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FROM THE PREZ BY KAYE DUNCAN

Let me start by saying Happy Thanksgiving to all of you at the GARC. I hope all of you had as good a day as Don (KC5GLM) and I did with lots of food, football (even though the Cowboys lost), and an opportunity to give thanks with family and friends.

While I am on the subject of giving thanks, I want to thank everyone for making the GARC Auction a tremendous success. I don't have the final totals, but I believe that we brought in more than we have in a long while. Ed (KC5GZZ) will have the final totals at the next meeting. In addition, I want to thank all of the volunteers that helped with the ECC cleanup. You all did an amazing job and the ECC looks cleaner than it has in a long time. Hopefully we can get the city to do the repairs that are needed soon and then we can have a painting party!

I want to remind everyone again about the GARC Christmas Pot Luck Social on December 17th starting at 7pm. It will be held again this year at the Freeman Heights Baptist Church on Garland Rd between Walnut and Buckingham. The club will provide assorted meats, rolls, and drinks. All we ask is that you bring either a side dish or dessert to the festivities. We will also be calling upon our GARC members to provide musical entertainment again this year. If you would like to participate, contact Jennilyn Schroeder (KC5YZK) to sign up.

There are still a few events for the remainder of the year that volunteers are needed. Check out John Galvin's web page at <http://www.qsl.net/n5tim/> for the list. He also has included on the list the e-mail addresses of the event coordinators for you to contact if you would like to volunteer.

November's meeting is going to be on APRS. At last word, Dave (N5DAV) was still arranging the guest speaker. However, I am sure it will be a very informative and entertaining presentation, so I hope that you will all plan on attending. Until then, 73's.....Kaye (K5AYE)

NVIS: NEAR VERTICAL INCIDENCE SKYWAVE PART 2

BY JAMES GLOVER, WB5UDE

What are the advantages and disadvantages of NVIS?

Among the many advantages of NVIS are:

- NVIS covers the area which is normally in the skip zone, that is, which is normally too far away to receive groundwave signals, but not yet far enough away to receive skywaves reflected from the ionosphere.
- NVIS requires no infrastructure such as repeaters or satellites. Two stations employing NVIS techniques can establish reliable communications without the support of any third party.
- Pure NVIS propagation is relatively free from fading.
- Antennas optimized for NVIS are usually low. Simple dipoles work very well. A good NVIS antenna can be erected easily, in a short amount of time, by a small team (or just one person).
- Low areas and valleys are no problem for NVIS propagation.
- The path to and from the ionosphere is short and direct, resulting in lower path losses due to factors such as absorption by the D layer.
- NVIS techniques can dramatically reduce noise and interference, resulting in an improved signal/noise ratio.
- With its improved signal/noise ratio and low path loss, NVIS works well with low power.

Disadvantages of NVIS operation include:

- For best results, both stations should be optimized for NVIS operation. If one station's antenna emphasizes groundwave propagation, while another's emphasizes NVIS propagation, the results may be poor. Some stations do have antennas which are good for NVIS (such as relatively low dipoles) but many do not.
- NVIS doesn't work on all HF frequencies. Care must be exercised to pick an appropriate frequency, and the frequencies which are best for NVIS are the frequencies where atmospheric noise is a problem, antenna lengths are long, and bandwidths are relatively small for digital transmissions.
- Due to differences between daytime and nighttime propagation, a minimum of two different frequencies must be used to ensure reliable around-the-clock communications.

What kind of antenna works well for NVIS?

Dipole

Once again, the dependable dipole antenna proves itself useful. One of the most effective antennas for NVIS is a dipole positioned from .1 to .25 wavelengths (or lower) above ground. When a dipole is brought very close to ground, some interesting things happen. The most interesting thing, from an NVIS perspective, is that the angle of radiation goes up. In the range of .1 to .25 wavelengths above ground, vertical and nearly vertical radiation reaches a maximum, at the expense of lower angle radiation (which we'd like to minimize, anyway, for NVIS). A dipole can be used at even lower heights, resulting in some loss of vertical gain, but often, a more substantial reduction in noise and interference from distant regions. Heights of 5 to 10 feet above ground are not unusual for NVIS setups, and some people use dipoles as low as two feet high with good results (relatively weak signals, but a very low noise floor).

CONTINUED ON PAGE 3

MARK YOUR CALENDARS...

FUTURE GARC MEETING PROGRAMS

November 26th, 2001: APRS

Get the low-down on what APRS is and what it can do for you.

December 17th, 2001: Annual GARC Christmas Party

Join us for a break from the amateur radio and get into a holiday spirit with plenty of food and fun.

Location & Time: Freeman Heights Baptist Church at 7pm

The dinner is a pot-luck social. Please bring a dessert or side-dish and the club provides the meats, rolls and drinks.

January 28th, 2002: Jim Haynie, ARRL President

Please join us for what has to be one of the most exciting meetings of the year. Jim brings insight on what our national organization is doing to keep your rights as an amateur radio operator solid.

CONTINUED FROM PAGE 2

Another interesting thing that happens with very low dipoles is that their feedpoint impedance goes down. An acceptable SWR with 50 ohm coax is likely. Plan to bring your tuner along just in case, but you may get by just fine without it.

Yet another fortunate thing about low dipoles is that they are easily erected. Finding a tree which will serve as a support is often easy, and it's not hard to get a line in a branch which will suffice. Masts made of PVC tubing are practical at these heights. Very low dipoles can be supported by traffic cones with a notch cut in the top, or a simple tripod made from short sections of PVC pipe or wooden dowels, and bungee cords.

With the exception of the very lowest dipoles, most dipoles will gain an extra 2 db or so of vertical gain if you allow the center to droop a few feet. Allowing the center to droop means that the end supports don't have to be as sturdy, which makes installing a good NVIS dipole that much easier.

Inverted Vee

The dipole's close cousin, the inverted vee, is another good NVIS antenna, which can be even simpler to support. An inverted vee will work almost as well as a dipole suspended from a slightly lower height than the apex of the inverted vee, so long as the apex angle is kept gentle--about 120 degrees or greater. An inverted vee is often easier to erect than a dipole, since it requires only one support above ground level, in the center.

Counterpoises

The high angle radiation of a dipole (or inverted vee) can be enhanced by adding a counterpoise wire below it, about 5% longer than the main radiating element, to act as a reflector. The optimum height for such a counterpoise is about .15 wavelengths below the main radiating element, but when the antenna is too low to allow for that, a counterpoise laid on the ground below the antenna is still effective.

A knife switch at the center point of the counterpoise can be used to effectively eliminate the counterpoise from the antenna system. This technique is useful for using a dipole for NVIS and longer distances, too. A counterpoise is installed at ground level, or as high as the switch can easily be reached, and a dipole is mounted .15 wavelengths above the counterpoise. When the switch is closed, the vertical gain will increase, and the noise levels will drop. When the switch is open, lower angle gain will increase, improving the antenna's performance for non-NVIS use.

How do I select a frequency for NVIS operation?

The selection of a optimum frequency for NVIS operation depends upon many variables. Among the many variables are time of day, time of year, sunspot activity, type of antenna used, atmospheric noise, and atmospheric absorption. To select a frequency to try, one may use recent experience on the air, trial and error (with some sort of coordination scheme agreed upon in advance), propagation prediction software, near real-time propagation charts (available on the Internet) showing current critical frequency, or even just a good educated guess. Whatever the strategy used for frequency selection, it would probably be best to be prepared with some sort of "Plan B" involving communicating through alternate channels, or following some pre-arranged scheme for trying all available frequency choices in a scheduled pattern of some sort.

In this discussion, some of my comments will assume that the reader's choice of frequencies is restricted to the amateur bands, but much of the discussion will be more general.

NVIS related links

<http://www.ci.san-jose.ca.us/oes/races/hfradio.htm>
<http://www.gordon.army.mil/acd/tcs/hf/2418xtr2.htm>
http://www.wr6wr.com/products/book_nvvis.html

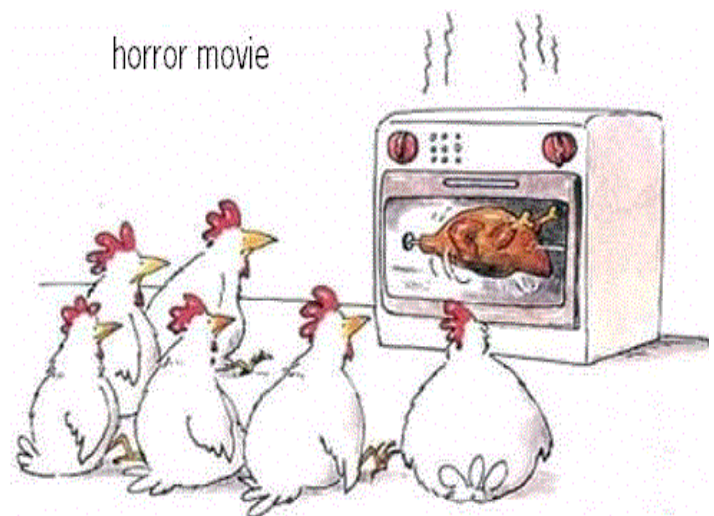
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**MINUTES OF AUGUST MEETING
GARLAND AMATEUR RADIO CLUB, INC.
OCTOBER 22ND, 2001**

- 7:40 PM Meeting called to order by Kaye Duncan
Don Duncan led the club in the Pledge Of Allegiance
Club Officer, Members and Guest were introduced and welcomed.
The Minutes of the September meeting as published in the Arclite were approved.
- John Galvin Detailed future special events and the pressing need for volunteer operators.
White Rock Marathon
Garland Christmas Tree Lighting
Flag Run
Wings Over Houston.
- Kaye Duncan Asked for volunteers for the GARC INFO NET
Chris N5ZVP volunteered for November
Theda KC5QZZ volunteered for December
Jerry WD4BIS spoke for January 2002
Don Duncan stepped forward for February 2002
James Bottoms is up for March 2002.

New members were voted in, WD5JYE, N5QNJ
Clean up of ECC and Club breakfast Saturday 10/27/01
Christmas party Dec 17th at Freeman Heights Church.
Bill KM5VZ Announced a Technician Class Starts Nov 3rd and continues to Nov 10th with a special VE test session.
The Topic of the November meeting will be APRS. Jim Haynie the ARRL President will visit with the club in January.
At was announced that the club would acquire a storage bin to store excess club equipment in so that the ECC could be cleaned, repaired and made ready for classes.
The Annual Club Auction was held.
There being no further business the meeting was adjourned at 10:00pm
Respectfully submitted:
Allen Yoder
NG5Y
Club Secretary

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NEWBIE CORNER

THE MARVELOUS JUNKBOX

GERRY CRENSHAW, WD4BIS, GARLAND, TEXAS

What's all this "junk box" stuff anyway! Many of us have heard the expression "junk box" on the air, but what is it, and what should be in it?

As I was sitting at my bench recently, working on my latest project, a request for a help to repair a power supply came across on the local repeater. After getting on the air (and opening my big mouth again), I suggested a slightly different transistor than the one he was looking for simply because it was in my junk box. And the ratings on the one I was suggesting were better. In fact, since I was at my bench anyway, I suggested that he bring it by and I would help with the repair. Before I could put the mike down, there he was in my garage workshop holding his power supply and wanting to see what treasures this mysterious junk box held.

The supply was repaired. But no, the junk box was not a large golden Pandora's box in one corner of my garage. Instead it was an organized collection of odds and ends that had been accumulated over a 20-year period. For those of you who enjoy building projects as I do, the pack rat syndrome seems to catch up with us as we realize that a failed project is not a failure. Instead, it's a source of parts for yet another project waiting to be born.

The parts come from many places. One friend who was moving from a house to a condo cleaned out his ham shack. He bestowed upon me a large collection of meter movements, RTL and TTL IC's connectors, tubes, wire, transformers, and transistors.

But for the ham today, what should you keep, what do you throw away? What should you stock for that next project?

Sadly, the state of the art has advanced to a degree that radio building in the garage is a thing of the past. So do you need to keep anything?

As long as the manufacturers of amateur radio equipment put connectors on their equipment the answer is YES.

Recently the ARRL was trying to get the various vendors to standardize on connectors for basic functions like power, antennas mike connectors and audio. This attempt was met with open hostility. Why standardize! Different and proprietary connectors make for brand loyalty.

For this reason the ham shack should have a small stock of wire and connectors to get that next project installed without ten trips to the store.

I still get a chuckle when I think about a friend who wired his last connector project with plastic twist ties from bread bags. It got it working until he got some wire the next day. (By the way the wire in twist ties has some modest resistance and does not take solder well).

It's times like these that make you think "yes, there is a need for some basic stock in the shack". Don't go into debt and buy the entire contents of a Radio Shack. But look at your equipment with open eyes and look for the connector types you use the most.

Murphy always visits at the worst time. That spare connector for your favorite equipment could make the difference between operating or not during the next emergency activation.

73'3
Gerry WD4BIS

UPCOMING EVENTS

November 27, 2001 - Garland Christmas Tree Lighting - This year's Christmas tree lighting event will be on Tuesday November 27th. This is earlier than in the past, and on a different night. There is a need for 9 switch operators for the early shift, and 5 to 6 operators later for fire watch. Those who volunteer for the switch throwing need to remember that there will be a rehearsal the night before, November 26 at 18:00 hours. Those who wish to help out may contact Clay Orchard, KC5MXN, via the following ways; Home phone 972 495 5860, Work phone 972 272 2620 or kc5mxn1@juno.com.

December 1, 2001 - SKYWARN Recognition Day - For the third year in a row, the National Weather Service will again host an amateur radio special event. This year, it's on Saturday, December 1st, and is known as SKYWARN Recognition Day.

SKYWARN Recognition Day for Amateur Radio Operators is cosponsored by the National Weather Service and the American Radio Relay League. The purpose of the event is to celebrate the contributions that amateur radio operators ("hams") make to the National Weather Service during times of critical weather. During the event, hams across the country try to contact as many NWS offices as possible using their radio equipment. The contacts are received and logged at the individual NWS offices by volunteer amateur radio operators.

SKYWARN Recognition Day will be held Saturday, December 1st, 2001, zero hours to 2400 hours ZULU, which is 6 p.m. Dallas time Friday evening to 6 p.m. Saturday. BSA Venturer Crew 73 of Richardson will again coordinate operations at the National Weather Service office in Fort Worth. The special event call sign used will be WX5FWD.

A significant number of volunteers are needed this year to staff two HF stations, a VHF/UHF station, a PSK-31 station and APRS operation. If you would like to volunteer, send an email to Frank Krizan, KR1ZAN, at kr1zan@arrl.net.

We hope you'll be able to take part. Volunteers are asked to commit to at least 2 hours of operation. Help is also needed Friday afternoon for setup and Saturday evening for tear down. For more information, including the available operator times, see Crew 73's web site, <http://www.qsl.net/k5bsa>. Full details about this NWS Special Event are contained at <http://hamradio.noaa.gov>.

December 1-3, 2001 - DFW Commuter Rail Celebration Special Event Station K5T - Amateur radio special event station K5T celebrates the start-up of full Dallas/Fort Worth commuter rail service on the Trinity Railway Express line. The event will operate Saturday 1 Dec 2001 through 100Z 3 Dec 2001 to honor the first full day of TRE commuter rail operation between Dallas and Fort Worth, Texas. Station K5T will be found on the 10, 15, 20 and 40 meter bands.

The Trinity Rail Express started partial route operations in December, 1996 between Dallas and Irving, Texas. In 2000, service extended west to Centreport (DFW Airport), and into Tarrant County with stops in Hurst and Richland Hills. Public service will start on Monday, 3 December 2001 with full route operations between both Dallas and Fort Worth, Texas.

For more information on the K5T Special Event, contact Valli Hoski N8QVT at N8QVT@arrl.net. For more information on the Trinity Railway Express, see the www.trinityrailwayexpress.org site or the Dallas Area Rapid Transit www.dart.org site.

December 9, 2001 - White Rock Marathon - Dallas' annual premier running event. This 27 mile run is one of the qualifying events for the New York Marathon. Usually about 60 amateurs are needed to cover this event. Details to follow. To volunteer for this event, contact Bob Jones, W5BJ, bobj1@airmail.net or John Galvin, N5TIM, n5tim@arrl.net or use the Easy Sign-up Form. Check out the White Rock Marathon web site www.runtherock.com for route map and other info.

DECEMBER 2001

SUN	MON	TUE	WED	THU	FRI	SAT
2	3 GARC Info Net - 7:30	4	5	6 Garland RACES	7	1/8
9	10 GARC Info Net - 7:30	11	12	13	14	15
16	17 GARC Christmas Party	18	19	20	21	22 GARC Breakfast
23	24	25 Christmas	26	27 VEC Testing - Garland	28	29
30	31					

SAME NET TIME, SAME NET FREQUENCY

The Following nets occur on a regular basis throughout the month.

Every Monday night at 7:30 PM. local time except for meeting nights the GARC conducts a good news/info net on 146.66 MHZ

RACES holds nets on Every Thursday Night at 9:00 pm local time on either the 146.66 or the 147.24 repeater. In addition to these nets there are also additional RACES nets held at 8:00 pm local time on the first and third Sunday of the month. These Sunday night nets are held on the 146.88

repeater. Only those stations who are authorized by the FCC or the regional Races authority may transmit on a Races frequency during Races nets unless there is a threat to life or property.

145.31 8:00PM Tuesdays Ham Association Of Mesquite holds a good news/info net

146.94 8:00PM Wednesdays FT Worth holds a info/swap net.

147.18 8:00PM Thursdays Plano ARK holds a good news/info net

GARLAND SIREN TEST

The Garland early warning sirens are tested by the city the first Wednesday of each month at noon, weather permitting. Tests are generally conducted on the GARC repeater at 146.660Mhz with 600Khz negative offset.

Amateur radio operators wishing to help with these siren tests should contact Bob Jones, W5BJ if interested in helping out.

GARC GENERAL INFORMATION

Repeaters:

The GARC operates two open repeaters for its members and for all local or visiting Amateur Radio Operators: Two meters: **146.66 (-)** and 70 Cmeters: **442.70 (+)**

Voice Mail:

For late-breaking news or to leave the club a message, call our 24-hour voice-mail line at **(972) 272-4499**.

Information Net:

GARC Information Net: held every Monday at 7:30PM on 146.66 (except for meeting nights and holidays). The net features current events, "swap shop", and a technical information exchange. All area hams are encouraged to check in. All members are encouraged to volunteer to be net control for this net. Contact the GARC communications officer, Mark Durbin (*kc5gng@qsl.net*), if you are interested.

Internet:

Information on the GARC can also be found on the world wide web address below:

<http://www.qsl.net/garc/>

The web site includes a map to the monthly meetings, classes, links to local public service events, and other items of interest to the hams in the Garland area.

Newsletter:

The Arclite is published monthly for the members of the Garland Amateur Radio Club. The contents of this newsletter are copyrighted the date of publication, but may

be reprinted without permission in any Amateur Radio Publication provided proper credit is given and the motive is the advancement of amateur radio and not for profit.

The deadline for Arclite materials is the 2nd Monday of each month. If you have any informative or educational articles that you would like to see included in this newsletter, or if you have items to be included in the GARC calendar, please send it to the Arclite editor.

Arclite Editor, 1027-B West Austin St.,
Garland, TX 75040

or emailed to the Arclite Editor at kd5lgu@arrl.net

Membership:

Membership forms are available at the GARC monthly meetings and on the GARC web site. Once the membership form and dues are submitted, new members are voted in at the next GARC monthly meeting.

The GARC membership roster is distributed to GARC members only and is included twice a year in the Arclite. It is not to be used for any commercial purposes.

To submit changes to the GARC roster (such as change of address, updated phone numbers, license upgrade, etc), send them to the GARC secretary, Allen Yoder (KB5GME) at kb5gme@ev1.net.



Garland Amateur Radio Club
Emergency Communications Center (ECC)
1027 B West Austin Street
Garland, TX 75040



Please Rush!!!

Reminder

GARC 4th Saturday Breakfast - Grandy's at 9:00 am (Garland Rd & Austin St.)