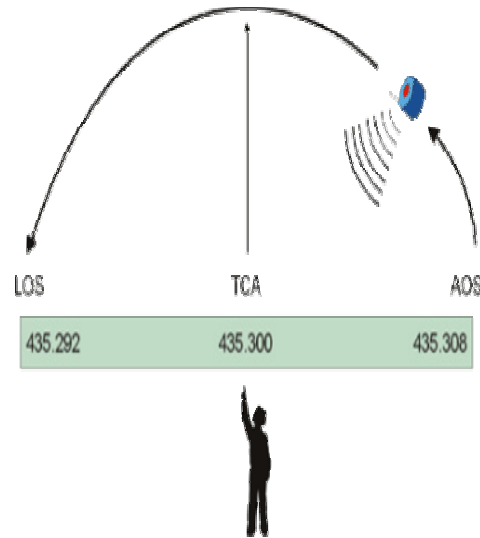
Last time we were introduced to OSCAR and hopefully you walked away with enough information to have listened to a few passes. If you did, you noticed the transmission moved off published frequency throughout the pass. This was due to Doppler effects. All satellite operators need to take this effect into account when working the bird. We all have experienced Doppler effects as it relates to sound waves in our everyday life. The sound of an emergency vehicle with its siren blasting has a low sound wave in the distance and becomes higher as it approaches. Then, as it moves away in the opposite direction, the sound becomes low again. Unlike human ears, we use our radios to change the frequency to compensate for Doppler, keeping the sound wave high.

The amount of frequency shift you'll have to provide will be dependent on the band you are using. Since the most popular birds that are in LEO (Low Earth Orbit) operate on 2m and 70cm, we'll concentrate on those bands. In the 2m range, about +/- 3-5 kHz shift will be acceptable and on 70cm +/- 3/10 kHz may be required. Many factors will determine the exact shift requirements such as azimuth and elevation of the pass but the above shifts will be close enough to get you started. Overhead passes have more extreme variation in Doppler shift than low elevation passes.

If you have deep pockets, software exists to calculate all this for you. For myself, however, the fun with experimentation has led me to venture into the "trial and error" mode. In my humble opinion, this is the best teacher. Plan ahead and have your radio set up BEFORE a scheduled pass you would like to work since OSCAR or ISS passes do not allow for any time to spare.

Let's walk through a pass. You've noticed via tracking software an A0-51 pass is nearing. This pass will be at or near a direct overhead pass. As the station rises above the horizon, listen carefully about +8 kHz (435.308) off published frequency (435.300). You will hear the frequency start to come to life. As the OSCAR moves higher from the horizon, adjust to 435.307. Continue frequency adjustments

downward with 1 kHz steps as the station climbs. You will be at frequency when the pass reaches apogee to the horizon. As the bird moves away, tune frequency downward to 435.299 and continue to make downward adjustments with 1 kHz increments for the remainder of the pass.



The above illustration was taken from the AmSat web site and is intended as a guide toward your contact success. Results will vary. I have not mastered these techniques by any stretch but the "trial and error" mode has taught me no two passes will be alike. If you transmit, remember the uplink will require frequency adjustments as well. If someone hears your transmission, they will reply. Most dual band radio's can be set up to make these adjustments on both bands at the same time by enabling the VFO tracking feature. The magic comes when it all comes together and you hear your own uplink and someone replies with your call sign. What a great opportunity to experiment and have some fun. Be ready, passes last only minutes. I'm sure there are LARC members that have been experimenting with OSCAR much longer than myself. Feedback is welcome. Send your thoughts, ideas and satellite work experiences to KI4KLQ@arrl.net.

Have you updated your Keplerian Elements lately? Elements for ISS need updating once a day. If station thrusters are fired, day old ISS Keps will be invalid by 1000's of miles. OSCAR Keps need updating every 2-4 weeks.

Next time we'll talk about antennas for satellite work.

73 to all
KI4KLQ Doyle

***** STOP THE PRESS *****

See the next page for late breaking satellite news!

Late Breaking OSCAR News

The annual JOTA (Jamboree on the Air) amateur radio event is scheduled for October 15-16. This is an International Boy Scouting event and amateur stations are invited to participate. AO-51 will be configured in a special dual band FM repeater mode for use over the weekend event. In addition, this mode will be active Monday through Friday before the event to familiarize and test this mode. Both repeaters will be for the exclusive use of JOTA activity.

The configuration of the satellite frequencies for this mode is listed below.

AO-51 FM repeater #1

Downlink: 435.300 MHz

Uplink: 145.920 MHz with 67hz PL Tone

AO-51 FM repeater #2

Downlink: 435.150 MHz

Uplink: 145.880 MHz with NO PL Tone

If you haven't tried Sat work yet, this is a great opportunity to do so. Allow all those young ham-scouts as many contacts as possible. Base stations, please use low power because most JOTA stations will be portable. The official times for the JOTA event will be from 1200 UTC on October 15 until 1200 UTC on October 17, 2005.
73, Doyle

From the Editor

Robert Copelan, WB4DHC

A big thank you to the contributors of articles and information for this month's newsletter. More contributions are needed in order to keep this a dynamic publication. If you would like to contribute a single article, be the author of an ongoing column or just give feedback on the newsletter please me on the 146.67 repeater, via email, wb4dhc@arrl.net or by phone at 678-989-5576. According to our Bylaws, the newsletter is the method of communication of official club information. You will see additions to the newsletter in the coming months in order to fulfill these Bylaw requirements.

EOC Tower Status

Lamar Grier, K4JLG

US Tower along with several club members recently repaired the tower at the EOC. It is now able to be raised to its full height. Thanks to everyone who had a hand in coordinating and performing the repairs!

For EOC Access

If you would like to operate the EOC station please contact one of the following folks.

Terry Jones	W4TL
John Brandon	KE4PCF
Alfred Westbrook	KT4VP
Larry Tyson	W4WLT
Roger Gibson	W4RLG
Bobby Broadwell	W4BLB
Lamar Grier	K4JLG
Darryl Dale	K4REV
Bob Scott	KG4NJC
Ed Cravey	KF4HPY
Phillip Loggins	K4PDL
Clyde Thomason	N4FCL
Robert Copelan	WB4DHC

Christmas Party

Larry, the club Activities Officer, has advised that the yearly Christmas Breakfast will be on December 3 from 0800 – 1000 at the Golden Corral just off of I-985 exit 4. Mark your calendars so that you can join us!

Lunch Bunch

Every Friday at 11:30 AM there is a lunch get-together at a local restaurant. The location is announced on the Wednesday night net as well as the Yahoogroups discussion list and the 146.67 repeater.

Hall Co. Nets

W4ABP repeater

146.67 Mhz(-) 131.8 hz

Net	Time
LARC	Wed. 2030R
Hall Co. ARES	Wed. 2000R

Where in the World is...

This column returns next month. If you would like your QTH or some favorite QTH in the world featured please send that info to the Newsletter Editor.

NVIS Antennas in use at Lucedale

Ed Cravey, KF4HPY

NVIS: NEAR VERTICAL INCIDENCE SKYWAVE

1. Pronounced: "niviss"

2. What is NVIS?

The sending of signals vertically into the *F1F2* layers to be reflected back to earth and cover a wide area with no gaps. Signals from impossible places to impossible places beyond line of sight.

3. How can this be done? Is it costly? Is it technical?

A. By reducing the height above ground of the antenna to .1 to .25 (1/10 to 1/4) wavelength of the operating frequency.

B. Low cost by using simple dipoles. Also lowering the feed point of a dipole by allowing the center to droop may work also.

C. The Tech part is easy to do. You want to use 75 meters? The antenna height for 75 meters is $75 \times .1 = 7.5\text{m}$ or $7.5 \times 3.28 = 24.6$ feet at 1/10 wavelength above the ground. To find 1/4 wave height for 75 meters, the equation is: $(75 \times .25) \times 3.28 = 61.5$ feet. The wavelength of the transmission frequency is found by the *300IF* equation.

D. What has happened? The antenna is now radiating at a very high angle (52-87 degrees). Compare this to a DX antenna with a radiation angle of 20 degrees or less covering several thousand miles with a huge skip zone. The NVIS system is able to cover 200km to 600 km with no gaps (120-400 miles).

4. Mobile Operations

The military uses the NVIS system on their vehicles. The normally vertical whips are placed into an adapter to allow the 16.5 foot whip to operate horizontally on the move. At a halt a 32 foot wire is used instead of a whip.

5. Antennas suitable for NVIS operations

Half Wave Dipole, Inverted Vee, Inverted 'EL' Sloper Dipole, TTFD Antenna, Loop, Sloper, AS-2259, End-Fed Terminated Wire

(continued in the next column)

Thanks to **Megaprint** for the free-of-charge printing of the LARC newsletter. Visit them at:

819 Oak St

Gainesville, GA 30501

for all of your printing needs.

6. History of NVIS use, or NVIS in the real world

A. D-Day, June 1944 was one of the NVIS hero stories when it contributed to the net between 9th Air Force at Uxbridge England, the Command Ship "Ancon" in the Channel, and the forward Comm. sites on the invasion beaches of Normandy. Uxbridge was the HQ. for all air assets and directly in charge of air assaults on the landing area. The Ancon controlled air attacks and naval gunfire and coordinated with 9th AF. The radios on the beaches made the requests to the Ancon. The Ancon passed the requests to Uxbridge. Uxbridge dispatched the assets to the control of the Ancon, subject to the tweaking of the beach radios. The distances involved were 150 miles to Uxbridge from the beaches; 100 miles of Channel alone. The Ancon in the Channel had to cover 50 miles to the farthest beach. Prior to D-day, tests were made and the results were not good. The problem was solved by Dr. Beverage of antenna fame. During the period 20 May-16 June 1944; Beverage had the NVIS technique put into use. The cross Channel radio links had no technical problems during the invasion of Europe.

B, US Special Forces used NVIS in the Mekong Delta in Vietnam on HF SSB nets. Success in the jungle and woods, outstanding.

C. In the first Gulf War, the Army used the T2FD antenna by the B&W Company. This is a broadband folded dipole with a 600 Ohm resistor in the center opposite the feed point. My SWL friends love this antenna at a tilt angle (sloper) as a quiet, low noise, receive antenna, needing no tuner.

D. Used by California ARES units in tests and demos since 1994. The NVIS procedure has never failed to amaze all who have seen it in action. Patricia Gibbons has used AMTOR at a distance of 82 miles with an antenna laid on her driveway using 3 Watts on 3545.5 KHz. Also she used traffic cones and tent pegs to support the wire.

E. Also in my research, I found the Germans used NVIS in WW II also. The Russians with vast areas to cover, also use NVIS and call it Zenith Radiation. Russia has been at the front in developing armored forces, and use much vehicle NVIS.

F. By typing NVIS in your search engine; you will find much information on the Internet. **Don't confuse with the "Night Vision Instrument Systems" also NVIS.**

Lanierland Amateur Radio Club
c/o Robert Copelan
3727 Windsong Chase
Flowery Branch, GA 30542

ADDRESS CORRECTION REQUESTED