THE DELAWARE-LEHIGH AMATEUR RADIO CLUB, INC.

NEWS

RD #4
GREYSTONE BUILDING
NAZARETH, PA
18064

*** MARCH 1987 *** MARCH 1987 *** MARCH 1987 *** MARCH 1987 *** MARCH 1987 ***

WE WILL BE CHANGING AGAIN
by Clarence W3PYF

Beginning on March 8, we will be changing the DLARC network back to its original Northampton County Emergency Network. In the mail within the last week or so, all members of the club and others who have been participating in the net should have received a questionnaire, with a return envelope. If you have not received a form please call me either on the air or at my home. The telephone number is on the back of this news letter.

There may be a question in your mind as to why, the renewal forms. The cards that have been issued as members of RACES have not been official membership in State Emergency Management plans, and in order to be covered in case of an actual emergency or a drill for any accident, we must have a new card. These will be issued, upon receipt of your new form.

Plans call for a calling tree, to alert members in case of an emergency or a non scheduled drill.

Although we will continue to have club news on the Sunday and Wednesday nets as well as ARRL bulletins, membership in Delaware-Lehigh Amateur Radio club will continue NOT to be a prerequisite to membership in the County EMA network.

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Special Event Station Report
by Roy, KA3MNY

As of February 10, 1987 we have responded to 102 requests for the Christmas City Special Event Certificate. The total number of contacts was 266 from 29 different states and Canada. We also had one request from a Short Wave Listener and since he specified the QSO that he listened to (and it checked out in the log) we honored his card.

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Come One - Come All

To the DLARC Spouse Appreciation Night. We have room for about 30 more people to join us at the East Lawn Fire Co. on Saturday, March 21. The door will be open at 6:30. Everyone attending will be asked to bring a salad with dressing or a dessert. The club will supply the spaghetti, rolls, and butter. Roy, KA3MNY and his crew will prepare the meal. If you would like to attend, notify Roy on .70 or at 759-2674. He will also keep track of what everyone is bringing. (We don't need 30 chocolate cakes) See you all there.
de Ken, KA3EED

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A Ray of Hope

The response from the EMA application forms has been very good. We may once again have in place a strong workforce to deal with emergency drills and actual emergencies. This is one of the primary functions of all Amateur Radio Operators and certainly one of the reasons that the Federal Government lets us use the crowded airwaves. So if you have not received a form, contact W3PYF on .70 or at 252-2109. If you have not returned your form, please do so at your earliest convenience.

One correction on the letter that is enclosed with the application. Volunteers will be covered by WORKMANS compensation NOT UNEMPLOYMENT compensation.
de KA3EED

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DLARC W.A.S. Starting Date

The official starting date for the DLARC Worked All States award is March 5, 1987. 0000 Z. Entry forms will be available from Barry KU3X at March meeting.

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LETTER FROM THE PRESIDENT

IT SEEMS THAT SOME THINGS ARE BETTER LEFT UNSPOKEN..MY WRITTEN COMMENTARY WILL ADDRESS SOME OF THESE "UNSPEAKABLES".

WHENEVER TWO OR MORE PEOPLE GATHER AND TALK ABOUT THE SAME SUBJECT, YOU WILL ALWAYS HAVE DIFFERENCES OF OPINION. THE MERE FACT THAT PEOPLE EXPRESS THEMESELVES IS THE MOST IMPORTANT PART OF IT ALL..NO ONE PERSON IN THIS RADIO CLUB WILL EVER SEE A TIME WHEN ALL DECISIONS MADE ARE COMPLETELY PLEASING AND SATISFYING TO THAT INDIVIDUAL. IN A DEMOCRACY, MAJORITY RULES. THATS THE WAY IT IS. AND IF A PERSON DOES NOT LIKE THE "WAY IT IS" THAT PERSON SHOULD FIGHT TO CHANGE THE STATUS. CHANGE HAS NEVER BEEN ACCOMPLISHED BY WALKING AWAY. QUITTERS NEVER WIN THE GAME AND THEY ALLOW THE OPPOSITION TO WIN SIMPLY BY "SHOWING UP FOR THE GAME."

THE STRENGTH OF ANY DEMOCRACY IS IN THE COLLECTIVE VOICE OF ITS PEOPLE AND IF YOU AS AN INDIVIDUAL DO NOT AGREE, THEN YOU MUST VOICE YOUR OPINION, HOWEVER, PLEASE DON'T MAKE THE MISTAKE OF EVALUATING DATA AND MAKING A JUDGEMENT ON MATERIAL SUPPLIED BY A FEW. THE BEST PLACE FOR OPINION GATHERING IS TALKING TO THE MAJORITY, FOR THEY HAVE MADE THE RULES AND ARE PLAYING THE GAME. THE SECOND BEST PLACE FOR OPINION GATHERING INFO IS READING YOUR NEWSLETTER!

THE OFFICERS AND BOARD OF DIRECTORS OF DLARC ARE TRYING VERY HARD TO RUN THE BUSINESS OF THIS CLUB TO MAKE IT ENJOYABLE AND FUN FOR EVERYONE. YES, WE HAVE MADE SOME MISTAKES, AND HAVE LEARNED IN THE PROCESS. WE HAVE LEARNED MUCH TO PASS ON TO FUTURE BOARDS OF DIRECTORS. PROCEDURAL THINGS MOSTLY, AND THIS EDUCATION AND SUBSEQUENT CHANGES CAME ABOUT FROM MEMBERS EXPRESSING OPINIONS!!

AS PRESIDENT, I WOULD LIKE TO ADD THAT THE BOARD OF DIRECTORS OF THIS CLUB HAS ALWAYS MADE DECISIONS WITH THE TOTAL MEMBERSHIP OF THE CLUB IN MIND. YES, WE ARE "RUNNING THE CLUB", THIS IS WHAT WE WERE HIRED TO DO.. BY THE WAY, WHEN IS THE LAST TIME YOU "THANKED" AN OFFICER FOR BEING JUST THAT. THEY ARE ALL "VOLUNTEERS".....REMEMBER!!!

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IF builders built buildings the way
programmers wrote programs,

THEN the first woodpecker that came along
would destroy civilization.

Gerald Weinberg

Secretary's Report for February

The February meeting was held on Feb. 5, 1987 with a packed room in attendance. If you weren't there, here's what happened. The following committees reported.

Social- Spouse appreciation nite (formerly Ladies Nite) is being planned for late March. See this issue for where and when.

Technical- The repeater antenna has been ordered at the price of $550.00. Delivery is expected in 2-3 weeks.

Activities - The DLARC WAS program will begin as soon as the WAS certificate is printed. A date will be announced at that time and all contacts must be made after that date. Log books (no QSL cards) are to be submitted to Barry KU3X for the certificate. This certificate is available only to club members. The February contest schedule was announced along with requests from members to indicate their interest in contesting, so that we may better serve those interests.

The ICOM 2AT's and accessories have been ordered and purchased with the monies from the estate of Bruce Cope, KB3LF. Delivery is expected in 2-3 weeks.

Field organization appointments are available for the positions of Public Information Assistant and Assistant Technical Coordinators. Interested persons should contact Kay Craigie KC3LM.

A complaint was heard from Wally W3YXS concerning club expenditures and allocations of monies without the knowledge of the entire membership. He requested any major purchases be announced in the newsletter before voting is cast on the expenditures. Discussion followed, members were reminded to check their newsletters to remain up to date on business involving the club.

A suggestion to form a committee to help disabled area hams was made by Chuck KC3SM.

A request was made for contributions to the Schuykill Repeater Group to aid in the repairs of damages to their repeater after high winds caused heavy damage. Contributions can be given to Blair K3YD and a club donation will be discussed at the March meeting.

Following the club meeting, a video was shown on Packet Radio.

My thanks to Bob W2CCE for preparing the minutes for the January meeting in my absence.

de Diane NB3L

IF WE ARE GONNA LOSE IT, LETS FIGHT.
by Clarence W3PYF

The following ARRL bulletin was received on packet on Sunday February 15 and it could be one of the most significant changes in the works for Amateur Radio operators. This will be one of the first times that the FCC has bowed to commercial interests. It is important that those of you can, write to our congressmen and senators in Washington and express your thoughts. This can be very significant, even if you do not use the 220, band as it will become much more popular as the novice enhancement program gets underway this month.

Below is the ARRL Bulletin as received and the comments by Gordon, N2DSY can show where it will be needed.

QST DE W1AW
HR ARRL BULLETIN NR 16 FROM ARRL HEADQUARTERS
NEWINGTON CT FEBRUARY 12, 1987
TO ALL RADIO AMATEURS BT

ON FEBRUARY 12, THE FCC RELEASED A NOTICE OF PROPOSED RULEMAKING, GENERAL DOCKET 87 14, THAT PROPOSES TO ALLOCATE 220 TO 222 MHZ ON AN EXCLUSIVE BASIS TO THE LAND MOBILE SERVICE AND 223 TO 225 MHZ EXCLUSIVELY TO THE AMATEUR SERVICE. ACCORDING TO THE FCC, THE 220 TO 225 MHZ BAND IS UNDERUTILIZED, AND THAT THE LAND MOBILE SERVICE HAS NEEDS THAT CAN BE MET IN THIS REGION OF THE SPECTRUM.

THEREFORE, THE COMMISSION IS PROPOSING THAT THE LOWER 2 MEGAHERTZ, 220 TO 222 MHZ, BE REALLOCATED ON A PRIMARY BASIS TO THE LAND MOBILE SERVICE FOR BOTH GOVERNMENT AND NONGOVERNMENT OPERATIONS AND THE EXISTING PRIMARY ALLOCATIONS TO THE AMATEUR, FIXED AND MOBILE SERVICES BE DELETED. ACCORDINGLY, THE FCC PROPOSES TO ALLOCATE THE REMAINING 3 MEGAHERTZ, 222 TO 225, TO THE AMATEUR RADIO SERVICE ON A PRIMARY BASIS.

COMMENTS ON THIS PROPOSAL MAY BE FILED WITH THE FCC ON OR BEFORE APRIL 6, 1987. REPLY COMMENTS MAY BE FILED ON OR BEFORE APRIL 21, 1987. SEE THE ARRL LETTER AND QST FOR FURTHER DETAILS AR

NOTE: THE FREQUENCY SPREAD IN LINE 3 IS AS RECEIVED AND CONFLICTS WITH THE SPREAD IN THE NEXT TO AND LAST LINE OF PARAGRAPH 2, ALSO AS RECEIVED. THE LATTER SEEMS TO BE THE CORRECT SPREAD.

The impact of this proposal, if enacted, is far reaching into the heart of Amateur VHF/UHF operations.

This move by the FCC would be damaging to the Amateur Packet Network. Most message traffic is moved between message systems on the 220 band, specifically on 221.01, 221.11 and other channels below 222.0 MHz. In addition, many wideband trunking systems (+/-50 kHz) have been set up, or are being installed at the bottom of the band using 220.55, 220.65, 220.75, 220.85, 220.95 MHz.

Major reasons for using the 220 band for Amateur Radio systems have been its propagation characteristics, which are similar to that of the 144 - 148 MHz band, and to avoid adjacent commercial bands which are often in use at the same sites as Amateur systems.

In its proposal the FCC suggests that current Amateur operations below 222 MHz could move to the 222 - 225 MHz spectrum. In major markets around the country the 222 - 225 MHz spectrum is fully populated by FM repeaters and simplex operations. Similarly, these same markets have a large amount of activity below 222 MHz creating a "no place to go" situation. This could force use of the spectrum into an "FM voice only" mode causing hardship to other users who have packet operations, inter-system voice links, and CW/SSB nets to lose access to the band.

Another scenario would suggest that we could do away with some voice repeaters creating a huge loss of systems needed to support the volume of new Novices who will probably use the 220 MHz band as their primary FM voice allocation because of the propagation characteristics mentioned above.

In either scenario, contrary to what the FCC has suggested in its proposal, there WOULD BE A SIGNIFICANT FINANCIAL AND OPERATIONAL LOSS to Amateurs operating in, or depending on systems using the 220 - 225 MHz band.

This a case of the FCC handing Amateur spectrum over to commercial interests without any level of understanding of the impact of their actions on the existing user base.

We strongly urge that Amateurs contact their Congressmen and U.S. Senators regarding the disposition of this matter.

73, J. Gordon Beattie, Jr., N2DSY
Chairman, The Radio Amateur
Telecommunications Society

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I'd give my right arm to be ambidextrous.
GRAFFITI

The following story was downloaded by packet and is of extreme interest to all amateur operators. For the old-timer it may bring back some information lost in the old memory, for the newcomer, it is much to think about.
de Clarence, W3PYF.

Hints on TVI/RFI & CATV
by Chris Crosby KA2RAF

One of the many questions I have received since taking the job of ARRL TC/SNJ has been "why do I have TVI?" Well, there are some real obvious places to start in the investigation of TVI complaints. Most hams are well aware of the most common fixes for MINOR TVI/RFI disturbances but MAJOR disturbances do not go away with easy work. It takes time & thought to track the evil demon but it can be a little easier to find than you think.

Let us consider the case of transmit interference to a neighbor's TV. It is the most common and will bring a smile to some and tears to others.

The first place to start: The Station Ground. Is it ground or a ground radial?

More often than not, BEST is not EASY. If you use a cold water pipe, unless you are next to the well's final plunge or close to it, you are too far. The best is a ground rod and some heavy braid or stranded conductor. If you are a basement dweller, it will be work but you may consider a floor bore through the concrete. Hidden in a corner, it will pay for itself. You must have a good earth ground to run any large power amplifiers. Moist earth is preferable to dry sand. Take this into consideration when selecting a perspective ground rod site.Enough said, I know you all have heard it before, just some different thoughts found through my own experience.

The next thing to think about is: Antennas Aerial or Underground?

This can be a MAJOR consideration since you emanate and receive electrical energy from this point in a radio system. The first you have heard before. What is the SWR on the antenna? Is the antenna in any proximity to the receiving antenna? Does the complainant have an Antenna Preamp or Cable Television installed in their home?

Usually hams like to get the antenna way up high but we don't always have our dreams fulfilled. No 100'oaks, so we deal with the problem at a realistic 30-40' level and works great for wire antennas but having them parallel to telephone and cable runs has been found to be a Trouble Zone! A typical situation is a 160 Meter "V" next to a neighbor's telephone run. Moved one leg of the antenna and the interference was gone.

I am going to explain CATV or Cable in finer detail since a MAJORITY of past instances have been related to cable television installations. I have assisted many people with regard to this facet of interference. I have also worked in the CATV industry,therefore, I have a lot of hints to share with you.

If the complaint comes from someone with cable, is it overhead or underground entry? They both have the same characteristics but the plan of attack is different in each instance. All cable systems are subject to massive leakage. If our stations had 1000's of cable connectors, they would leak too! Think of what cable is: a matrix of RF cable, amplifiers and signal splitters to complete a signal path. Ahh! think of it as a giant RF swiss cheese! The problem is that if the cable system leaks out signals, we can leak in signals as well. Open shields and oxidized connector's are commonplace in the CATV industry because of the lack of Good Installation Practice. This is present in almost ALL above-ground systems. Underground systems are less prone to this problem since they use aluminum hardline and better quality connectors as opposed to aluminum foil coax and tinplate connectors in above ground systems.
Once your signal enters the system, it is amplified & amplified & amplified! Everyone's TV is different but all you need is one guy who don't want to hear why his $22 TV can't compete with your "!@#$%&*&%$#@! radio!" Cable TV companies are just as liable for their transmissions as we are but we are easier to blame. You must make sure your cable company is clean & tight or you stand to loose your credibility as a ham! If you have a 2 meter or 220 MHz handheld and an external antenna(preferably directional), please try this:

1. Connect your handheld and antenna so that you can easily take it outside.
2. Tune to the picture carrier frequency(*) +or-30 KHz(depends on local company). The frequencies are:

Cable Channel	Video Carrier	Color Carrier	Sound Carrier
E	$145.250 MHz	148.830 MHz	149.750 MHz
J	217.250 "	220.830 "	221.750 "
K	$223.250 "	226.830 "	227.750 "

* - Denotes places where a 30 KHz AM carrier can be found in the Amateur bands. All other frequencies for information ONLY

If you tune to (*) frequencies and hear a wide, open carrier, you are hear- ing the cable company's signal leaking from somewhere. By using the directional antenna, you can 'DF' the source(s) easily using an attenuator if necessary. If you detect and note leakages, Please call your local company and MAKE SURE THEY SEAL THE LEAK! I have heard pro & con on Field Engineers of such companies. Be POLITE and tell them you are a ham and you have found some leakage. You may be asked to or find a chance to demonstrate this method for them and get it fixed immediately. Some companies have leak detectors but never use them. In some instances, the detectors will not be believed by the techs because they go off so easily. That will be your que' to show them it is TRUE!

If you tune to (*) frequencies and hear nothing, don't be depressed, this is one you won't want to hear!

Be very careful not to think this is the only reason you have TVI/RFI but a well informed operator is the best defense in case the finger points at you. I do not lay all the blame on the above subjects, however, this article is written to expose some facts which have been ignored or hard-to-find. If you have tried the above and reside in the Southern New Jersey ARRL Section but haven't had any luck, please contact me by mail or packet:

Mr. Chris Crosby KA2RAF
83 Shady Lane Drive
Lakewood, NJ 08701
-or-
KA2RAF @ NN2Z

DLARC Classified Ads

Heathkit SB-102 w/power supply, Fox-Tango 400 hz filter, Turner 254 microphone, extra tubes (including finals), VFO drive belts.
CONTACT: Dave N3DRE at 868-8080

DRAKE R4 - T4XB - MS4 combo. 80-10m . Capable of full 160m band with addition of 1 crystal. Very Good Condition. $395
CONTACT: Ken Field, KA3EED at 759-6306 or on .70

Yaesu FT-101ZD Mark II. Yaesu FV-101Z Ext. VFO. Shure 526T Desk mike.
CONTACT: Don N3FEA at 759-3670 after 3 PM.

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--- WANTED ---

Help for Charlie, KC3SM to teach a group of handicapped people Ham Radio. A couple hours a week would help a great deal both for these prospective Hams and for Amateur Radio.
CONTACT: Bob, KU3K or Charlie, KC3SM on 146.70

Donations for the Schulkyll Amateur Radio Association (SARA) who, in the beginning of December, lost their tower and antennas for the W3EEK repeater (145.37). They have been running with a mobile antenna on the radio building since then and the DLARC would like to help them get back up in the air again. Reach deep in your checkbook and do whatever you can for them. After all donations are collected, they will be sent to the SARA. Make your checks payable to the DLARC and send them to :

Blair Bates K3YD
3221 Farmersville Road
Bethlehem, PA 18016

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CONTEST CORNER
by Barry, KU3X

MARCH 7-8
ARRL International DX Contest - PHONE
(info. Dec. QST page 80.)
MARCH 12
W1AW Qualifying Run 10-35 WPM
MARCH 14-15
Maine QSO Party
Iowa QSO Party
Zero District QSO Party
MARCH 17
W1AW Qualifying Run 10-35 WPM
MARCH 21-22
YL - ISSB QSO Party (PHONE)
BARTG Spring RTTY Contest
MARCH 28-29
CQ W.W. Prefix Contest

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Other Dates of Interest

MARCH 20, Friday - W3OI Auction 8:00 PM
146.94 Repeater for info.
MARCH 26, Thursday - Forest Lodge/VFW 7:00 PM
Annual Auction. Old Rt. 309 just North of Sellersville
APRIL 5, Sunday - Lancaster Hamfest

PROFILE OF AN OLD-TIME AMATEUR RADIO OPERATOR

by Clarence, W3PYF

WHO is an OLD TIME AMATEUR RADIO OPERATOR??

An Old Time Amateur Operator is one who was here before the Pill and the Population Explosion. We were here before television, penicillin, polio shots, anti biotics and frisbees. Before frozen food, nylon, dacron, Xerox, Kinsey, radar, fluorescent light, credit cards, and ball point pens. For us timesharing meant togetherness, not computers; a chip meant a piece of wood, hardware meant hard wear, and software wasn't even a word. Co-eds never wore slacks. We were before pantyhose, and drip dry clothes, before ice makers and dishwashers, clothes dryers, freezers, and electric blankets. Before Hawaii and Alaska became states. Before men wore long hair and earrings and women wore Tuxedos.

We were before Leonard Bernstein, yogurt, Ann Landers, plastic, the 40 hour week and the minimum wage. We got married first and then lived together. How quaint can one be?

Closets were for clothes, not for coming out of, bunnies were small rabbits and rabbits were not Volkswagens. We were before Grandma Moses and Frank Sinatra and cup sizing for bras. Girls wore Peter Pan collars and thought cleavage was something butchers did. We were before Batman, Rudolph the Rednosed Reindeer and Snoopy. Before DDT, vitamin pills, disposable diapers, Q.E. One,and Jeeps. Pizza, Cheerios, instant coffee, decaffeinated anything, and McDonalds's were all unheard of. We thought fast food was what you ate during Lent. We were before Boy George, J. D.Salinger, and Chiquita Banana. Before FM radios, tape recorders, electric typewriters, word processors, MUZAK, electronic music, disco dancing, and that's not all bad!

In our day cigarette smoking was fashionable, grass was for mowing, Coke was a refreshing drink and pot was something you cooked in. If we'd been asked to explain CIA, Ms., NATO, UFO, NFL, JFK, ERA or IUD we'd have said alphabet soup.

We are today's OLD TIMERS a hardy bunch when you think of how OUR world has changed and the adjustments WE have had to make!

REVISED from a story in Keen Ager News

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NOVICE & TECHNICIAN PRIVILEGES EXTENDED

by W3PYF, Clarence

According to ARRL Bulletin 13, issued on February 11, as of March 21 0001 UTC the so called Novice Enhancement program will take effect.

What will it mean? First, holders of Novice and Technician licenses will be able to operate from 28.1 through 28.3 Mhz in the 10 meter band using CW and Digital Modes. This will include teletype. The area from 28.3 to 28.5 will have CW and all types of Voice Modes permissible. Novice and Technician control operators will be limited to 200 watts output in this band, but other licensees are not similarly limited.

Novices as of that date will now use up to 25 watts in the 222.10 to 223.91 MHZ band with all authorized emissions, and also use up to 5 watts in the 1270 through 1295 MHZ Band with all authorized emissions.

There is one exception, no stations at which the control operator or station licensee holds a novice class operator license shall be in repeater, auxiliary or beacon operation.

Two examiners will now be required to administer future novice exams, which shall consist of 30 questions. FCC Form 610 will be revised to provide for certification by two VEs.

Present holders of novice and technician licenses will be grandfathered into the new privileges.

There will be a change in the testing, Element 3 is divided into two parts, 3A and 3B, with each licensees will be given credit for having passed both elements. In the future, upgrades to technician will only have to pass element 3A and future technicians upgrading to general will have to pass both Elements 1B, 13 WPM, and Element 3B.

****** <W3PYF> ******

Government Specs. for Pipe Construction

All pipe is to be made of a long hole surrounded by plastic or metal centered around the hole. All pipe is to be hollow throughout the entire length. Do not use holes of different length than the pipe. The inside diameter is not to exceed the outside diameter, otherwise the hole will be on the outside.

Be sure to specify whether you want level, uphill, or downhill pipe. If you use downhill pipe for uphill, the water will flow the wrong way.

*** ARNS ***

The Problem with Digipeaters
by Tom Clark, W3IWI

I am sitting here in the shack feeling very frustrated. I am watching the activity on 145.01 (although the problem is just as severe on 145.05 or any of the other frequencies in use in the area) watching WA4xxx tying up the frequency for the greater portions of Northern VA, MD, WVA and EPA, trying to connect with a BBS in Pittsburgh using SIX(!) digipeaters. He is having no luck and undoubtedly is wondering why. The basic answer is very simple:

Packet radio doesn't work thru more than 2 or 3 digis!!!! Oh yes, I hear you saying "You are wrong -- the AX.25 protocol permits me to use up to eight digis!". That is a true statement, but just because something is permitted doesn't mean it will work. And here is why -- Assume that you are a station ABC at one end of a long string of digi's trying to send out a packet through digis DEF, GHI, JKL, MNO, PQR, STU and addressed to station XYZ (fake calls are used to protect the guilty!). Thus your intended path is expressed by the following connect command: CONNECT XYZ VIA DEF, GHI, JKL, MNO, PQR, STU. Your outgoing packet then should take the path ABC=> DEF=> GHI=> JKL=> MNO=> PQR=> STU=> XYZ. At every step along the way, there is a finite chance that the packet is going to be hit by QRM. My observations are that on the very best paths about 5% of packets get clobbered on any single hop. For the example we are using, this means that 95% of the ABC => DEF packets make it to DEF, and the 95% of them successfully navigate the DEF => GHI path, and so forth. Thus at the destination XYZ we have .95* .95* .95* .95* .95* .95* .95* =.70 Only 70% of the data you sent out makes it all the way to XYZ.

AX.25 packet protocols require XYZ to send you back an "ack" (acknowledgement) packet which then has to unwind itself back thru the same route. The same probability arguments apply and 70% of the acks get to you. Thus on a high-quality 95% link thru 6 digis, only .7 * .7 = .49 of your packets are successful thru 6 digipeaters! A Las Vegas gambler could make a very good living on 51/49 guaranteed odds.

But wait -- there's more! We took 95% as the probability of each link working. I know of a very few paths that are that good except perhaps at 4 AM when nobody else is on the frequency. Links you tend to think of as "pretty good" probably have 10-20% of your packets trashed on any given hop. And I know of a number of links where the probabilities are no better than 50%. For the general case, if P is the link probability on all links, and N digipeaters are involved, then PA = the aggregate probability of success will be given by the formula PA = (P) ** (2N + 2)

Every time your packet gets clobbered, you try again to push it thru. If 50% of you packets get hit, on average you will try/retry your packet 2 times. In general the number of tries/retries that will be required is TRIES = 1/PA But wait -- there's more!!!

You and everybody else who is on packet spent a lot of money to be able to ragchew and send messages (or data, or nudie pictures, or ????) at 1200 baud. But the packet gurus lied to you. Your data doesn't really flow at 1200 baud -- there is some overhead associated with headers that are appended to each and every packet you send, plus some time wasted in getting that all important ACK back, plus some time for your radio to change from transmit to receive and back to transmit, plus time waiting for a hole to open up on the channel. At best you can transmit say 600 baud. But for every digipeater you use, another set of similar delays is added at each step along the way. So if you had a perfect set of links thru N digis, your average baud rated would drop to something like DIGIPEATED BAUD RATE = 600 / (1 + N)

Each time your packet gets clobbered, it is retried, until it gets thru (or until you time out). So the real effective baud rate is slowed even further until it is given by this formula EFFECTIVE BAUD RATE = 600 * PA/(1 + N) = 600 * [(P)**(2N+2]/(1+N)

Every time you take over the channel with an unsuccessful packet, somewhere along the chain you have prevented some other hapless individual from using that time slot. YOU HAVE HOGGED THE FREQUENCY!!!

We might express your channel usage efficiency as the ratio of the baud rate that you actually achieved to the baud rate you would have achieved if you had simply used a piece of wirre, i.e. EFFICIENCY = EFFECTIVE BAUD RATE / 1200

More instructive than seeing this factor as a simple numberical ratio is to express it in dB as what I like to call the "Hog Factor" -- HOG FACTOR = 10 log (EFFECTIVE BAUD RATE/1200) This factor even includes the 3 dB "loss" for a perfect AX.25 link due to the overhead we discussed earlier.

So far I have only used a few numbers

to introduce the concepts. The following four tables tell the whole story. I have worked out a number of cases for links ranging from perfect (P=1.0) to pretty scuzz-ball (P=0.50) and for 0 thru 8 digipeaters. My experience shows that P=0.95 is a pretty rare case, but outside of "prime-time" hours P=0.90 is fairly typical. In the evenings when everybody is on the channel P=0.80 is not unusual. Paths involving "DX" digipeaters (like K3LZ-1 or WB4APR-6 or WA4FRB-3) degrade to P=0.6 or P=0.5!

My advice to all users is that they not even attempt to use a path for which PA<0.5 (or on average >2 tries/retries). I have put those "bad" combinations in parenthesis to highlight them. Unless you have an exceptional path (better than P=0.95), these tables clearly show that using more than one or two digipeaters is an exercise in futility which will make you very unpopular with your peers ('Hog Factor' poorer than - 10 dB) and drive you to distraction (with effective baud rates slower than about 100 baud).
Have I proven my premise from the start of this tome?

Link Success Probabilities Per Hop

N=	P=1.0	P=.95	P=.90	P=.85	P=.80	P=.70	P=.60	P=.50
No. of Digis	**PA = Aggregate Probability of Success**							
0	1.0	0.90	0.81	0.72	0.64	(0.49)	(0.36)	(0.25)
1	1.0	0.81	0.66	0.52	(0.41)	(0.24)	(0.13)	(0.06)
2	1.0	0.74	0.53	(0.38)	(0.26)	(0.12)	(0.05)	(0.02)
3	1.0	0.66	(0.43)	(0.27)	(0.17)	(0.06)	(0.02)	(0.00)
4	1.0	0.60	(0.35)	(0.20)	(0.11)	(0.03)	(0.01)	(0.00)
5	1.0	0.54	(0.28)	(0.14)	(0.07)	(0.01)	(0.00)	(0.00)
6	1.0	(0.49)	(0.23)	(0.10)	(0.04)	(0.01)	(0.00)	(0.00)
7	1.0	(0.44)	(0.19)	(0.07)	(0.03)	(0.00)	(0.00)	(0.00)
8	1.0	(0.40)	(0.15)	(0.05)	(0.02)	(0.00)	(0.00)	(0.00)
	Average number of Tries/Retries before Success							
0	1.0	1.1	1.2	1.4	1.6	(2.0)	(2.8)	(4)
1	1.0	1.2	1.5	1.9	(2.4)	(4.2)	(7.7)	(16)
2	1.0	1.4	1.9	(2.7)	(3.8)	(8.5)	(21)	(64)
3	1.0	1.5	(2.3)	(3.7)	(6.0)	(17)	(60)	(256)
4	1.0	1.7	(2.9)	(5.1)	(9.3)	(35)	(165)	(1,024)
5	1.0	1.9	(3.5)	(7.0)	(15)	(72)	(459)	(4,096)
6	1.0	(2.1)	(4.4)	(9.7)	(23)	(147)	(1,276)	(16,384)
7	1.0	(2.3)	(5.4)	(13)	(36)	(301)	(3,545)	(65,536)
8	1.0	(2.5)	(6.7)	(19)	(56)	(614)	(9,846)	(262,144)
	Equivalent System Baud Rate							
0	600	542	486	434	384	294	216	150
1	300	244	197	157	123	72	39	19
2	200	147	106	75	52	24	9	3
3	150	100	65	41	25	9	3	1
4	120	72	42	24	13	3	1	0.1
5	100	54	28	14	7	1	0.2	0.02
6	86	42	20	9	4	1	0.1	0.01
7	75	33	14	6	2	0.2	0.02	0.001
8	67	26	10	4	1	0.1	0.007	0.0003
	Channel "Hog Factor" in dB							
0	-3	-3	-4	-4	-5	-6	-7	-9
1	-6	-7	-8	-9	-10	-12	-15	-18
2	-8	-9	-11	-12	-14	-17	-21	-26
3	-9	-11	-13	-15	-17	-21	-27	-33
4	-10	-12	-15	-17	-20	-25	-32	-40
5	-11	-13	-16	-19	-22	-29	-37	-47
6	-11	-15	-18	-21	-25	-33	-43	-54
7	-12	-16	-19	-23	-28	-37	-48	-60
8	-13	-17	-21	-25	-30	-40	-52	-67

Processor Mods for the Yaesu FT-727

Here is a way to get the Yaesu FT-727 Dual Band Talkie out of the band in both UHF and VHF both lower and higher than normal. Although illegal it will transmit as well, and all is done by keyboard entry, no mods.

When and if you take the battery off and turn the memory backup switch off for a couple of seconds, the talkie loses all memory. Put the battery back on and turn on the talkie, you will notice that the display turns on all segments for 1 sec then goes blank. At this point the processor is looking for a 6 digit code. The factory programming code is 443300 and if you enter those digits the talkie will return to normal again. However if you enter the code 601111 you will notice the talkie will come up in a different mode. At this point you can, and must input 5 digits instead of 4 to dial up a freq.

Example; In the normal mode to get freq 147.06 you would enter 7060 then hit the dial button.

In the expanded mode you would enter 47060 to get the 147.06 because your display now takes and controls the last 5 digits of a freq. instead of the normal 4.

Thus, entering the freq. 50450 would give and display 150.450 mhz and 61650 would give you 161.650. And yes this works on the 440 band too. The limit on the 440 band seems to be 430 mhz to about 463.500 or so.

Drawbacks:

The only drawback is on 440 you are stuck with 10 or 20 kc steeping. Thats OK for 444.1 or 462.050 but 444.255 would be either 444.250 or 444.260 The display will tell you if you try to enter something using 5 kc, it will automatically change to a 0 instead when you hit the dial button.

Other than getting used to entering 5 digits instead of 4 thats it. Oh and don't forget to re-enter into the shift memory the fact that you want 5.0 mhz offset for uhf and 0.6 mhz offset for vhf. In the expanded mode it comes up with both offsets 0 but you only have to enter this once as it will never forget them because of the lithium backup.

**** from Compuserve Hamnet ****

***

DJIBOUTI - J28EO on 14,015 KHz from 1900 UTC. QSL Rafik via F6FYD.

***

E. CAROLINE IS. - KC6IN, in the ZL2AAG Net on 7182 KHz from 0800 UTC, will be on leave from the Island for six months beginning next week. Hold your QSL card to his CBA until he returns.

***

E. GERMANY - Signing Y34K, the Ilmenau Club's contest team will be an entry in the CQ WW 160m SSB Contest on 20-22 Feb. QSL via Y24UK.

***

EGYPT - SU1ER has become a daily participant in the W7PHO Family Hour on 14,227 KHz from 1800 UTC. QSL to: Ezzat Ramadan, Box 78, Heliopolis, Cairo, Egypt.

***

FAROE IS. - 18-28 Feb. OY/DK9FE, on at least 10-40 with cw and ssb, will be an entry in the ARRL DX CW Contest on 21-22 Feb. QSL to his home CBA.

***

GIBRALTAR - ZB2GR is near 14,295 KHz weekdays from about 1300 UTC. QSL to his CBA or via the ZB2-Buro.

***

GREENLAND - OX3LX, readying 40-meter capabilities, is on 14,240-50 KHz daily from 1700 UTC. QSL "Bo" via OZ1DJJ.

***

KAMPUCHEA - XU1SS has resumed frequent appearances with DU9RG near 7088 KHz from about 1100 UTC. QSL via JA1HQG.

***

LORD HOWE I. - Now to 1 March. VK9LM by DJ5CQ, emphasizing 40 and 80 with cw and ssb. QSL Rudi via OE1ZL. ... K3NA, reported to have finally received his VK9 callsign, will be an entry in the ARRL DX CW Contest on 21-22 February.

***

MINAMI TORISHIMA - Now to 20 Feb. Just a few more days to catch Charlie, KA2CC on 10, 15 and 20 ssb. QSL to his CBA.

***

MONTSERRAT - Now to 4 April. VP2MDB by W2WSE with ssb on 10-160. QSL to CBA.

***

MONACO - 3A6E meets his QSL Manager, F9RM, on 3780 KHz at about 0730 UTC and is then QRV for your call.

***

ST. LUCIA - 19-28 Feb. Probably signing J6LTA - unless one of the new prefixes is assigned on their arrival - K6LTA and his XYL N4FKO, on their 8th annual DXpedition to the Caribbean, will lead a team that will include WE5P, W5PWG and NF5Z. They will be in the ARRL DX CW Contest on 21-22 Feb. Watch for them on cw, 25 to 30 KHz above the low ends of all bands, plus 1833, 3505 and 7005 KHz. They'll follow with a week or more on DOMINICA. QSL route(s) to be announced. (See over for special YL skeds).

***

ST. PETER & PAUL ROCKS - 20-28 Feb. ZYØSA on cw by PY1ZT and ZYØSB on ssb by PY1BVY - 10 to 160. QSL both via PY1BVY.

***

SO. FALKLAND IS. - VP8BFM likes 21,018-20 KHz - weekends - from 1400 UTC.

***

SYRIA (GOLAN HTS) - OE8HFL/YK near 14,216 KHz from 1900 UTC. QSL: OE Buro.

***

WALLIS I. - FKØAT/FW on 14,025-30 KHz from about 0130 UTC and on 14,250-260 KHz from 2200 UTC (mostly via Long Path). QSL to his home CBA.

All Amateur Radio Operators are invited to
participate in the DLARC Nets
on 146.70 W3OK/rpt.
The Nets are held on Sundays at 9:30 AM
and on Wednesdays at 7:00 PM.
The alternate repeater for these Nets
is 145.110 W3PYF/rpt.

****

The DLARC NEWS is the Official Publication
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1987
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CLUB MEETING NIGHT

All regular meetings of the D.L.A.R.C. are held
on the first Thursday of each month at 7:30 PM
in the Greystone Building at Gracedale.
Phone....759-2600

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