THE FEEDBACK

Volume 97 Issue 11 **November 1997**

THE AMATEUR RADIO NEWSLETTER

Laurel Amateur Radio Club, Inc.

P.O. Box 3039, Laurel, Maryland 20709-3039

http://www.webtrek.com/~laurel/org/larc **email: larc@webtrek.com**

Meetings and Nets:

- 1st, 3rd, 5th Wednesdays:
  On-the-air Net at 8:30pm on 147.225+ PL156.7 (no tone required during nets)
- 2nd Wednesday:
  Informal/Social Gathering at 7:00pm – Tubby's Restaurant; Rt. 198, 1 mile West of I-95
- 4th Wednesday:
  Monthly Meeting at 7:30pm - The Woman's Club of Laurel, 384 Main Street, Laurel
- Nightly:
  Informal Net/Rag-Chew from 10-11pm on 147.540

Laurel Amateur Radio Club, Inc.
P.O. Box 3039
Laurel, MD 20709-3039

FIRST CLASS MAIL

Banquet:

Sunday, Dec 7 – 4:00pm
Timbuktu Restaurant

RESERVATIONS DUE IN NOW!!

No meeting in November, see you at the Banquet!

THE LAUREL AMATEUR RADIO CLUB

Officers:

President:	John Menard	N3GXA	301-725-1641	n3gxa@hotmail.com
Vice-President:	Jerry Siegel	N3WSG	301-937-1174	j_siegel@compuserve.com
Secretary:	Mark Doore	N3NTQ	301-572-2385	mdoore@webtrek.com
Treasurer:	Patty Menard	N3OYN	301-725-1641	

Other LARC Positions and Contacts:

Immediate Past President:	Mark Doore	N3NTQ	301-572-2385	mdoore@webtrek.com
Membership:	Mark Doore	N3NTQ	301-572-2385	mdoore@webtrek.com
FAR Representatives:	Dan Blasberg	KA8YPY	202-667-5780	dan.blasberg@juno.com
	Joe Seasely	KA3UZI	301-725-5822	
Laurel VEC:	Bob Busch	WB3KXJ	301-317-7819	rbusch@erols.com
LARC VE Testing:	John Creel	WB3GXW	301-572-5124	creewb3gxw@aol.com
AutoCall Reporter:	Jim Cross	WI3N	301-725-6829	jcross3@juno.com
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Public Information Officer:	Pud Reaver	W3YD	301-498-6293	preaver@erols.com
Youth Programs:	Mark Doore	N3NTQ	301-572-2385	mdoore@webtrek.com
Education and Training:	Pud Reaver	W3YD	301-498-6293	preaver@erols.com
Technical Specialist:	Kevin Arber	W3DAD	301-725-0038	karber@smart.net
ARES/RACES Coordinators:	Mike Moseley	WB3HUP	301-317-8546	wb3hup@aol.com
	Jim Cross	WI3N	301-725-6829	jcross3@juno.com
Official Emergency Station:	Mike Moseley	WB3HUP	301-317-8546	wb3hup@aol.com
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Official Relay Station:	Pat Gormley	KK3F	301-864-4694	pgormley@nova.umuc.edu

LARC Special Interest Groups and Mentors:

Antennas	Kevin Arber	W3DAD	301-725-0038	karber@smart.net
Packet Radio				
APRS	Mark Doore	N3NTQ	301-572-2385	mdoore@webtrek.com
QRP	Scott Rosenfeld	NF3I	301-549-1022	ham@w3eax.umd.edu
Repeaters	John Creel	WB3GXW	301-572-5124	creewb3gxw@aol.com
Satellite/EME				

ARRL Field Organization:

Atlantic Division Director:	Kay Craigie	WT3P	610-993-9623	wt3p@arrl.org
Atlantic Division Vice Director:	Bernie Fuller	N3EFN	814-763-1529	w3efn@arrl.org
MD/DC Section Manager:	Bill Howard	WB3V	410-551-6775	wb3v@erols.com
MD/DC Asst Section Manager:	Jerry Gavin	NU3D	410-761-1423	k2ilq@aol.com
Affiliated Club Coordinator:	Tony Young	WA3YLO	301-262-1917	tonyy@juno.com

Items to be published in *The Feedback* should be submitted by the third Wednesday of the month. Email submissions may be made to larc@webtrek.com

The Feedback is published monthly as the newsletter of the Laurel Amateur Radio Club, Inc.

Editor/Publisher: Mark Doore, N3NTQ (mdoore@webtrek.com)

President's Ramblings

This will be the last time I will be babbling on this page, at least for a while. While that is good news, the even better news is that John/N3GXA will be doing this column starting in January - I certainly enjoy John's articles and look forward to his monthly commentaries to continue The new board will formally installed at the Banquet on December 7th, please send your reservation in quickly.

It has been a pleasure for me to serve as your club president this past year. I was truly shocked last Fall when I was asked to run for President. I really didn't have a clue as to what I might be able to offer the club - it had a great group of people that were always willing to pitch in and get the job done. Somehow the club has survived my antics this past year and continues to be, in my mind, the best damn club around! If we look at what the club has done this past year, by the numbers, I think you would agree that the club had a good year. We added some more public service events, got some wonderful new members, did well in the contests, had an excellent turnout for the Novice/Tech class, helped several people with their antennas, had some ARRL appointments, increased amateur radio and LARC awareness to the public,…

Having said that, how was your year? Did you learn or try something new? Did you make some new ham acquaintances? Did you feel good helping out with a public service event or other activity? Did you have fun? That's really the bottom line, that ham radio brings you enjoyment personally and in turn the club might be a vehicle that allows you to share and give back to the community by providing some public service.

To all of you that volunteered and helped out this year, I can't thank you enough. The VE test sessions, contests, field day, runs, walks, parades, festivals, classes, committees, the article writing, the antenna help, projectors, picture taking, JOTA, J-Poles, the club shack, the tents and tables, generators and batteries, trucks and ties, the stuffing/stapling/licking, gate keeping, demonstrating, mentoring, repeatering, food and drink, and much more… You are like the infamous pink bunny on TV, you just keep going on and on, taking care of business without whimper or whine.

So, what did I do all year? Well, I certainly learned a lot and had fun doing it. I felt obligated to be a little more (OK, a lot more) focused on ham radio, the club, ARRL, etc. Magazines and articles I used to skim over I looked over more carefully. I tried to broaden my view of ham radio and line up speakers that would touch on a variety of aspects of the hobby. I spent more time surf'n the net in search of items of interest. I spent a lot of money of the club's money on postage for The Feedback and paper for flyers (I like to share and hate to cut stuff out). I even made it to all the meetings this year!!!

It was probably anticipated that I stay on as President one more year. I also personally believe that is beneficial for a person to keep an office for two years. However, I have a young family and need to focus my attention more in that direction. I would love to continue another year or more, but one can overdo a good thing. I am very grateful to John/N3GXA who stepped forward (maybe Pud pushed a bit) to be our leader this coming year. John has been very involved in the club for many years which is a real benefit. I look forward to working with John, Jerry, Patty, Dan, and the rest of you. I'm sure you'll give them they great support you gave me.

What will I being doing in the coming year? I don't plan to disappear. Club-wise, I will be taking over the production of the Feedback from John/N3GXA and the Secretary position. Hopefully I can work on some projects that came to mind during the past year that I didn't have time to get to: amateur radio signs, packet and aprs (thanks to Mike/WB3HUP), get started on some youth programs, get caught up on the LARC web page updates, collect some donated equipment to put in schools or put to other good use. Personally, I hope to at least get that 5wpm under my belt, get the antennas squared away at the home QTH, get a SW receiver setup for Stephen (my 8 year old) and maybe work with him to get his ticket. I suspect the XYL-list will be on the top of the my list, or my list will be on the bottom of the XYL-list, depending on how you look at it.

The 2m/440 Copper Pipe J-Pole build went very well with ten or so people building. We do have some extra materials which I plan to cut to size and package in case people want to take one home to build. Many thanks to Mike/WB3HUP for hosting us, to Jim/WI3N for doing the shopping and all that participated or lent a hand. Mike's already thinking about a spring build project - along the lines of a SW Receiver Kit or VHF amplifier/brick.

The Novice/Tech class is winding up with the VE team testing them on Monday, 11/22. Hopefully there will be 20+ new hams in the area. This is the last scheduled testing session for the year. However, there is the possibility that a follow-up session to Monday's session might be done for those that didn't quite make it.

If I did the math right, the GENERAL class licensing class is scheduled to begin on Monday, February 2. My recollection is that it is 8 weeks with the last class (test session) on the Monday preceding Easter , which is late this year.

A couple of club members have received ARRL Field Organization Appointments: Pud/W3YD as Public Information Officer, Kevin/W3DAD as Technical Specialist, and Mike/WB3HUP as an Official Emergency Station. As many of you know Mike likes to do things right and in a big way - he has about 30 days of battery power for the rigs in his shack at ATR.

Winter is coming - make sure your vehicles, ham equipment, and batteries are in good shape. You never know when you might be called upon to lend a hand - either mobile or from your home. You might consider becoming an Official Emergency Station (OES). To get started all you might need is a deep cycle or large gel cell battery at home and a small gel cell and J-Pole in the car. It is helpful for the Emergency Coordinators to know who might be prepared to help out during a power outage, search-and-rescue operation, or other incident.

Remember no regular meeting in Nov or Dec, also no Feedback or test sessions in December. We do have two public service events in December: the Laurel Christmas Tree Lighting (and parade??) on Satuday, December 6th (Jim/WI3N coordinating) and the DCRRC 10/20-mile run in Beltsville/Greenbelt on Saturday, December 27 (Pud/W3YD coordinating). As always, check-in on the nets or 147.540.

Have a great holiday season!

73, de Mark/N3NTQ

"Murphy's Law is recursive. Washing your car to make it rain doesn't work."

RAY SMITH COMMENTS ON BOOK

In a column commenting on books that changed future CEOs' outlooks on business, life or both, the Fall edition of FORBES FYI notes that Ray Smith said that as he was just entering his teen years, a book entitled "The Fundamentals of Radio," by Frederick Emmons, allowed him to understand the power of science for the first time.

1998 Dues

Consider sending in your 1998 LARC Dues with your banquet reservation:

Regular Member	$ 15.00
Each Additional Family Member	$ 7.50
Blind	$ 10.00
Under 21 (oldest ham in house)	$ 10.00
WB3GXW Repeater (2m/70cm)	$ 17.00

If you are not going to the banquet then you may send your club and/or repeater dues to:

Laurel Amateur Radio Club
c/o Mark Doore (N3NTQ)
2929 Gracefield Raod
Silver Spring, MD 20904-1668

Minutes of LARC Meeting – 22 October 1997

- Called to order at about 7:00pm, President Mark/N3NTQ presiding; held at The Historical Electronics Museum, Linthicum, Maryland. Approximately 24 members were in attendance.
- The treasury was reported at about $1500.
- Jim/WI3N reported on the recent Jamboree on the Air (JOTA). Club participation was hosted by Mike/WB3HUP at ATR, Inc.
- Mark/N3NTQ reminded the assemblage that the J-Pole antenna construction project will be Saturday, 25 October, at the ATR shack with Mike/WB3HUP.
- Pud/W3YD briefly announced the upcoming Sweepstakes contest will begin on 15 November at 16:00. Also, Pud reminded the membership about the Holiday Banquet on 7 December at the Timbuktu Restaurant. He has received very few reservations so far.
- Election of officers for 1998 was held with the nominated slate being carried by unanimous voice vote. Elected officers for 1998 are: John/N3GXA as President, Jerry/N3WSG as Vice President, Mark/N3NTQ as Secretary, Patty/N3OYN to remain Treasurer, and Dan/KA8YPY as Primary FAR Rep.
- Vice President Elect Jerry/N3WSG informed anyone interested that the Radio Shack Company is selling out their 440 Mhz handi-talkies for $150, and there are 4 available at the White Oak store.
- Scott/NF3I announced the availability of another group purchase for antenna tuner kits. Anyone interested should contact him.
- The business meeting was rapidly brought to a close at about 7:30 p.m. in order to move on to the tour of the museum. The club had been graciously invited by Heru Walmsley, W3WVV who is a curator of the museum.
- The meeting adjourned at about 9:45pm.

-Respectfully submitted, John/N3GXA

A programmer and an engineer are sitting next to each other on a long flight from LA to NY. The Programmer leans over to the Engineer and asks if he would like to play a fun game. The Engineer just wants to take a nap, so he politely declines and rolls over to the window to catch a few winks.

The Programmer persists and explains that the game is really easy and a lot of fun. He explains 'I ask you a question, and if you don't know the answer, you pay me $5.' Again, the Engineer politely declines and tries to get some sleep.

The Programmer, now somewhat agitated, says 'OK, if you don't know the answer you pay me $5, and if I don't know the answer, I will pay you $50!'This catches the Engineer's complete attention, and he sees no end to this torment unless he plays, so he agrees to the game.

The Programmer asks the first question. 'What's the distance from the earth to the moon?' The Engineer doesn't say a word, reaches in to his wallet, pull out a five-dollar bill and hands it to the Programmer. Now, it's the Engineer's turn. He asks the Programmer: 'What goes up a hill with three legs, and comes down with four?' The Programmer looks at him with a puzzled look. He takes out his laptop computer and searches all his references. He taps into the Airphone with his modem and searches the Net and the Library of Congress. Frustrated, he sends E-mails to all his co-workers and friends he knows. All to no avail.

After over an hour, he wakes the Engineer and hands him $50. The Engineer politely takes the $50 and turns away to get back to sleep. The Programmer, more that a little miffed, shakes the Engineer and asks, 'Well, so what IS the answer?' Without a word, the Engineer reaches into his wallet, hands the Programmer $5 and goes back to sleep.

THE DAILY DIVERSION ***http://www.the-daily.com***

The Historical Electronics Museum

-by N3GXA

As you may notice in the minutes, our last meeting was held at the Historical Electronics Museum, as guests of Heru Walmsley, W3WVV. Heru is a volunteer curator of the museum and was kind enough to give a guided tour of the facility. At first I was tempted to type "complete" tour, but that is something that just can't be done in a few hours, or possibly, in the space of one day.

I had never been to this museum before, but I had heard about it. I have attended two lectures/demonstrations by Heru; the first was at the old Laurel Armory, the second at our current meeting place, the Women's Club of Laurel. For some reason I expected the HEM to be a smallish sort of place, possibly in a trailer or temporary building, staffed by a dedicated group of volunteers; sort of like the College Park Airport Museum, (a past LARC Special Event). It turned out that I was wrong except for the part about the dedicated volunteers.

The HEM is established and supported in part by Westinghouse. This company has a long history in the invention and advancement of radar systems. One of the most interesting parts of our tour was where Heru had set up an operation of the SCR-270 radar scope and receiver of 1941 vintage in such a way that he can demonstrate the likely view of the radar operator on December 7, 1941 showing enemy planes approaching Pearl Harbor. The antenna for this unit is displayed on the grounds of the museum. Other displays we looked over showed the advancement of airborne radar as used in various military and civilian jets. They even have a full size AWACS microwave antenna mounted on the wall. (The AWACS are those Boeing planes that fly around the Middle East with a big dome attached to the fuselage. The dome is, of course, the housing for that big antenna.) The museum got the antenna because it had been damaged, (just dented really), in such a way that it was too expensive to repair. Heru also explained that in high voltage testing, the State Police had to close Fort Meade Road for about 15 minutes, because the engineers felt it would be unsafe to expose anyone to the microwaves. (This was done in the middle of the night.)

Heru took us into the back room where they store things that they don't have room for, or are otherwise not ready for display. Yes, it was dusty, and yes there were items all around that certainly appeared to be both historical and electronic to me, but heck if I know what they were. We also poked around in the workshop for a bit. Heru had set up an old TV camera that he was testing; it was supposed to work well in low light conditions. Since he had no lens attached, he made a pinhole lens and it worked pretty well. Someone wondered if this would still work in near darkness. Well, what would you expect a roomful of hams to do? We turned off the lights and tried it. And it still worked pretty well! Naturally, this led to efforts with varying degrees of darkness as well as speculation that the light from the video monitor itself may be a significant factor.

The museum has a roomful of hands-on displays aimed at youngsters, including a real telegraph, a Jacob's Ladder, and a few static electricity experiments. They also have an Amateur Radio Club station W3GR. There's the real Edison Cylinder Phonograph with a variety of old recordings. One of my favorite things was a display of a real German Enigma cipher machine from World War II along with a few other encoding devices from the Army Signal Corps. The Lunar TV camera at the museum is one of only two models in existence that was used on July 20, 1969 to transmit Neil Armstrong's first steps on the moon. The display of vacuum tubes is quite extensive, and it includes some literature from the early days of electronics. The museum has a library that I think I could easily spend several weeks in. These books and periodicals can be used by the general public during regular hours, and most material can be checked out for use at home.

If you missed the October meeting, may I suggest that you visit the Historical Electronics Museum Monday - Friday 9 a.m. to 3 p.m., and Saturday 10 a.m. to 2 p.m.. Call (410) 765-3803 for more information. If you have some time on your hands and are interested, the museum can always use volunteers, call (410) 765-6162 to make an appointment. Membership in the HEM includes their newsletter "Reflections" and other benefits. Dues range from $15 for students and $25 for individuals; life membership is available also. The mailing address is:

Historical Electronics Museum
P.O. Box 746, Mail Stop 4015
Baltimore, MD 21203

From the Keyboard of Pud/W3YD…

SWEEPSTAKES REPORT

Well, we had a lot of fun last weekend working the SSB SS. It turns out we have done better, scorewise, but I think we had more fun, operating-wise. On Saturday at 1600L Pud and Kevin started a "search and pounce" strategy on 20 meters, and worked a lot of multipliers….with some help from Roger listening on another radio and giving us different States out west. By 9PM we (Pud, Kevin, Roger, Mike) had worked about 35 of the 79 multipliers, all out west. As we were leaving, Michele, the voice no on can ignore, arrived, and she, Danny, Mike, Roger, (and probably others) worked another 30 before they called it quits about 1:30 Sunday morning. At 0800 Pud showed up, to find Mike already busy on 40 meters, with Irv/N3LDY in the shack. After a few minutes of briefing Irv on the fine are of the CT-logging program, he and Mike were running at about 100 QSO/hour rate. Pud took over for about 30 minutes, and continued that rate until he started saying "350 Bravo W3LM 92 Michigan"…. An Indiana station said "I thought you were in Maryland"…that was Mike's cue to grab the mike and tell Pud to have a cup of coffee….things got better after that!

To make a long story short, we finally got it down to where we only needed Alaska for that CLEAN SWEEP. We heard several KL7's on 20, but either they quit early, or the band dropped out; but we **knew we had it**.... patience, Jackass, patience! At about 1530 a KL7 came booming through, and Mike got him on the (I think) third try. **CLEAN SWEEP!**...all down hill from here...Redskins start at 1600...let's call it a day!

We scored about 79000+ points….a reasonable effort for about 14 hours of operating.

Here's how we've scored in the past (thanks to W3DAD, SS historian!)

Year	QSOs	Sections	Points	Call Used
1997	501	79 (SWEEP)	79158	W3LM
1996	193	72	27792	KB3BLK
1995	393	77 (SWEEP)	60522	KB3BLK
1994	622	71	88324	WI3N
1993	(no record…probably did not compete???)			
1992	705	75	105750	WI3N

Electronic Equipment for Sale

If interested call Joe Tippett @ 301-572-4323

Renew Your ARRL Membership Through LARC

When you renew your ARRL membership through LARC, the club gets to keep $2. It's easy to do: Just complete the ARRL renewal form and send with check made out to LARC to:

Laurel Amateur Radio Club
c/o Patty Menard/N3OYN
905 Montrose Avenue
Laurel, Maryland 20707-3835

Please don't wait until the last notice from ARRL to renew! **New ARRL memberships** can also be done through the club.

Technical Topics

Kevin Arber, W3DAD

Coaxial Cable

Coaxial cable is used extensively in the amateur radio station for connections between the radio and antenna as well as among various other station boxes. Coax cable can match the output impedance of most transceivers (50 ohms) and is ideal where unbalanced connections are needed. Coaxial cable is constructed with a copper center conductor surrounded by an insulating material, which in turn is covered by a braided copper shield or shields. The jacket material is normally PVC. The insulating material is commonly polyethylene or foamed polyethylene, however, other material is used including air.

Types of Cable: Common types of coax cable in amateur radio use are: RG-8, RG-8x, RG-58, RG-213, RG-214 and Belden 9913. The RG designation comes from the government specification used to standardize coaxial cables; MIL-C-17. The standard has been in existence since the 1940s and has seen revisions through the years. A 1970s revision superseded the RG designations with M17 part numbers, and you may encounter those designations on surplus cable. Despite the military specification, RG designators seem to be firmly entrenched and we will likely be using them for years to come. Some RG designators are listed with the M17 equivalents in the table below. Very good quality commercial cable is also available, such as the Times Wire LM series, which, although not listed in the table, may be the cable of choice for critical installations.

Attenuation dB/100'

RG	M17	15MHz	150MHz	Zo	Dia. in
RG-8		0.85	3.2	52	.405
RG-8 Foam		0.6	2.1	50	.405
RG-8x		1.9	4.5	50	.242
RG-11/6		0.85	3.2	75	.405
RG-58C/28		1.8	6.8	50	.195
RG-59 /29		1.4	4.6	75	.242
RG-174/119		4.6	>10	50	.100
RG-213/74		0.85	3.2	50	.405
RG-214/75		0.85	3.2	50	.425
Belden 9913		0.53	1.7	50	.405

Table I- Characteristics of some common coaxial cable.

Cable Attenuation: This is likely the most important cable specification to most radio amateurs. Attenuation increases with frequency and can become a significant factor in station performance at VHF and above. Larger cables and those using foam or air as an insulating material will have lower total losses than smaller cables and those using a solid dielectric. Attenuation of foam cables will increase if moisture is absorbed and are not recommended for use in high-humidity areas above 150 MHz. Semiflexible cables or "hardline" is preferred above VHF. Elevated temperatures increase attenuation by increasing the resistivity of the conductors and by increasing the power factor of the dielectric. Polyethylene and foamed polyethylene dielectric cables have operating temperature ranges of -65? C to +80? C which should span the normal range for amateur operation.

Characteristic Impedance: The average characteristic or surge impedance of a coaxial cable is determined by the physical dimensions and the dielectric constant of the insulating material. It can be calculated from Zo = 138/? E(log(D/d)) ohms; where E = the dielectric constant, D = the inside diameter of the outside conductor and d = the outside diameter of the inner conductor in inches.

Capacitance: The inner and outer conductors are separated by an insulating material thus forming a capacitor. Cables are rated in capacitance in picofarads per foot, therefore, the longer the cable the higher the total capacitance. This can be a factor when the cable is used for transmitting digital data. As the total cable capacitance increases, pulse distortion increases, thus limiting the distance over which data can be transmitted. Cable capacitance is normally not a factor when using coaxial cable for radio frequency transmission.

Power Rating and Maximum Operating Voltage: Charts are available for determining power handling capacity of coaxial cable, however, amateur reference material, such as the ARRL Antenna Book[1], lists maximum operating voltage. The power capacity can be determined from this specification from $P = E^2/Zo$. This would provide the maximum power and should be derated by factor of three for general use. For example, RG-8x is a small diameter cable with a voltage rating of only 300 Vrms. Using the formula above shows that the cable can withstand 1800 Watts and when derated should be usable with 600 Watts. Losses in coaxial cable increase with frequency. At higher frequencies, above 20 MHz, the loss in long runs of coaxial cable can cause heating and ultimately cable failure. A general rule is to use larger diameter lower loss cable for higher frequencies and power, and certainly for VHF and above when long runs are needed.

Velocity Factor: The velocity factor in percent is the reduction in the velocity of a radio wave in the cable as compared to the velocity of light in free space and is dependent on the dielectric used. The VF for polyethylene is 66% and for polyethylene foam is 75% to 78%. Normally this is not a significant factor in an RF transmission line except where exact multiples of a wavelength or fraction are required. This is often the case where matching sections must be made of coaxial cable. To determine the proper wavelength length of a cable, first find the free-space wavelength and then multiply by the velocity factor. For instance if a 1/4 wavelength 75 ohm cable is needed at 146 MHz; RG-11 could be selected. Find the free-space wavelength from 984/146 = 6.74 feet. Multiple by .66 to obtain 4.45 feet, and then by .25 for the quarter wavelength section to obtain 1.11 feet. The velocity factor of cables can vary somewhat as a result of manufacturing variables. If an exact length is needed then the cable VF should be measured before the cable is cut and terminated.

Electrical Equivalent: Think of coaxial cable as a three conductor device; the center conductor, the inside of the shield and the outside of the shield. At radio frequencies conductors exhibit a characteristic called skin effect; current travels on the surface of the conductor. Two different currents can travel on the coaxial cable shield, one the outside and one on the inside as a result of unbalances in the antenna and feedline system. Antenna currents on the outside of the coax shield can cause RF to appear at the operating desk, cause radiation from the cable rather than the antenna and cause difficulty in obtaining stable operation. If touching an RF coaxial transmission line causes the SWR to change it either has a loose connection or currents are flowing on the outside of the shield. To prevent outside shield currents, a section of the line, normally at the antenna end, can be coiled to form a choke. Six to ten turns of cable eight to ten inches in diameter form a high inductance at HF effectively reducing the current. Alternatively, ferrite beads can be threaded on a section of cable creating a high impedance to RF on the outside of the cable. This is sometimes called a ferrite bead balun.

Connectors: Terminating the coaxial cable with a good quality connector properly installed is very important. Normally RG-8 type cables are terminated in "UHF" connectors of the PL-259 type. The PL-259 is a perfectly acceptable connector for HF and can be used on the smaller cables with a reducer. The PL-259 is not watertight and is not a constant impedance connector. It does not preserve the cables characteristic impedance across the connection. At VHF and above the connector of choice for the larger cables is the type N. This connector is waterproof and preserves the impedance across the connection. For RG-58 type cable, BNC connectors are often used. BNCs are also waterproof (Mil Spec versions, some commercial versions are not) and preserve the impedance. Whatever connector is used, care must be used in the installation. Consult reference material to obtain the proper dimensions to cut the cable and follow the directions exactly. Notice also that a standard PL-259 which is sized for RG-8 cable will not fit on a double shielded cable such as RG-214.

Cable Installation: Coaxial cables with stranded center conductors and braided outer conductors are designed to withstand flexing and can withstand many 180 degree bends if the radius of the bend is equal to 20 times the diameter of the cable or more. Cables can be installed in a fixed bent configuration as long as a minimum bend radius is kept to 5 times the cable outside diameter. For RG-213 cable with a O.D. of .405 inches this is two inches. Water vapor can enter cable through the jacket as well as through connectors. Outside cable installations should be inspected and tested on a regular basis. Sunlight (ultra-violet) will attack the outer jacket causing degradation over time. New cable jackets are not completely waterproof. Water vapor can pass through the

jacket. In addition, jackets will have pin-holes and can have damage due to rodents, installation techniques or other causes. Keeping cables out of standing water, elevating cable runs, and providing protection from the elements are worthwhile efforts for promoting cable longevity. Special cables are available that are guaranteed pin-hole free and flooded with a moisture resistant compound, however, they are not normally found in amateur installations. All connectors, even waterproof types, should be taped after installation.

[1] Straw, R. Dean N6BV, 1997, The ARRL Antenna Book 18th Edition, ARRL Newington, CT,

Excerpts from *The ARRL Letter*

Volume 16, Number 42 (October 24, 1997)

FCC ISSUES NEW FORM 610 -- OLD VERSIONS OBSOLETE

The FCC announced this week that as of January 1, 1998, Amateur Radio applicants may only submit FCC Forms 610, 610 A and 610B that carry an edition date of September 1997. After the first of the new year, previous editions of Form 610 will not be accepted for filing by the FCC or by Volunteer Examiner Coordinators (VECs).
Amateurs may begin using the new Form 610s now.

The major change on the new form is a certification that says the applicant has "read and will comply with Section 97.13(c) of the Commission's Rules" regarding RF radiation safety and the amateur service section of OST/OET Bulletin No 65, Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields. But, Amateur Radio Supplement B of Bulletin 65, which has additional information on how to conduct a routine RF safety evaluation and explains other aspects of RF safety, is still in the draft stages and not yet available to the ham radio community.

The new Forms 610 may be obtained from the FCC' Web site via the Internet at http://www.fcc.gov/formpage.html, at ftp://ftp.fcc.gov/pub/Forms/ or by fax at 202-418-0177 (request index, or for Form 610 use form code 000610, for Form 610A use form code 006101, for Form 610B use form code 006102). The FCC Forms Distribution Center will accept FCC forms orders by calling 800-418-3676.

Volume 16, Number 43 (October 31, 1997)

FCC OPENS VANITY GATE 4!

Christmas will arrive a bit early for General, Technician Plus, Technician and Novice Class hams. The FCC has announced that vanity call sign program Gate 4--the last vanity gate--will open December 2, 1997, for General, Tech Plus, Technician and Novice class hams to request a vanity call sign on or after that date. The potential number of applicants from these four licensee groups is huge--well over a half million hams!

Applicants may use either the electronic Forms 610V and 159 on the Web or hard-copy Form 610V and 159 -- but not both. Both versions -- plus fact sheets and answers to frequently asked questions -- are available at http://www.fcc.gov/wtb/amateur. The application fee is $50, payable by check (to "FCC"), bank draft, money order or credit card. Do not send cash. The FCC gives processing priority to electronically filed Forms 610V for which the filing fee and Form 159 have been received. The FCC now requires all vanity filers to include a Form 159, which must be mailed to the FCC with your fee.

Electronic filers must mail the Form 159 Fee Remittance Advice to FCC, Amateur Vanity, PO Box 358994, Pittsburgh, PA 15251-5994. The Form 159 and the fee must be received within 10 days of electronically filing your Form 610V or your application will be dismissed.

Those filing on document Forms 610V and 159 must mail the application package containing a completed Form 610V with a copy of your license attached, Form 159 and the proper fee in a sealed envelope to FCC, Amateur Vanity, PO Box 358924, Pittsburgh, PA 15251-5924.

For general information, call the FCC's toll-free National Call Center, 888-225-5322 (CALLFCC).

YOUNGEST EXTRA REVISTED

We've published reports of boys and girls of 10 and 11 years old earning their Extra class tickets. But Rebecca Rich, KB0VVT, of Raytown, Missouri, could have them all beat. According to her mom, Barbara Rich, KG0UT, Rebecca earned her Extra ticket in March 22, 1997, just a few months before her ninth birthday. In fact, the whole Rich family studied for and passed their Extra tests together, and all of their licenses were issued on the same day. Rebecca's dad is David Rich, KG0US. Rebecca has been a ham since March 1996, when she qualified for her Technician license (see QST, October 1996, p 19). Recently, Rebecca spent several hours operating in the CQ WW SSB contest at the home of Jerry Fisher, NX0I. Says her mom: "I believe that women and youth add a dimension to Amateur Radio that is needed." (Any other challengers for the title of Youngest Extra? --Ed)

ARRL DEBUTS 160-METER DXING BOOK

The ARRL has introduced DXing on the Edge--the Thrill of 160 Meters, by Jeff Briggs, K1ZM. DXing on the Edge gives an insider's view at what it takes to make it on 160 meters. The book includes lots of interesting Topband history plus an audio CD of some exotic and exciting QSOs made from prominent DX stations. Much of 160 meter history revolves around the late Stew Perry, W1BB. His QSL card remains prize wallpaper for amateurs around the world.

Author Jeff Briggs, K1ZM, is a well-known DXer and contest operator. He has 270 countries confirmed on 160 meters, making him one of the leaders in the DX chase and an expert on this most challenging of amateur bands.

DXing on the Edge is $29.95 (plus shipping). Order Item No 6354. Call toll-free 888-277-5289 or see http://www.arrl.org/catalog/6354/.

Volume 16, Number 44 (November 7, 1997)

FCC SEQUENTIAL CALL SIGN UPDATE

Note that the last available Group C (1x3) call sign, N3ZZZ, has been issued in District 3. Group D (2x3) call signs now will be issued to Tech Plus, Technician, General, and Novice licensees in District 3. The FCC has almost exhausted its supply of Group C call signs in District 1.

VANITY UPDATE

The FCC in Gettysburg, Pennsylvania, reports it received 598 vanity call sign applications during the month of October, 435 electronic and 163 paper.

RSGB VHF/UHF HANDBOOK AVAILABLE

The RSGB's VHF/UHF Handbook, edited by Dick Biddulph, G8DPS, now is available from the ARRL. This 317-page book is the successor to the VHF/UHF Manual. It covers a broad array of topics for beginners and experts alike and includes information on specialized modes such as data and TV. The VHF/UHF Handbook is ARRL Order No. 6559. It's $35 plus $6 for UPS shipping. Call toll free, 888-277-5289, or visit the ARRLWeb site at http://www.arrl.org/catalog.--RSGB

FCC INITIATES UNIVERSAL LICENSING SYSTEM

As a first step in implementing its new Universal Licensing System (ULS), the FCC's Wireless Telecommunications Bureau is attempting to "populate" the ULS by getting licensees to register. Ultimately, the ULS will give hams and other licensees on-line access to make license updates and renewals, eliminating the need for hardcopy forms like the venerable Form 610. An FCC Public Notice this week said the ULS is aimed at combining the 11 different licensing systems the Bureau now uses--including Amateur Radio--into a single system.

Licensees are invited to register electronically at http://www.fcc.gov/wtb/uls. Select ULS Registration. Licensees without access to the Internet may file a TIN registration form, FCC Form 60, from the FCC's fax-on-demand service at 202-418-0177 or by calling the FCC Forms Distribution Center, 800-418-3676. --FCC

SOLAR UPDATE: A STRONG UPWARD TREND; MAJOR FLARES

Solar oracle Tad Cook, K7VVV, Seattle, Washington, reports: Solar Cycle 23 showed renewed activity this week, as solar flux values went well over 100. Average solar flux for the week was up about 19 points, and average daily sunspot numbers were up about 36 points. The average solar flux for the previous 90 days went up two points

from 87 to 89 over the week, and daily values were above this average on every day, indicating a strong upward trend. Flux values are measured three times per day at an observatory in Penticton, British Columbia. The one reported here is the noon measurement at 2000 UTC, but the highest flux measured for the week was actually 120.6 at 2200 UTC on November 4.

Sunspot numbers for October 30 through November 5 were 51, 55, 62, 74, 66, 68 and 51 with a mean of 61. The 10.7 cm flux was 88.2, 90.5, 93, 97.8, 109.8, 117.9 and 113.8, with a mean of 101.6, and estimated planetary A indices were 10, 4, 8, 3, 3, 9, and 9, with a mean of 6.6.

Volume 16, Number 45 (November 14, 1997)

RADIO COACHES PROGRAM TO RAISE ELMERING TO NEW LEVEL

Over the years in the pages of QST, countless letters and articles have been written about Elmers, those patient, inspired souls who thoroughly enjoy bringing newcomers into the world of Amateur Radio. Now, the ARRL's new Radio Coaches program takes Elmering to new levels. Through the Radio Coaches program, you and your fellow club members can become part of a national effort to better the lives of youth using Amateur Radio. And we'll provide the game plan!

Radio Coaches stems from the kickoff of America's Promise, the Alliance for Youth, a national campaign to improve the lives of the nation's young people and put them on paths for brighter, more productive futures. As a result, the ARRL Board of Directors authorized the creation of the "Radio Coaches" program as Amateur Radio's commitment to youth.

The mission will be to give young people an ongoing relationship with a caring adult and a marketable skill through effective education. Amateur Radio will be our chief tool. How does it work? From day one, we supply information to help your Affiliated or Special Service Club form a "coaching team." Your team will build a relationship with a local school, community organization or other institution from which you will recruit your "athletes." You will coach young people in your community on the basic elements of electronics and the magic of radio communication through exposure to Amateur Radio. In addition, you may arrange field trips to technology museums, radio conventions and hamfests. Or you may choose to introduce students to local businesses that use radio and electronics technology. Your job as a coach will be to make every member of your team more aware of how these experiences can lead to career opportunities in telecommunications.

The ARRL will support this effort by providing clubs with fliers to help recruit youngsters, curriculum materials and other informational resources. While supplies last, the ARRL will provide 1997 ARRL Handbooks to participating clubs who want to use them with students and later donate them to school libraries or youth groups. The League also will provide youth packages with handouts to accompany the curriculum materials. Basically, we'll supply the strategy, and you'll supply the energy and imagination.

Through Radio Coaches, we want to reinforce the idea that Amateur Radio is a "sport for the brain." Ham radio provides not only a lifetime of enjoyment, but also, potentially, a lifetime career.

For more information on how you can get involved in the Radio Coaches program, contact Radio Coaches, c/o Field Services Department, ARRL, 225 Main St, Newington CT, 06111;or e-mail coaches@arrl.org. -- Jennifer Gagne, N1TDY

AT&T FUNDS KENTUCKY HAM RADIO REPEATERS

There was a silver lining to the clouds that brought heavy flooding to Northern Kentucky earlier this year. Ham radio's role in providing emergency communication in the flooding's wake has resulted in a windfall for that region's hams -- courtesy of AT&T. Seventh District Emergency Coordinator John Meyers, N4GNL, of Covington, Kentucky, says AT&T has agreed to spend some $100,000 to set up a VHF repeater, a UHF repeater, antennas, and a shack with air conditioning and heat at one of its cellular telephone sites. Other sites will be equipped as receive-only sites and tied back to the repeater. As part of the deal, the Northern Kentucky Amateur Radio Club agreed to cover the electricity and phone bills. Meyers says he's already gotten four Northern Kentucky counties (Campbell, Boon, Kenton and Pendelton) plus the City of Falmouth to pitch in for the utilities at the sites.

Meyers says ham radio was the only means of communication for the first four days of the floods. Many of the club's members remained on duty to help out during the flood recovery. Hams' efforts during the flooding

attracted the attention and respect of local governmental officials and of AT&T, which saw the possibility of a mutually beneficial arrangement. AT&T had been hoping to gain access to several possible cellular telephone antenna sites that had been off-limits. With the ham equipment on board, however, the cellular sites gained emergency communication status--just what was needed to get the moratorium lifted on their use by AT&T. "The marriage came together really good," Meyers said this week. "AT&T needed some sites, and hams needed the coverage."

In addition to the Kentucky repeater, AT&T also plans to set up a similar emergency system for hams in Southwestern Ohio, which also suffered from this year's flooding. Meyers says AT&T's total commitment is in the area of $300,000. When it's all in place, Meyers says, a huge region in Northern Kentucky, Southwestern Ohio and Southern Indiana will be accessible using a 2 W hand-held transceiver.

If all goes as planned, Meyers hopes to throw the switch on the first new repeater site in Edgewood, Kentucky, by year's end. Great Lakes Director George Race, WB8BGY, has been invited to take part.

SOLAR UPDATE

Sun watcher Tad Cook, K7VVV, Seattle, Washington, reports: Last week's major geomagnetic storm was really confined to Friday, when the global A index went clear to 45, and global K indices went as high as seven. This was from the Tuesday, November 4 solar flare, and the later flare on Thursday didn't seem to have an effect, indicating that the energy was probably aimed away from Earth. Protons from these disturbances produce an effect a few days later, and the Thursday event didn't seem to bother conditions over the weekend. On Saturday the global K index dropped down to 0.

Volume 16, Number 46 (November 21, 1997)

WRC-97 WRAPS UP IN GENEVA

The 1997 World Radiocommunication Conference concluded its talks in the early morning hours of November 21 in Geneva, Switzerland. Amateur Radio survived WRC-97 largely unscathed, but the stage has been set for renewed spectrum battles at WRC-99.

BALLOTS DECIDE DIRECTORS RACES

In the Atlantic Division, incumbent Director Kay Craigie, WT3P, of Paoli, Pennsylvania, easily beat back a challenge from Jim Carson, WK2K, of Ithaca New York. The vote tally was 4918 to 1573.
Atlantic Division Vice Director Bernie Fuller, N3EFN, was without opposition for his seat.

FCC ISSUES RF SAFETY SUPPLEMENT B TO OET BULLETIN 65

Hams now have basic guidelines and tools to evaluate their stations for compliance with the FCC's RF exposure guidelines that start phasing in January 1, 1998. The FCC's Office of Engineering and Technology issued the long-anticipated Amateur Radio Supplement B to its OET Bulletin 65 on November 18. The FCC worked closely with the Amateur Radio community to develop the new supplement. Several ARRL Headquarters staff members and Technical Advisors reviewed preliminary drafts of the supplement. ARRL Lab Supervisor Ed Hare, W1RFI, has been the League's point man for RF safety and exposure issues.

SOLAR UPDATE

Solar prognisticator Tad Cook, K7VVV, Seattle, Washington, reports: Solar activity was up a little this week compared to last, and geomagnetic conditions were quiet. The average solar flux for the previous 90 days rose one point to 91, and the solar flux was above these numbers every day this week. This indicates an upward trend. The 90-day average was 5 points lower only a month ago.

Solar activity is expected to remain high, with solar flux values over 100. An active area (region 8100) is expected to return November 23, and this may send solar flux to the 110 mark from November 26 to December 1. Flux

values are not expected to drop below 95 until December 10. This region, which produced X-class solar flares on November 4 and 6, may produce M-class flare activity this time around. Watch for active geomagnetic conditions around November 20 to 24 and again around December 3.

The 10 and 15 meter bands should open during the day with higher solar flux values. The best conditions, with high solar flux and low geomagnetic conditions are currently forecast for the CQ Worldwide CW DX Contest on the weekend following Thanksgiving.

With solar activity higher, it is fun to watch the progress of cycle 23 with a plotting program which graphs the daily numbers over time. Check out the Solar Data Plotting software from WA4TTK on the web at http://edge.net/~scraig/. This program automatically grabs the solar data from this weekly propagation bulletin to update it's database. If you need to fill in gaps in your data, grab old propagation bulletins from the ARRL web site at http://www.arrl.org/w1aw/prop/1997-index.html.

The ARRL Letter is published by the American Radio Relay League, 225 Main St, Newington, CT 06111; tel 860-594-0200; fax 860-594-0259. Rodney J. Stafford, KB6ZV, President; David Sumner, K1ZZ, Executive Vice President. The ARRLWeb page at http://www.arrl.org/arrlletter/) includes any photographs. For email delivery, send e-mail to listserv@netcom.com (no subject needed), the body of the message should say subscribe letter-list.

ARRL Audio News, This Week in Amateur Radio, Amateur Radio Newsline, and /or The R.A.I.N Report

may be broadcast locally by John/WB3GXW at one or more of the following times:

Saturday @ 8:00pm on 147.225+ PL156.7
Sunday @ 8:30pm on 147.225+ PL156.7
Tuesday @ 7:15pm on 147.180+ PL156.7

December Birthdays

3	W3LM	Roger Davis
4	W0ZX	Tom Traughber
7	N3JOA	Tom Reilly
9	N3WSG	Jerry Siegel
17	N3RWJ	Mary Rekus
18	KA3ALB	John Handiboe
18	WB3KXJ	Bob Busch
23	KA3GSW	Clarence Fine
24	N3AUQ	Russ Studer
25	WB3HUP	Mike Moseley
29	N3TZA	Joe Craven

first year: 1913, last year: 1964

January Birthdays

1	N3LFK	Barbara Studer
4	KQ3S	Jim Kessler
4	N3WLU	Pat Brown
5	NF3I	Scott Rosenfeld
8	K3QDC	Norm Tavan
10	N3PGI	Rex Wells
10	N3SCU	Ondine Doore
12	KK3F	Pat Gormley
14	W3CP	Jim Headrick
18	N3TYY	Don Bini
19	W3YD	Pud Reaver
25	W3VRX	George Whitmore
28	N3DUE	Alan Juers
30	N3GNI	Julia Bertak
30	KB0PWW	Colleen Traughber

first year: 1916, last year: 1980

The FAR Report – November 12

FAR President, Chuck Sommer (N4OSD), called the meeting to order at 8:00 p.m. at Lee Center in Alexandria, VA.

The attendees introduced themselves. There were 21 trustees representing 20 groups.

The October minutes were approved as mailed.

The treasurer's report was given by Charles Johnson (N3HFO) and accepted.

Auto-Call - Tony Young (WA3YLO) reported that the Dulles Amateur Radio Group membership has a 100% subscription rate to Auto-Call. Congratulations to DARG! Tony also reported a query from World Radio asking how we manage such a high quality publication and keep the rate at $8.00 per year. Tony replied that is was only because of the dedication of our volunteers and our editor, John Queen (KA0SEY). Kudos to all!

Survivor's Assistance - John Swafford (W4HU) reported that he has a few small items for sale like a Hustler antenna, LP filter, etc. Tony Young (WA3YLO) reported that he went to La Plata, Maryland, and picked up about 20 pieces of gear from the estate of W3ALX, who passed away about 10 years ago. Items include a Swan 600T and Swan 600R, various receivers and other older gear. He also still has a crack-up/tilt over self supporting tower with a TA-33-JR beam, AEA isopole, rotor and cables near Bowie for $300. The buyer has to dismantle and move it.

Scholarship Committee - Hugh Turnbull (W3ABC) reported that there will be 64 scholarships awarded this year. 17 of these scholarships will be sponsored by QCWA. Several other clubs are changing to memorial scholarships. Hugh also thanked Mary Morris (N4TCI) for helping out with some of the clerical work. Hugh also asked the Foundation trustees to please consider a replacement for his position as the FAR Scholarship Chairman. He plans to retire after this scholarship year. The Foundation is asking for a volunteer or volunteers to assume this awesome responsibility.

ARRL Report -- There was no ARRL report.

FARFest -- Chuck Sommer (N4OSD) reported that the Gaithersburg Fairgrounds has been secured for FARFest on September 13, 1998. Al Brown (KZ3AB) reported that he received a letter from the ARRL stating that Atlantic Division Director, Kay Craigie, has approved our application to hold an "ARRL approved hamfest"...on September 6, 1998. FAR Secretary Al Brown (KZ3AB) will straighten out the mistake on the dates. In order to clear up any confusion, FARFest 98 will take place in Gaithersburg Maryland on Sunday, September 13, 1998.

Old Business --

>The FAR Board has finally filtered through the National Capital ARES Council's (NCAC) Request and Proposals (R&P's) to FAR. The FAR Board decided to pass along two of NCAC's R&P's to the trustees for a vote and rejected the others.

The first R&P was for two portable repeaters. The FAR Board reduced that R&P to a single portable repeater and passed that on to the trustees for consideration. The cost to FAR will be approximately $965.00. A motion was made, seconded and a vote approved the purchase. A second approving vote is needed at the next FAR meeting. If you have any questions about this item, please send me an e-mail and I will try to answer them. Questions still to be worked out include, where will it be stored, who is the contact person, and who will maintain the equipment.

The second NCAC R&P was for various packet equipment upgrades at the National Weather Service in Sterling Virginia (SKYWARN). Subsequent events made this second R&P moot. Discussions resulted in a motion being made to allow for spending up to $1,100 toward a new HF transceiver to be used by SKYWARN. The motion was seconded and there was an approving vote with one club abstaining. SKYWARN is requesting this to replace the one they have that is owned by The Vienna Wireless Society. It would be used to maintain communications with Norfolk NWS as well as The National Hurricane Center, for which Sterling NWS is the alternate.

New Business --

>Discussion began about a replacement computer for the Scholarship Committee. It was decided that this was a normal office expense that should be handled by the FAR Board and need not be considered by the trustees.

>Chuck Sommer (N4OSD) reported that response to the Dayton Hamvention charter flight has been poor. There have been only 12 replies, so far. This proposal was announced at the last meeting, included in the minutes and advertized in Auto-Call. Unless there is a remarkable response in the next few weeks, the idea will be dropped.

Announcements, etc. --

>Lenny Schachter (N3RPQ) reported that WARC 97 will not consider the "Little LEO's" and there is talk about splitting up the 40-meter amateur band. Details were sketchy.

>The Calvert Amateur Radio Club complained that they did not receive last month's minutes by neither e-mail nor snail mail. FAR Secretary Al Brown (KZ3AB) has vowed to correct the problem. Al also noted that if any other clubs are having a problem, they should not hesitate to notify him.

A motion to adjourn was entertained at 9:08 p.m.

The next meeting will be held at Columbia Union College in Takoma Park, Maryland at 8:00 p.m. on Wednesday, December 10. See Auto-Call magazine for directions.

Respectfully submitted.
Dan Blasberg KA8YPY FAR Representative

Top signs that you may need an elmer..

By Jeffrey S. King, N1DJS, jeff.king@cbis.com

An elmer is the guy you go to, to ask questions about topics in Ham Radio that you don't understand. In that vein, you know it's time for you to find an Elmer if...

- Your friend tells you he has a new two meter radio and you figure one of the meters must be for swr and the other for power out.
- You hear a conversation on the low bands about CW and you think they're refering to the cold war.
- You hear someone sign this is N8XXX mobile 4 and you think it's because he has three other radios
- You hear that someone won a 40 meter radio at a hamfest and you wonder how they're going to get something that large in their house.
- You build a morse code key out of plexiglass and can't figure out why it won't key your radio.
- You think the difference between short wave and long wave is the speed at which you move your wrist back and forth.
- You're thinking about joining your other ham frineds in the local ATV group because you own a four wheel drive vehicle that will go just about anywhere.
- You won't use a repeater because you've heard that using a repeater could be dangerous. You've heard an alligator could get you.
- You think a colinear antenna can only be used with two amplifiers.
- You think fm is the modulation type that came after em, dm, cm, bm and am.
- You wouldn't mind getting into packet radio but no matter how much you practice you can't get the hang of sending those beeps and braps with your keyer.
- You wonder what sound a short wave makes and why anyone would want to listen to one.
- You think the repeater owner would be a lot happier if instead of talking about his cavities he just went to the dentist and got them filled.
- You think a CW ID is the number the army gave you on your dog tags during the cold war.

FREE

Amateur (Ham) Radio License Upgrade Class

GENERAL Class License

8 Week Class, Mondays, 7-9pm
Starting Monday February 2, 1998

Location: Woman's Club of Laurel
384 Main Street
Laurel, Maryland

For more information contact:

Pud (W3YD) 301-498-6293 preaver@erols.com
Jim (WI3N) 301-725-6829 jcross3@juno.com

Laurel Amateur Radio Club
http://www.webtrek.com/~laurel/org/larc
email: larc@webtrek.com

Offered by the Laurel Amateur Radio Club, Inc.
An ARRL Special Service Club

November 1997

Su	Mo	Tu	We	Th	Fr	Sa
						1
2	3	4	**5**	6	7	8
9	10	11	12	13	14	**15**
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

December 1997

Su	Mo	Tu	We	Th	Fr	Sa
	1	2	**3**	4	5	**6**
7	8	9	**10**	11	12	13
14	15	16	**17**	18	19	20
21	22	23	**24**	25	26	**27**
28	29	30	**31**			

January 1998

Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Upcoming Activities and Events

November

24	**Mon**	**7:00pm**	**Laurel VE Test Session (last Nov/Tech class)**	**384 Main Street**
26	**Wed**	**8:30pm**	**LARC Net (NO MEETING THIS MONTH)**	**147.225+**

December

3	**Wed**	**8:30pm**	**LARC Net**	**147.225+**
6	**Sat**	**??**	**Laurel XMAS Tree Lighting**	
7	**Sun**	**4:00pm**	**LARC Annual Banquet**	**Timbuktu**
10	**Wed**	**7:00pm**	**LARC Social Meeting**	**Tubby's Restaurant**
10	Wed	8:00pm	FAR Meeting	Takoma Park, MD
17	**Wed**	**8:30pm**	**LARC Net**	**147.225+**
24	**Wed**	**8:30pm**	**LARC Net - maybe (NO MEETING THIS MONTH)**	**147.225+**
27	**Sat**	**9am??**	**DCRRC 10/20 Mile Run**	**Beltsville/Greenbelt**
31	**Wed**	**8:30pm**	**LARC Net**	**147.225+**

NO VE Test Session in December

January

7	**Wed**	**8:30pm**	**LARC Net**	**147.225+**
14	**Wed**	**7:00pm**	**LARC Social Meeting**	**Tubby's Restaurant**
14	Wed	8:00pm	FAR Meeting	Alexandria, VA
17	**Sat**	**9:00am**	**VE Test Session**	**384 Main Street**
21	**Wed**	**8:30pm**	**LARC Net**	**147.225+**
28	**Wed**	**7:30pm**	**LARC Monthly Meeting**	**384 Main Street**

GENERAL Licensing Class (tentatively) Starts Monday, February 2nd

Some Upcoming Hamfests and Conferences

January 19 - Frostfest '98, Richmond, VA
Richmond Amateur Telecommunications Society, Richmond, VA, Tod or Amy McCoy, PO Box 35021, Richmond,
VA 23235, 804-330-3165 or 804-739-2269 (Box FEST), E-mail: frostfest@rats.net, http://frostfest.rats.net

January 25 - Maryland Mobileers ARC, Odenton, MD
Bill Ziegler, KA6TYY, 1307 Ashburton Dr., Millersville, MD 21108, 410-987-2384
E-mail: ka6tyy@juno.com

February 8
+ Chestnut Ridge ARC, Latrobe, PA, William Demosky, K3AFS, 1740 Raymond Ave., Latrobe, PA 15650, 412-539-1552

February 14
+ Harrisburg RAC, Oberlin, PA ,Tom Hale, WU3X, PO Box 418, Halifax, PA 17032, 717-232-6087

TIMBUKTU Rides Again!

This will be the third consecutive year that we visit Timbuktu
for our annual Christmas/Installation Banquet.
And this will be the third consecutive year that we probably run them out of doggie bags!

Sunday, December 7, 4-9 PM

4-5...Happy Hour, 5-6...Dinner, 6-8...Entertainment and Installation!
(4PM is actual....other times approximate, as usual!)

Price, as usual, is $25.00, and you have several entree's to choose from.
All entrees include tossed salad, two vegetables, bread, butter, coffee (or sanka or tea), and dessert.
The price includes tax and gratuity.

ENTERTAINMENT:
Traditional Folksinger Judy Cook fromWest Laurel, Maryland
http://www.ceimd.com/folksing.htm

Banquet Reservation and Membership Renewal

Please return by Friday November 27 to:

PUD REAVER (W3YD), 6516 BROOKLYN BRIDGE ROAD, LAUREL, MD 20707
If you think it will not make it in time please give Pud a heads up: 301-498-6293, preaver@erols.com

Name/Call: _____

Banquet

Regular	_____	@ $ 25.00	= _____
Surf & Turf	_____	@ $ 37.00	= _____

1998 LARC Membership

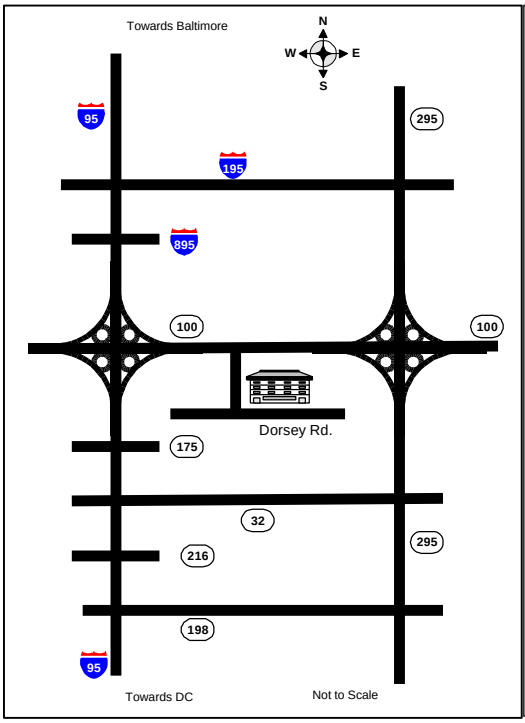
Regular Member	_____	@ $ 15.00	= _____
Each Additional Family Member	_____	@ $ 7.50	= _____
Blind	_____	@ $ 10.00	= _____
Under 21 (oldest ham in house)	_____	@ $ 10.00	= _____

WB3GXW Repeater Dues

Per Household, 2m & 440	_____	@ $17.00	= _____

TOTAL ENCLOSED: _____

PLEASE COMPLETE BOTH SIDES OF FORM...



Directions to the Banquet at the Timbuktu Restaurant

Basically, the TIMBUKTU is between I-95 and the BW-Parkway.

So, once you get on one of those, you have to look for Md Rt 100 (replaces the old Md Rt 176).

Take Rt-100 East from I-95, or West from the Parkway, and watch for signs for Coca-Cola Drive.

Take that South (about one block) to Dorsey Road.

You have just passed the Timbuktu on your left.

Turn left at the light, turn left into the parking lot, and drive to the back.

We are in the downstairs banquet room.

Banquet Reservation

Please return by Friday November 27

NAME/CALL		
APPETIZER (pick one)		
Chilled Tomato Juice		
Chilled Grapefruit Juice		
Chilled Orange Juice		
Soup du Jour		
Fruit Cup		
ENTRÉE (pick one)		
Roast Prime Rib of Beef (specify how cooked)		
Stuffed Flounder		
Broiled Maryland Crabcakes		
Milk Fed Veal Parmigiana		
Vegetarian Platter		
Surf & Turf **($37)** cold water lobster and NY strip (specify how cooked)		

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