

Feed Line

GARA - We're putting the "Spark" back in Amateur Radio®



Volume 15, No 2

Editor: Tom Forrest, N4GVK

Web Site: www.w4gso.org

February, 2006

E-mail: info@w4gso.org

FCC Tells Idaho Licensee To Stay Off Repeater

The FCC has told an Idaho radio amateur that he must stay off the Voice of Idaho Amateur Radio Club's W7RAZ repeater. FCC Special Counsel Riley Hollingsworth issued a Warning Notice September 22, 2005, to Larry L. Smith, KC7LJR, in response to a request from the repeater's trustee. Hollingsworth told Smith the request resulted from Smith's alleged failure to follow the repeater's operational rules. He said Smith has "apparently ignored" oral and written requests to refrain from using the W7RAZ repeater system. He also noted that Smith, a Technician licensee, had

received a Warning Notice two years earlier regarding alleged interference to the W7RAZ repeater.

"The Commission requires that repeaters be under the supervision of a control operator and not only expects, but requires, such control operators and licensee to be responsible for the proper operation of the repeater system," Hollingsworth wrote.

"Control operators may take whatever steps are appropriate to ensure compliance with the repeater rules, including limiting

the repeater use to certain users, converting the repeater to a closed repeater or taking it off the air entirely."

The Warning Notice advised Smith that the FCC expects him to comply with the request to stay off the W5RAZ system and with any similar requests. *From the ARRL QST, January, 2006*

Meet February's Member of the Month!



W.D. "Al" Allred, K4ZKQ,

W.D. "Al" Allred, K4ZKQ, is a native North Carolinian, hailing originally from Archdale, where he lived until he went on active duty with the Naval Reserve in 1942. When he left active duty 4 years later, he relocated to Greensboro to rejoin Burlington Industries. After several job relocations, he and his family settled permanently in Greensboro in 1953.

Al first became licensed as a Ham in 1958 with the Novice tag KN4ZKQ, back when the FCC granted Novice privileges for only a year. He gained his Tech. license

Next Meeting

The next meeting of the Greensboro Amateur Radio Association will be February 27, 2006 at the Golden Corral Steak House off Wendover Ave.

A program will be presented by Steve Marks, KE4FCW, on "The Amateur Radio Operator's Role During Emergencies."

K4ZKQ, upgrading later to General status (he says it only took 3 trips to the FCC office to pass the 13 WPM code requirement!). For roughly the past 2 years, Al has enjoyed the privileges of an Extra Class license.

He operates an Icom 765 on the HF bands. He has a Standard twin band in the car for VHF/UHF.

Please turn to page 7 ----->

SuitSat - SK?

By Tom Forrest, N4GVK, Feed Line Editor

February 19 - SuitSat has apparently stopped transmitting signals as of February 19 from reports. Signals reported from Amateurs all around the globe have indicated that there appears to be no signal.

SuitSat has been hailed as a successful experiment and the amateur community has learned from it's flight.

Based on RF link budget calculations, suit Sat's estimated transmitter was estimated at 1 to 10 milliwatts. Originally SuitSat was designed to transmit at 500 milliwatts. This explains why it was so weak.

ISS is no longer repeated SuitSat signals. The D700 radio on the ISS was returned to APRS Packet digipeat mode.

Thanks to the AJ3U.COM web site for the updates. You can view the site at

<http://www.aj3u.com/suitsat/status.php>

Another web site is www.suitsat.org, where you can view those who have reported hearing the transmitter. There were a number of local Greensboro amateur stations that were been able to copy the signals.



SuitSat with antenna mounted on the helmet - Photo - SuitSat.org

Used Items For Sale

Hewlett Packard Flat Top Scanner-Color/Black/White /copier & e-mailer.

Like new top of line, not inexpensive model. Makes excellent copies & pictures. In original box, with original packing, installation instructions, manual, start-up software CD and ArcSoft Photo Manager Software CD, Adobe Active Share CD and power supply. Uses a USB connection cable. Original cost about \$189. Sell for \$75.

Palomar Engineering HF Transceiver Pre-Amplifier.

Covers 6 meters through 160. Model P310X, 110 VAC. Very good condition. No manual or box. \$30

Direction Finder.

45 to 470 MHz. Used for fox hunting, locating dead key signals, etc. Uses 9 volt battery. No manual. With coax & BNC connector. Commercially

made. \$30.

Turner Dynamic Amplified Base Microphone.

Volume & Tone controls, Built in meter reads both audio output & battery condition. Freq response 200-4000 Hz, low impedance, adjustable head, bar & lock key. With specifications & diagram. VGC \$30

Sony-Mini Stereo Speaker System.

For walkman, etc. Like New. \$10

May consider a trade on any of the above, however, I really don't need more "Stuff"?

Call me on 145.15 or E-mail me at N4DFA@arrl.net. Serious inquires call my home between 10am & 10pm @ 288-5595

FROM THE DESK OF THE PRESIDENT

By John Doggett, KI4BMS, Pres.

As everyone knows, the Ham Radio community is severely lacking younger members, but no one really has any ideas as to how to catch these young people's interest and get them really interested in what ham radio is all about.

I think that we as older ham radio operators have a duty to attract younger people into the community so that we can spread interest and knowledge about ham radio and all of its benefits.

I feel that everyone should try to do as much as they can to invite younger groups to the regular ham radio meetings, especially the Starbucks meetings, because that seems to be something that younger

people seem to be somewhat interested in.

If they know that the meetings are being held somewhere enjoyable and "youth friendly", they'll be more inclined to come and participate. Also, I feel that we should have some sort of "kids only" meeting in which the children or teenagers could come up with ideas and activities to consider.

We should listen to these ideas and act upon them in order to make the ham radio community a more "youth friendly" environment. Once we attract a few younger members, they'll spread the word and eventually we will have a surplus of younger members as opposed to the shortage we're experiencing now.

"The Feed Line" is ©2006 by the Greensboro Amateur Radio Association and published monthly. Our address is P.O. Box 7054, Greensboro, NC 27417. The purpose of the newsletter is to provide the club and prospective members information about the club and amateur radio in general. Material and information should reach the editor by the first Friday of the month for the next edition of the newsletter. Opinions expressed in "The Feed Line" do not necessarily represent the views of the officers, directors, editor or members of the Greensboro Amateur Radio Association. Material may be reproduced, provided proper credit is given to GARA.

Is The Machine “On-Frequency” ? (Part 1)

By Arch, KT4AT
Engineering Chairman

A few months back, a discussion was going on over the repeater. Somebody made the claim that he could “see” that the repeater was “off-frequency by 40 Hz”. Let’s look into that.

There are two different problems involved: if the machine is not on frequency today, has it ever been in the past ? The first issue we will review this month is “initial setting”. The second issue we will review next month is the phenomenon of “drift”, after a good and accurate initial setting.

Let’s start by establishing how oscillators are measured for accuracy, frequency-wise. The measurement unit for this is the PPM (parts per million), PPB (parts per billion), or PPT (parts per trillion). Easy to use. Example: a 2 PPM oscillator at 1 MHz can be:

$$2 / 1000000 \times 1000000 = 2 \text{ Hz}$$

(ppm x frequency = error)

Measuring (or even worse, ...setting) an oscillator will depend greatly on which equipment you use. Table 1 provides a quick summary of the performance of several devices that could be used to adjust the machine. The first category, which is not really used for that purpose, rather just an example, is the class of cheap computer or CPU clocks (XO’s in short, for Xtal Oscillators). If such a device was used as a reference to set 145.15, or 442.875, those machines could be off by as much as 7.3 kHz at VHF, and 22 kHz at UHF. You are invading the next channel. Plainly unacceptable.

The second class of devices is “low end instrumentation”, like cheap frequency counters, older service monitors, cheap frequency generators, etc... (average cost of such things is a few thousands of dollars). Those devices generally use TCXO’s (Temperature Compensated Xtal Oscillators). You could still end up 725 Hz off at VHF, and over 2 kHz off at UHF. Equally

unacceptable (although used often in the amateur community).

The next category is high end instrumentation. We start being serious only here. Are in this category high performance frequency counters, spectrum analyzers, and top of the line service monitors (average cost of such instruments is around \$15000 to \$25000, including precision timebase options). Even so, at VHF you could still have an error of 30 Hz, and at UHF up to 90 Hz. Those instruments use OCXO’s (Oven Controlled Xtal Oscillators). Acceptable this time, but you need to maintain them well calibrated at all times (at least once a year - cost to do that for my HP-8594 spectrum analyzer: \$1500 per calibration).

Let’s jump to the last category on Table 1, lab frequency standards. Frequency standards use atomic clock references (mostly Cesium tubes), and will provide accuracy on steroids. They have a price tag on steroids too (around \$90000, and the tube has limited lifetime).
(Over----->)

Equipment	Oscillator Type	Accuracy PPM	Error @ 145.15 MHz	Error @ 442.875 MHz
Computer/CPU oscillator	XO	+/- 50 ppm	+/- 7258 Hz	+/- 22144 Hz
Low end instrumentation	TCXO	+/- 5 ppm	+/- 725 Hz	+/- 2214 Hz
High end instrumentation	OCXO	+/- 0.2 ppm	+/- 30 Hz	+/- 90 Hz
WWV	Rubidium	+/- 10 ppb	+/- 1.5 Hz	+/- 4.4 Hz
GPS	Cesium	+/- 0.1 ppb	+/- 0.015 Hz	+/- 0.044 Hz
Lab frequency standard	Cesium	+/- 1 ppt	+/- 0.0002 Hz	+/- 0.0004 Hz

Table 1 - Common Oscillator Accuracies, and equivalent error at VHF and UHF

This is an overkill for two-way radios and repeaters.

Wouldn't it be neat if there was some frequency standard out there which would be (a) very accurate, (b) available all the time, and (c) free of charge to use? Well, actually there are several. The WWV frequency standard broadcast in Boulder, CO, is one of them. It provides 2.5, 5, 10 and 15 MHz references suitable for our application. The problem is that reception is limited here to a couple of hours per day, with a lot of QRM which degrades accuracy quite a bit.

The other one is GPS, the Global Positioning System. Although GPS is a position determination system, its inner workings are based on TOA (Time Of Arrival) of coded sequences. This implies that a GPS receiver has very precise knowledge of time. And, if you know time, then you can in turn extract frequency. There are several systems, which are commercially available, which will extract timing from GPS and deliver a super-accurate 10 MHz reference. They cost several thousands of dollars, and you need to set them up with outside antenna to have a predictable frequency reference, 100% of the time, accurate at VHF and UHF at less than a fraction of a Hz.

Another piece of gear was released to the market recently. Made by EndRun Technologies in California, the Praecis CF frequency reference (see Figure 1) does not synchronize directly on GPS, but on the

pilot channel of 800 MHz CDMA (Code Division Multiple Access, developed by Qualcomm) telephone cell base stations. This is quite clever because those CDMA carriers need to be themselves locked to GPS to function properly, and therefore are almost identical in accuracy to the original GPS timing. The advantage is double. First, there is much better territory coverage by CDMA signals than by GPS ones, with much higher levels, which require only a little 800 MHz rubber-duckie (especially at the repeater site !...). Second, it is easier to acquire and decode a CDMA pilot carrier than a full GPS three or four satellite set. This allows for a very small and cheap solution (\$1300), which truly delivers the same accuracy performance than a full size GPS synchronizer.

It will provide a frequency reference at 10 MHz, accurate to around +/- 0.1 part per billion. Then, you can use that 10 MHz

reference with pretty much any instrument which uses a 10 MHz reference (that is practically all of them). Since it is small, and works everywhere there is CDMA cell phone service, you just take it with you, and synchronize it wherever you need it. It virtually eliminates instrument variations with temperature, aging, etc. (bye-bye calibrations at \$1500 every year...).

The last interesting thing is that it allows to use the more mediocre devices of the "low end instrument" category (if they have a 10 MHz external reference input). One of those is my 9 digit Heathkit frequency counter, which I had retired a long time ago (+/- 2 ppm). This thing is usable again, counting frequencies at less than one Hz of error up to 700 MHz.

Now that we can precisely adjust things, next month we will review where the repeater drifts come from.

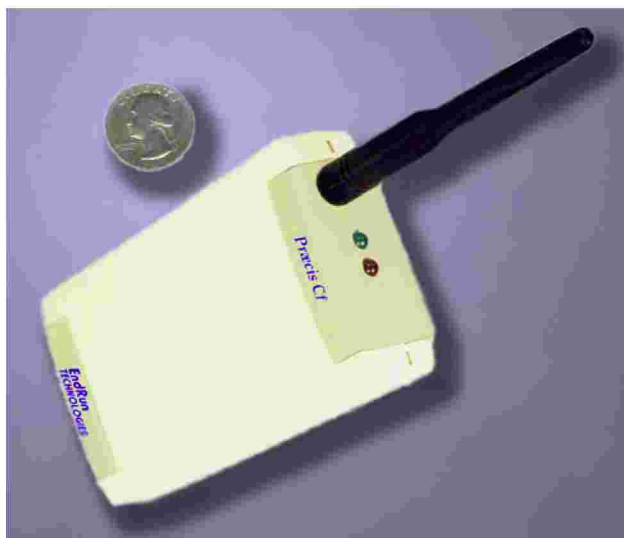


Figure 1 - EndRun Technologies Praecis CF CDMA Reference



GARA Meeting Minutes

REGULAR MEETING January 23, 2006

The regular meeting of the Greensboro Amateur Radio Association was held at the Golden Corral Restaurant Monday evening January 23 at 7:15 PM at the Golden Corral Steak House off Wendover Ave.

The meeting was called to order by President John Doggett, KI4BMS. The minutes of the previous meeting were approved as printed in the "Feed Line."

There was no old business reported. Committee reports were presented.

Treasurer Ernie Wall, NC4EW, reported all was well and the outlook for 2006 looked very good and there had been of renewals already.

Al Allred, K4ZKQ, gave a financial report for 2005 and explained the club's spending and receipts for the 05 year. He also spoke briefly on the financial outlook for 2006.

Secretary/web master/news letter editor Tom Forrest, N4GVK, gave his report saying that the January Feed Line was the biggest to date and the PDF file transfer to members was going smooth. He said updates are continuing on a daily basis on the web site and new ideas are planned for the future along with some new designs.

Engineering Committee report: Arch, KT4AT said he had finished his antenna software design program and was ready to begin construction on a prototype. The VHF machine software and update on the ID's was to be performed soon. Arch also described a new piece of frequency measurement equipment he purchased. He told the club that he still has the Icom modules that were used by the club some years ago for linking. He asked for input from the club as to what they would like in the form of linking on the UHF machine. No decision was made.

Operations Chairman and Repeater Trustee Roy Smith, N4BYU, had no report. Also John Doggett, KI4BMS, reported about various projects he had in mind for next year. He also reminded members of the lunch dates on Fridays and Mondays for gatherings of Hams in the area. Allen Bradley, KD4IUN, who coordinates the local soccer events for GYSA, said he would like to hear some new calls during this year's soccer tournaments. He then presented the club with a grant from GYSA.

The program for the evening was presented by Ken Weeman, WB2RFK and Mary Weeman, WA2RFN, of Archdale. The couple gave a very interesting and moving program on their first hand experiences as volunteers for the Red Cross. They assisted during the aftermath of hurricane Katrina in the hard-hit areas of New Orleans and Mississippi. The couple

presented photos of the massive destruction after the storm. Thanks to the Weeman's for a great program!

There being no further business, the meeting was closed at 8:15 pm.



Ken, WB2RFK and Mary Weeman, WA2RFN, at the January meeting.

BOARD MEETING - 2/13/06

The regular monthly board meeting of the Greensboro Amateur Radio Association was Monday evening, February 13, at 7:30 PM.

Those present were John Doggett, KI4BMS, president; Rudy Langley, KG4HCY, vice president; Tom Forrest, N4GVK, secretary; Ernie Wall, NC4EW, treasurer; Al Allred, K4ZKQ, financial; Arch, KT4AT, engineering chairman; Roy Smith, N4BYU, repeater trustee and operations chairman;

Please turn to page 7 ----->



The Greensboro Amateur Radio Association
P.O. Box 7054
Greensboro, NC 27417
www.w4gso.org

MEMBERSHIP APPLICATION

\$24 per year

(\$2 per month)

Please fill out the following information and mail to the address above, or hand deliver to the GARA treasurer. Your membership is appreciated!

Call: _____

Name: _____ Spouse: _____

Address: _____

City: _____ Zip: _____

E-mail Address: _____

Phone number: _____

(please advise if this is unlisted and it will not be published on the club roster)

Note: Family memberships are available for persons living under the same roof or if a family member is a school student living away from home - no extra charge.

Is this a family membership? Yes () No ()

If ,Yes, family member name: _____

Call: _____

Comments:

Meet the member from page 1

And, he has an Icom 706 Mk II G as a backup rig for all bands; it's also his base station for VHF/UHF.

While his all-time favorite antenna is a two element mono-band mini-beam for 15 and 20 meters, Al says he doesn't have enough space for them at his QTH. His Icom 765 has an antenna tuner that facilitates use of his 75 meter dipole on the higher bands. Al says he spends a lot of his operating time on 75 meters because he's able to maintain great QSO's with lots of long-time contacts.

Al considers himself to be an occasional DX operator - with WAC (20-meter SSB) and WAS designations to his credit that he says he got "way back yonder." He enjoys the 75 meter net, and is active in Skywarn and ARES. His favorite GARA activities are, "In this order: Chatting among the members, meeting and eating."

Over the years, Al has become a highly active retiree. He retired from Burlington Industries in 1986 after a 48-year career. Al was part of their Corporate Controller's staff

with key responsibilities in the area of Cost Accounting. He is also listed as a USNR Retired Lieutenant-Commander.

Al and his lovely wife, Marion, were married in September, 1948; they expect to celebrate their 58th anniversary this year.

Ham Happenings NEWS briefs

Ann Gibson's (N4AIG), mother Jennie Nance, 99, passed away February 7. Our thoughts and prayers are with Ann and her family during this time. Ann is a past president of GARA.

Ron Brandley, N4MYG, SK, Ron was active on the Greensboro repeaters maybe 8-10 years ago. He passed away Jan. 27, 2006. Ron lived in Mebane, NC.

Mike Jackson, W4ABX, is recovering from back surgery.

GARA Board from page 5

and Mark Robertson, KG4STP member-at-large. Not present for the meeting was Clark Doggett, KG4HOM, member-at-large.

Officer reports:

President John Doggett, KI4BMS, welcomed the members to the meeting.

Arch, KT4AT, gave his engineering report, discussing various items. Control codes for repeater: it was the feeling of the board that the control codes for the repeater should be kept private and only available for GARA members in good standing. The 911 code will be available to the public. A motion was made by Al, K4ZKQ and seconded by Rudy, KG4HCT, that we approve this procedure. The motion passed. We will now include the codes with the paid member roster only. Control for control operators will be changed as well. Arch also discussed some other items regarding messages and software updates.

renewals were coming in good. He also discussed expenses for the coming months.

Financial advisor, Al Allred, K4ZKQ, gave a report on the last three years of finances.

Member-at-large, Mark Robertson, KG4STP, said he'd like to see more people on the repeaters.

Secretary Tom Forrest, N4GVK reported to the club the GARA web site now has a new "Join button" added to the main menu that allows a website visitor to get information about joining GARA. The new feature includes a downloadable membership form to fill out and return along with dues to the club address. The site was still getting e-mail request for assistance and information from some people who were not Hams.

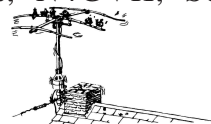
Vice-President Rudy Langley, KG4HCT, discussed some activities for the club along with some program ideas.

KI4BMS, discussed some items on board procedure and also discussed activities and sprograms.

Secretary Tom Forrest, N4GVK reported all was going well and web site continues to have a growing view count. We're getting questions from all surrounding areas. News letter growing in size.

There being no further business, a motion was made to adjourn the meeting at 8:25 pm.

Respectfully submitted, Tom Forrest, N4GVK, Secretary



Treasurer Ernie Wall, NC4EW said

President John Doggett,

Area Activities

FOURTH MONDAY – at 6:30 PM, the **Greensboro Amateur Radio Association** has their regular monthly meeting at the Golden Corral on Landview Dr., off W. Wendover Ave. Please plan to gather at 6:30 PM for dinner. The meeting is scheduled to start at 7:15 PM

CLUB NETS:

SUNDAYS – weekly at 9 PM, the **GARA News and Information Net**. This net features NewsLine and is on the 145.150, W4GSO repeater. Roy Smith, N4BYU is always looking for net controls. Contact him if you would like to help.

THURSDAYS – The **Guilford County ARES Net** meets on the 145.150 repeater (100 Hz. tone) at 9 PM.

TUESDAYS – at 8 PM, the **2 Meter SSB Net** meets on 144.225 Mhz. USB. Chris Thompson, K4HC is the net control station.

WEDNESDAYS – The **Guilford Amateur Society** holds their weekly net on the 145.250, W4GG repeater with an 88.5 Hz. tone. Jim Hightower, W4JLH is the net control.

TUESDAYS – at 8:30 PM **The Triad SkyWarn Net** meets on the 147.225, K4ITL repeater, no tone required.

OTHER ACTIVITIES :

FIRST MONDAY – The **Guilford County A.R.E.S.** monthly meeting is held at 1002 Meadowood St. off W. Wendover Ave, in the EMS building, beginning at 7 PM.

THIRD MONDAY – at 6 PM **The Guilford Amateur Society** holds their monthly meeting at the Golden Corral on Landview Dr., off W. Wendover Ave. Dinner at 6:30 PM and the business meeting is slated to begin at 7 PM.

SATURDAYS – at the K&W Cafeteria on Big Tree Way, hams get together for **Saturday Breakfast** at 7:30 AM. Talk-in is on the 145.150, W4GSO repeater, with 100 Hz. tone.

MONDAYS & FRIDAYS – at 11 AM, Greensboro Hams get together for lunch. On Monday they meet at various locations. Check on the 145.15 repeater for current location and on Friday lunch is at the K&W Cafeteria off South Holden Road. Talk-in is on the 145.150, W4GSO repeater with a 100 Hz. tone.

EVERY FRIDAY – at 8 PM (approximately) Greensboro Hams get together for coffee at Starbucks at Guilford College (winter location till Daylight Savings time changes)

Greensboro Amateur Radio Association

P.O. Box 7054

Greensboro, NC 27417



Web:
www.w4gso.org

GARA OFFICERS

President

John Doggett, KI4BMS

Vice President

Rudy Langley, KG4HCT

Secretary

Tom Forrest, N4GVK

Treasurer

Ernie Wall, NC4EW

Financial Officer

Al Allred, K4ZKQ

Engineering

Arch, KT4AT

Operations

Roy Smith, N4BYU

Members At Large

Clark Doggett, KG4HOM

Mark Robertson, KG4STP

Webmaster & News Letter Editor

Tom Forrest, N4GVK

FIRST CLASS MAIL

The Official Publication of GARA