



# Bulletin



November 2019

## From the Prez



Dick K5TF

It's difficult to try and top what our Vice President has to say in his column this month, so I won't. Looking forward to seeing everyone next month at our Holiday Dinner.

73,

Dick K5TF ❖

## This Month's Meeting

There will be **no meeting** at the Rich Auditorium this month. Instead, please enjoy this Thanksgiving holiday with family and friends. Then, get on the air for CQWW CW November 23-24.



## VP's Corner



Mike ND4V

We had a great gathering for BBQ and fixins at Paul W4KLY and Eileen Kelley's QTH. The rain didn't bother us. Thanks to all who brought desserts and especially to Norm WA4ZXV and Carole for the cake on my 73<sup>rd</sup> birthday.

*Cont. on p. 3*

## INSIDE THIS ISSUE

- 1** From the Prez; VP's Corner
- 2** Treasurer's Journal; Announcements; *Around the Shack*
- 3** Club Officers
- 5** TX7T, Marquesas Island DXpedition
- 6** 25 Years Ago in SEDXC

## Treasurer's Journal

Current checkbook balance (10/31/19): \$13,370

Payments made during October:

--Domain renewal: \$14.67

--Picnic: \$279.48

--ARRL Insurance: \$200

73,

Jeff K1ZN ❖

## Around the Shack de N4GG



Balun Bits

## Announcements



December 19

Info: <http://www.sedxc.com/christmasparty>

I was asked the other day if I could do a piece on baluns. I have come to regret saying yes. I regret it because the subject is just-too-darned-big.

A lot has been written about baluns. The ARRL Antenna Book and the ARRL Handbook both explain balun theory and types. Myriad web-based articles do as well. With the web-based articles: Caveat Emptor. An excellent source of information is Tom Rauch, W8JI's web page: [www.w8ji.com](http://www.w8ji.com). Balun information could fill a book – and it has. Jerry Sevick, W2FMI, has written two books on the subject – available on Amazon. They are excellent.

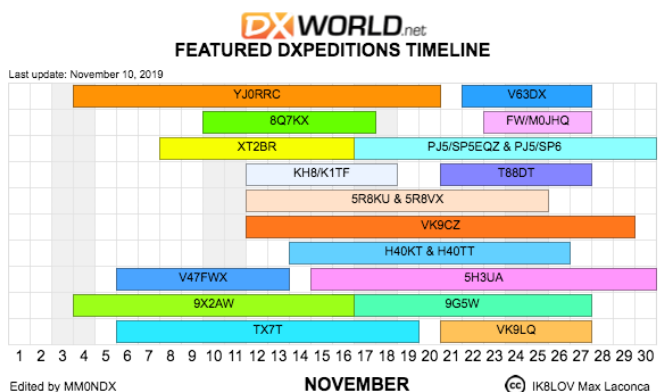
Rather than repeat what's in the handbooks and on the web, I thought I would offer a few hints, kinks and examples of where we might use a balun, and why. Baluns are valuable and necessary in many applications. Let's take a look.

First some definitions:

The word "balun" is simply the portmanteau of balanced and unbalanced. Yes, that's \$3 English. I had to look it up. Portmanteau just means sticking two words together. Like smog. Smog is smoke and fog stuck together. Words like portmanteau don't belong in articles like this – but I can't find another word for "stuck together."

Balun: A balun is non-directional device that transfers RF between a balanced transmission line and an unbalanced transmission line, such that current flows equally on both wires of the balanced line and does not flow on the outside of the shield of the unbalanced transmission line.

Continued on p. 4



## SEDXC OFFICERS

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## Club Communications

**SEDXC Webpage:** [www.sedxc.org](http://www.sedxc.org)

**SEDXC Chat Room:** details on webpage

**SEDXC Reflector:** details on webpage

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I had the pleasure to speak about the DXCC program and talk about the chase of getting that first 100 entities to the Silver Comet Amateur Radio Society. We talked about some of the tools like LOTW and Club Log that make the chase a bit easier and more affordable.

The Stone Mountain Hamfest can boast of another success. Weather was perfect! Main building was full of vendors; inside Flea Market was sold out; the bone yard had lots of stuff looking for a new home. SEDXC picked up two new members and a renewal. Thanks to Neil and the Dale for their help in manning the booth.

HamJam put on another great show with great speakers and almost \$7,000 in prizes. SEDXC won the attendance award, and I will have a digital subscription to CQ Magazine for the raffle table when we meet in January.

Members of The DX Club from all over the State and Country met in Macon to honor and remember Paul Newberry at his funeral on Sunday. Paul was in the SEDXC Hall of Fame, was at 340 on the honor roll and was a legendary contester. RIP November 4 Papa November!

Our next gathering will be December 19 at the 57<sup>th</sup> Fighter Squadron for our holiday party. Dick, K5TF has negotiated a fantastic buffet, we had the tablecloth cleaned, and Chaz W4GKF has a [link on the website to sign up](#). See you there.

"No man is an island entire of itself; every man is a piece of the continent, a part of the main; if a clod be washed away by the sea, Europe is the less, as well as if a promontory were, as well as any manner of thy friends or of thine own were; any man's death diminishes me, because I am involved in mankind.

And therefore, never send to know for whom the bell tolls; it tolls for thee" (John Donne).

73 es gud DX,

Mike ND4V❖

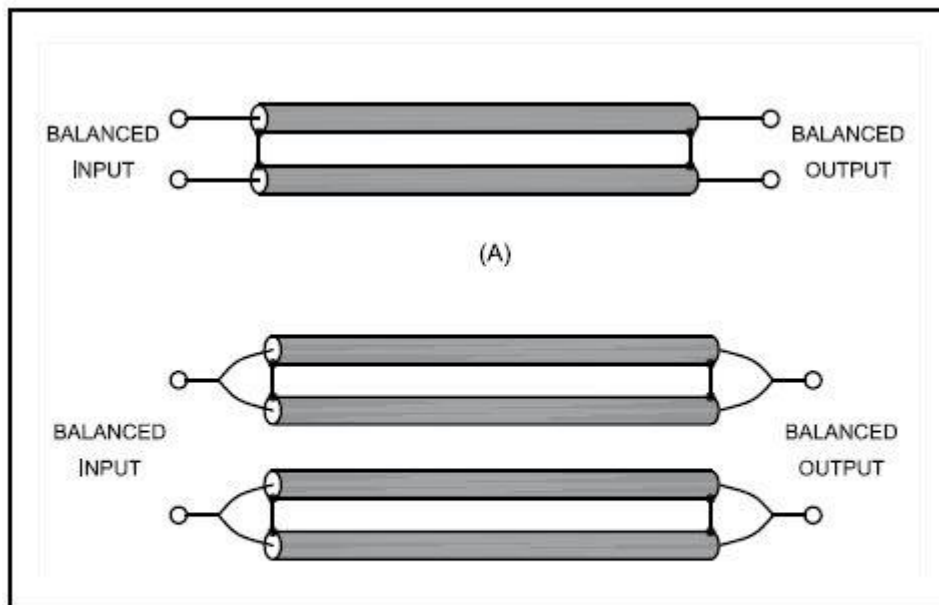
## Around the Shack (cont.)

Baluns have two cousins:

**Unun:** A device used to prevent or “choke” RF current from flowing on the outside of a shielded cable (unbalanced transmission line), e.g., coax. Ununs are coax in, coax out, or, if you prefer, an unbalanced transmission line in and an unbalanced transmission line out.

**Balbal:** I just made that up. I have never heard the term “balbal” used to describe a device for connecting one balanced transmission line to another. The reason, I think, is because there is not much use for such a device. At N4GG I have connected 300 ohm balanced line directly to 450 ohm balanced line without a second thought. The current in the wires stays balanced when you do that, and the resulting impedance bump doesn’t create enough SWR to matter from a loss standpoint. Balanced lines have very low loss, even with significant SWR.

Regarding “balbals” however, see Figure 1. Figure 1 is a reproduction of Figure 23.25 in the 21<sup>st</sup> edition of the ARRL Antenna Book. I left the ARRL figure number in the caption to credit the source. [As an aside – You **do** own a copy of the ARRL Antenna Book – yes?] Each of the two diagrams within the figure would qualify as a “balbal.” Balanced in, balanced out. Sometimes we need to route balanced lines in places we’d rather not. One example is through an exterior wall on the way to an antenna tuner in the shack. Another is in close proximity to metal objects. The “balance” (equal current in each wire, 180 degrees out of phase) in a balanced line is lost when the line is close to a metal object or close to the ground. You can’t tape ladder line (sometimes called window line) to a boom or to a mast. You can’t run balanced line along a gutter or down a downspout. You *can* use either of the two “balbal” techniques in Figure 1 to address these needs. You can even use the techniques in the figure to create a balanced transmission line that runs all the way from the antenna to the shack – using coax. Done this way, the proximity of the “balanced transmission line” to metal or to the ground doesn’t matter, and the line will not pick up unwanted noise.



**Figure 23.25 — Shielded balanced transmission lines utilizing standard small-size coaxial cable, such as RG-58 or RG-59. These balanced lines may be routed inside metal conduit or near large metal objects without adverse effects.**

A question I get now and then is how close is too close – when we are considering balanced lines near the ground or metal objects. My personal rule-of-thumb is two feet, but I can’t defend that number. It is helpful to twist balanced lines. Hanging from an antenna, twisting adds stiffness and keeps the line from whipping around in the wind. Near

the ground or near metal, twisting tends to “even out” the proximity effect. “Even out” is in quotes. How much does it help? I don’t know. One half-twist every few feet is plenty and no, I have no science to defend that number.

What must be the most asked antenna question of all time is: “I’m putting up a dipole and I’m going to feed it with coax. Do I need a balun?” I guess the question keeps getting asked because the answer is “maybe.”

A dipole is a balanced antenna. A balun at the feedpoint will accomplish the transition from a balanced antenna to an unbalanced transmission line. The balun prevents RF current from flowing down the outside of the coax and radiating. Some antennas like the G5RV use transmission line radiation to form part of the antenna – but those are exception cases. Radiation from the transmission line causes pattern distortion and power lost to the antenna itself. Including the shield of the coax as a radiating part of the antenna also allows it to pick up additional noise on receive. Dipoles are typically horizontal and dipole transmission lines are typically vertical. Do we want our dipole coupled into both the horizontally and vertically polarized noise sources in our house or yard?

Dipoles suspended only at the ends will sag a lot when the weight of a balun is added at the feedpoint, and baluns cost money, so many dipoles are directly fed with coax and they work. The “do I need a balun” question is really a question of how good is good enough. If you want to rag chew with your pals, you can get by without the balun. If you want to work DX, the lower noise and better pattern a balun yields make the balun a near necessity. The optimum way to feed a dipole is with a balanced line (open wire or ladder line) to a balun at the ground, then using coax to get from the balun to the shack. SWR becomes important in that approach – high SWR on the coax produces a lot of loss. A good way to minimize SWR on the coax is to make the balanced line an exact half wavelength (or multiple of a half wavelength), which presents the antenna’s impedance to the coax, independent of the impedance of the balanced line. An example will help. The 75 ohm impedance at the feedpoint of a dipole will also be 75 ohms at the end of a half wave of balanced transmission line. The transmission line can be 300 ohm Twinlead, 450 or 600 ohm open wire line – it doesn’t matter. At the far end of one half wavelength (or multiple) of balanced line, we will see 75 ohms. At that point a 1:1 balun will allow using 75 ohm coax back to the shack for an SWR of 1:1 or 50 ohm coax and accepting a 1.4:1 SWR (the usual approach).

Balanced lines are excellent for long runs – let’s take a look at a LONG run - 1,000 feet. We have the option to use coax all the way, hard line or a balanced line with a balun on each end. Here are the losses on 80, 10 and 6 meters:

	Loss of 1,000 Ft (dB)		
	MHz		
	<u>3.5</u>	<u>28</u>	<u>50.1</u>
RG8/X (Belden 9258):	-5.6	-18.5	-25.9
RG-213:	-3.6	-11.4	-15.7
Andrew ½” Heliac	-1.0	-3.2	-4.5
450 ohm ladder line:	-0.45	-1.5	-2.0
600 ohm open wire line:	-0.32	-1.0	-1.4

The table neglects balun losses on the ends of the balanced lines due to the high degree of variability among balun types and manufacturers. 450 ohm line has approximately half the loss of ½” Heliac, at a fraction of the cost and weight. Nothing beats open wire line.

To get a full appreciation of just how good open wire line is vs. coax, let’s take a closer look at the loss in 1,000 feet of RG8/X at 50.1 MHz. Per the table above the loss is -25.9 dB at an SWR of 1:1. But, how much is -25.9 dB in a context we can appreciate? How’s this: 100 watts delivered into 1,000 feet of RG8/X at 50.1 MHz yields 0.3 watts at the antenna. We have lost 99.7 % of our signal. This happens on receive as well as transmit too. You won’t hear much and not many will hear you. If we lost 99.7 % or 99.3 watts of our transmit power, where did it go? Into heat. The coax gets warm. At 1,500 watts transmit power RG8/X gets noticeably warm to the touch.

One more observation from the above example: When the loss of a transmission line gets very high, and -25.9 dB is VERY high, SWR at the transmitter always appears to be 1:1, independent of what it is at the antenna. I have mentioned this at many talks I’ve given – the worse the loss in a transmission line the better your SWR looks at the shack.

Most of us don't need a 1,000 foot transmission line, but the table is instructive nonetheless. At N4GG I try to keep loss from the rig to the antenna at -1 dB or better. The table makes the case for balanced lines where possible. An application often unnoticed is the use of balanced lines at VHF.

Baluns have been around a long time. When first licensed in 1961, Hy-Gain was offering their BN-86 balun, for mounting at the dipole feedpoint of their Yagi antennas. More than 60 years after its introduction, the BN-86 is still available. It's a 1:1 voltage balun and the design has been eclipsed by current baluns – but a BN-86 does what a balun is supposed to do. It matches an unbalanced coax transmission line to the Yagi's dipole driven element, preventing current from flowing on the outside of the shield of the coax. This is required for nearly any Yagi design, since the transmission line will wind up taped or clamped to the boom and the mast.

Voltage baluns like the BN-86 are susceptible to breakdown, particularly at high SWR. Anyone who has sent a KW on 40 meters down the line to a HY-GAIN 20 meter Yagi can attest that a trip up the tower to replace the balun may follow. Current baluns (“beads on a string”) are forgiving of such lapses and have lower loss.

The last point I'd like to note is that baluns using ferrite (both voltage and current baluns) will cover a fairly wide range of frequencies, but the mix of the ferrite (or the manufacturers specifications) needs to be considered. Most “HF” baluns will cover 3.5 to 28 MHz, but many of those do not work well on 160 meters. Baluns covering 160 meters may not work well at 28 MHz. It is perfectly reasonable to put two current baluns in series to cover a very wide frequency range. The Wireman is one of several companies that sell the ferrite beads and small high-power-capable coax needed to home-brew your own balun or unun. By using ferrite beads of two different mixes, a very wide-band balun can be constructed.

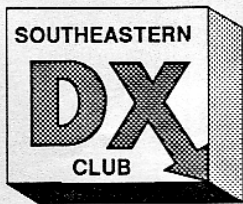
Where can we get a balun? Roll your own is my answer for the easy ones, but when we get up to high power and/or large impedance transformations, “store bought” is the way to go. DX Engineering sells great baluns. A less expensive and seemingly little known supplier is CWS Bytemark.

[http://www.cwsbytemark.com/index.php?main\\_page=index&zenid=e9vc005td01sq5ual9f3ogr3a3](http://www.cwsbytemark.com/index.php?main_page=index&zenid=e9vc005td01sq5ual9f3ogr3a3)

I use a lot of 6:1 baluns to transition 300 ohm balanced transmission line to 50 ohm coax. A 6:1 balun requires three ferrite cores and some complex windings. The cores must be large to handle 1,500 watts. I'm a DIY guy, but at some point it's time to defer to a manufacturer. CWS Bytemark's 6:1 balun is under \$100, weather tight and handles full power with ease. At N4GG there are a lot of CWS Bytemark baluns in use; I have never had a failure.

73 es gud DX,

Hal N4GG ❖



# SOUTHEASTERN DX CLUB W4NT

THE  
SOUTH'S  
PREMIER  
DX CLUB

November 1994

## NEXT MEETING TIME & LOCATION

Tuesday, November 15th, 7:30 PM, Old Hickory House in the Days Inn, Roswell Rd., just inside I-285.

## VEEP BEEPS

by Dick Bentley, K2UFT, VP

## PRESIDENT'S MESSAGE

-Delaine McCarthy, KM4FV, President

Well, it's hard to believe that another month has gone by. I know we are in November now, but where did the Summer go? Seems like there's so much to do and so little time. I know the conditions were not the best this weekend, but I had a lot of fun working the contest. It was good to hear a lot of fellow DX'ers in the pileups. We will all be interested to hear the final scores.

Thanks, Bob, K4UEE, for that "Turkey" program last month. It was great to watch you operating in another country, but watch out for those roofs!

Hope to see you at the Hamfest this weekend — it's time again to buy, sell, or trade.

Join us on November 15 for another good meeting. I know it's a really busy time for most of you, but join us if you can. We will have an update at the meeting on Ham Radio '95 and the DXPO. Remember to get your address and phone number changes to John, N4TOL.

CUL, 73 Delaine - KM4FV

## ROSTER UPDATES

Please remember that an updated roster will be printed in the December newsletter. If you have any changes needed as shown in the preliminary roster published in October, please see that they reach me by November 23rd. The new listing will be delivered for print right after the Thanksgiving holiday. Thanks!

-John, N4TOL

November's show: You heard them, you probably worked them, so now see them in action. The video of the 3YØPI operation will be the subject of our November program.

Look for ZF2SY November 19 thru 24th, WARC bands, 40 & 80 musical mode.

Late breaking news, Steve KR4DL and I tied for first place in the left foot sending contest at the Stone Mountain Hamfest. Steve got points for endurance and I got mine for style.

73 Dick, K2UFT

## DX TIDBITS

-Rick, N4XMX

Ah, the holidays! I am visiting my folks in Richmond this Thanksgiving, right in the middle of CQWW CW! Oh well, guess the OM will get an introduction to contesting. Some interesting countries will be on, most important, Syria (YK). Need them real bad. My father's station will get a workout, that's for sure.

Packet, can't live with it (according to some), can't live without it (the rest of us). Been chasing problems for a week now. Tried connecting on different frequencies and nodes, but at least now able to hang in there. (Tad, don't you dare turn off CUGNOD!) Still don't know why ARCDX doesn't like me... maybe my coax.

Finally got my tribander up on a 20' push-up pole. Now I have to figure why 20m SWR dips at 13.700 instead of 14.200! Hate to start moving the elements around, they are perfect on 10 and 15 meters. Maybe I'll just shorten the ends a little... Wished *(continued on p2)*  
The SEDXC Newsletter is published monthly by the Southeastern DX Club. All opinions expressed by the contributors do not necessarily reflect those of the editor, officers, or club. We welcome your opinion.

(continued from p1) one of these Ham CD's I have had some of those antenna programs on them. Plotting SWR verses height would be a real depressing exercise for us limited in antenna elevation!

Tried to put up a 100' wire and tune it like I did at the old house. Tuned fine at the antenna matching box but then changed drastically as you walked around and really messed up as you hooked up the coax. I'm sure Mike will have a few helpful words at the next meeting. It would be even better if I knew what I was doing! Just need something quick for the 160 meter contests coming up. Back to the antenna books... CU in the pileups!

-Rick, N4XMX

**-Buddy Harrell, W4OUN, Sec.**

**MINUTES OF SEDXC MEETING HELD 10/18/94**

The meeting was called to order by Delaine at approximately 7:30 PM. There was introductions by all including welcome to any newcomers.

John, N4TOL discussed that upon comparing the new Club roster with who had actually been attending meetings, it was apparent that dues were past due from quite a few people. We need your financial support as well as your fellowship and moral support!

It was announced that we are still short of our goal for the South Georgia DXpedition. Additional donations were sought.....

Dan Nixon, N4DVW, Chairman of DXPO associated with Ham Radio 95 will be getting in touch with anyone who volunteered to help with this activity. If you are interested in helping, please give Dan a call. It was moved, seconded, and passed that 200 DXPO pins in yellow and blue be ordered at \$2.00 each and sold as profit.

At the last meeting, there was discussion of moving the location of the meeting. It appears we won't have to pay for the meeting room as originally thought, based on conversations with management. Therefore, members voted in favor of continuing to meet at the current site.

Everyone was reminded of the upcoming contest season and especially the 160M Contest. Get those antennas ready!!!!

Following the business session, Bob Allphin, K4UEE presented an excellent program on his recent operation from Turkey as TA1/K4UEE. Thanks Bob for another good program.

The meeting was adjourned at 9:05.

73's and DX, Buddy/W4OUN

**TREASURER'S REPORT**

**-de John Tramontanis, N4TOL**

Balance 9/30/94 (Checkbook)	\$2,351.00
Deposits:	
Raffle & Shirts	119.00
Memberships	60.00
160 plaques	440.00
South Georgia	54.00
Total Receipts	<u>673.00</u>
Subtotal	<u>3,024.00</u>
Expenses:	
Newsletter (Oct)	138.73
QSL bureau	9.50
Hamfest booth	105.00
VCR rental & supplies	26.17
Bank Charges	10.38
Total Expenses	<u>289.78</u>
Balance Checking 8/30/94	<u>\$2,734.22</u>

Of this ending balance, \$770.00 is earmarked for the cluster fund, resulting from voluntary contributions from the club membership at renewal time. Also, \$119.00 has been donated by club members for the South Georgia DXpedition, the amount of which the club will match. Please help contribute to this cause by mail or at the next meeting as a donation of \$500.00 or more will allow for club recognition on the QSL card. As you all know it was very nice to see our logo on the 3YØ card. The club is also holding \$440.00 for 160 meter award plaques.

- 73 de N4TOL John

**MR. LOWBAND SEZ....**

**-Mike, K4PI**

For the bulletin, we had a member, Steve, KR4DL, get an article published in QST. Way to go Steve! Also a snippet, the old battle cry for contests was "If you snooze, you loose.." New for '95, "We'll have plenty of time to sleep after we're dead." Good luck in

COWW CW!

-Mike

(Ed. note: The following was supplied by Dick, K2UFT. Continued from last month.)

## From the diary of KT5X/USØQ, June, '94

by Fred Maas, KT5X

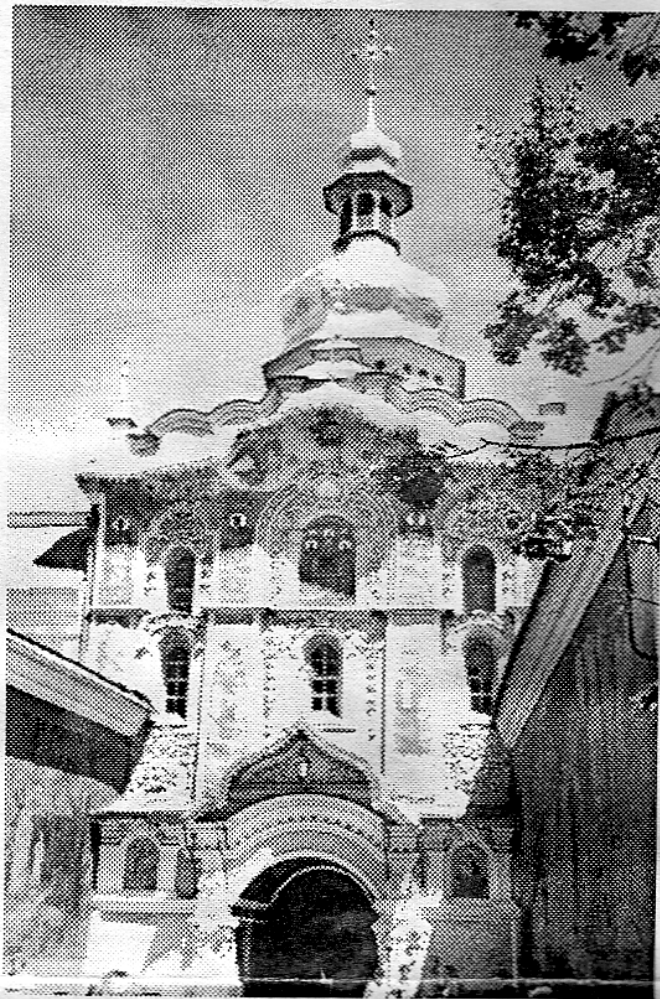
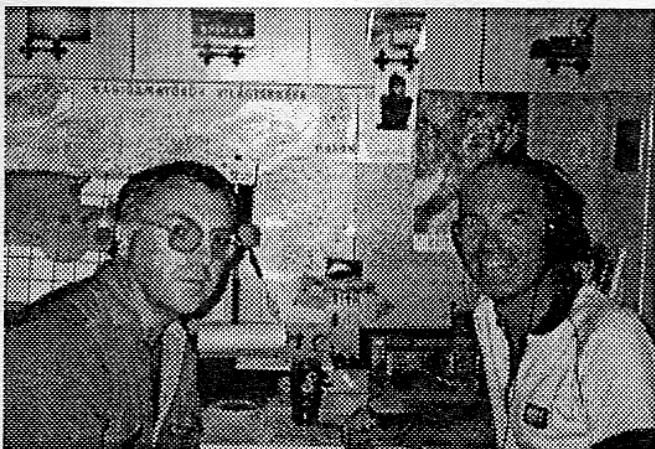
The station was in a corner of the 8 foot by 10 foot kitchen. I had hardly begun to send when the desk top was shared by a glass of compote, a Ukrainian drink of boiled fruit.

CQ was generated by the CMOS Super Keyer II I brought as a present for his station, and it was quickly answered. There were several stations calling, so QSO's were brief unless the caller happened to be one of my friends who were on the lookout for me at the low end of 20 meters. The stack of stations deepened, and the log filled. Behind me, Vlad encouraged me onward.

The first page filled and I signaled for a second. Vlad obliged, and slapped a glass of vodka on top. "Choot-choot," he said, just a little, to celebrate the first fifty QSO's from Ukraine. There were 150 QSO's from most continents in the log by the time Vlad's charming wife Natalia entered the kitchen.

Clearly DX'ing was over for now. Natalia, with little English, had many questions, and all the while she was making a multi-course breakfast. Tea, called "chai," sliced cucumbers and tomatoes, pancakes with honey, and sausage were the fare. They had to be off for work, so Vlad drove me back to my flat. Then he sped off with my New Mexico callsign license plate prominently displayed in the front windshield.

I walked into my flat to find my wife up and in the kitchen. Our host was making her breakfast. Of course I had to eat again. This time the chai and sliced vegetables were accompanied by spaghetti and hot dogs. Well, they have different customs! My second ham radio experience of the day would come in the evening, but first there was a full schedule of other activities.



We had seen the magnificent cathedrals of St. Petersburg and Kiev, but none here. All cathedrals in this city had either been destroyed in World War II or taken over by the government and used for some other purpose. We were taken to one which had been recently returned to the people and was under reconstruction.

We had asked to witness a Russian Orthodox church service. We were ushered into the church where we were immediately the center of attention. They were celebrating one year of renewed services, and they considered it providential that we were here on this day.

The service was nearly three hours long, during which time everyone stood. There were no chairs. While the structure of this church was simple, magnificent ancient icons which had been hidden in peoples' homes for seventy years were proudly displayed. The service was well attended, notably by soldiers in uniform who took part in all aspects of the ceremony.

Afterward, we were led out, across the courtyard and to our surprise, into the quarters of the priests. There we discovered that a many course meal had been prepared for us by the wives of the priests.

*continued next month*

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**DX PACKET FREQ. (2400 baud)**

W8ZF	145.63
K4KG	144.91
N4UCK	145.65, 144.97 (ARCDX)
KK4JF	145.71 (also 1200)

**DX COMMUNICATION FREQ.**

Simplex	147.54
Melvin	147.51
K4JPD Repeater (tone 7)	147.795/T-195/R
W8BLA/R	442.075+

**NEXT MEETING**

Nov. 15th, 7:30 PM, Old Hickory House, Days Inn on Roswell Rd., just inside I-285