

# DIGITAL JOURNAL™

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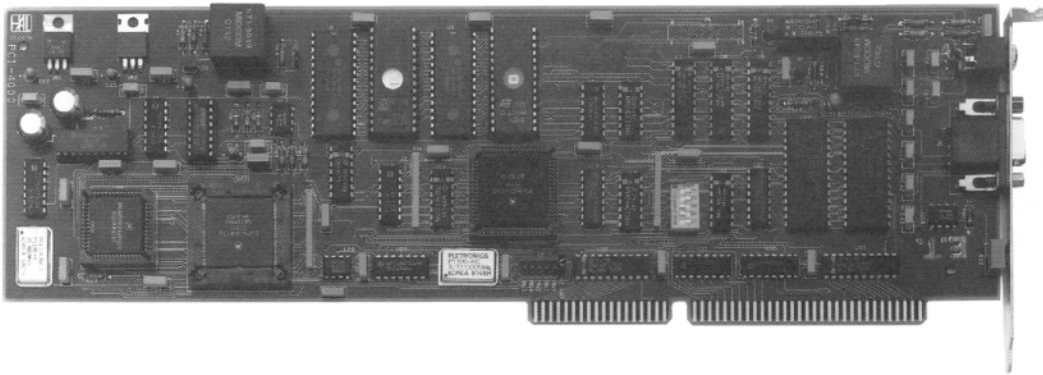
## Oh Wah Tah, What?



Six digital types stood in for all in attendance at this year's RTTY dinner and took the oath of the secret society of Oh Wah Tah (see story page 4). Standing in foreground with silly hats are: L. to R. Roy Gould, KT1N, Bob Blodinger, W4NPX, Jay Townsend, WS7I, Jim Mortensen, N2HOS, Bill Henry, K9GWT, and David Speltz, KB1PJ. In the background are the directors of the ceremonies: L. to R. Dale Sinner, W6IWO, (asst.), Frank Moore, WA1URA, (asst.), and Bob Foster, WB7QWG, (His Grossness) who officiated the initiation. Those seated at the table appear to be enjoying this humorous and entertaining affair.

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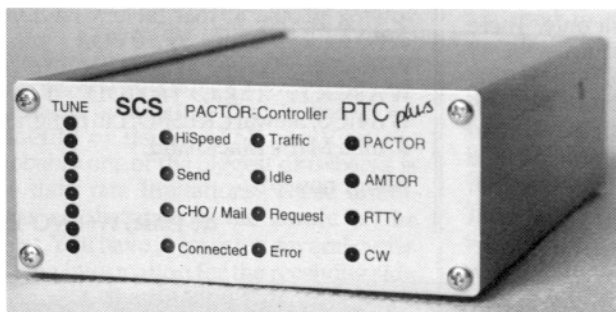
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## HITS & MISSES

Dale Sinner, W6WIO

Dayton Days & Dayton Nights

Dayton Days & Dayton Nights - sounds like the words to a song. To me Dayton this year was a song. So many friends to visit with, so much to see and do. It was an *extravaganza* .. without the music.

The festivities always start with a welcoming time on Thursday evening in the lounge of the Radisson. This year was no exception and the turnout was fantastic. Digital types from around the country and the globe were there to tell their tales, exchange greetings, have an eyeball QSO, swap tech tips, and so on. This gathering is always a great beginning for this popular weekend.

This year a new agenda was followed. Since the Hamvention does not officially open until Friday noon, Jay Townsend, WS7I, and Jim Jennings, KE5HE, arranged a number of sessions for Friday at the Radisson. Among the sessions was an ADRS forum conducted by Warren Sinsheimer, W2NRE, our President. Sessions were also held on DXing, Contesting, Digital introduction and others. All were well attended and I'm sure we can look forward to more of this type of session next year. Unfortunately, the DARC only allows limited time for our regular forum at the Convention Center, so this is an alternate way to obtain additional technical sessions for our group.

Transportation this year was not provided by the DARC, so we made other arrangements through the Radisson Inn. They were kind enough to help out and even though it was not the best, we did not have to take a taxi or thumb a ride to the arena. What will happen next year is unsure at this time. Hopefully, we will be able to welcome back the previous program.

Weather was a factor this year and Mother Nature blessed us with rain for two days. This made shopping at the Flea Market difficult but no doubt a lot of money still changed hands. There are no roadblocks strong enough to hold back a Ham looking for a bargain or some unusual item he cannot go home without. However, inside the Convention Center, the crowds made the atmosphere very sticky, but I am told buying was brisk.

Friday evening we enjoyed our usual comradery at the new larger hospitality suite provided by the hotel. A large crowd gathered throughout the evening for a chance to visit with old friends and

meet new digital friends. Sleep eludes us as we enjoy this once a year chance to eyeball and plan strategies for DXing and Contesting or have a friendly argument about Filters, TUs, Mods, Tech Tips, Software Programs, etc. that are of interest to the digital Ham. Missing though, were the discussions on 28ASRs, ribbon re-inkers, or tuning forks. Instead these sessions are now filled with high-tech topics that represent the state-of-the-art climate we live in today.

Saturday it is back again to the Convention Center for more serious shopping and bargaining. Saturday evening we all enjoy a great dinner together at the hotel. To add to the evening the Order of Ah Wah Tah was once again called upon. Six handsome digital hams (see cover) represented all present in the ceremonies. Upon completion of this solemn but silly rite, all in attendance were presented a certificate denoting their membership into this Order. For those not there or who have never seen this event, it is really not a serious affair. It is all in fun and is designed and executed for the enjoyment of those present only. There are no dues, officers, or requirements of any kind needed to belong. At no time will anyone be called upon to perform any duties. The entire affair is meant to entertain and add a little humor to the evening. If you ask what does Oh Wah Tah mean, the answer is nothing. But, if I were asked to give the name a meaning, I would say, "Oh Wah Tah Weekend!".

After dinner many can again be found back at the hospitality suite where more rumors and truths exchange. Some will leave the suite early because they must head home in the morning while others will stay late but plan one last trip back again to the Convention Center for a last minute buy and to attend the Digital Digest forum.

The Digital Digest forum was well attended on Sunday morning even though

our time slot was not the best this year. Our three speakers, Phil Anderson, W0XI, Peter Helpert, DL6MAA, and Peter Schulze, TYIPS did an outstanding job with their presentations. Our sincere thanks to all three.

By Sunday afternoon us digital types have given Dayton their city back as we head home with our new acquisitions and look forward to a few good nights of rest. But, as 1995 approaches our thoughts just naturally gravitate toward Dayton as we once again begin to make plans for the trek to our Ham Heaven and the home of Ham Fever.

### Summer Edition

In past years The RDJ did not published during the Summer months of June and July. This year that is being changed. The May/June issue (this issue) remains the same but there will be a July/August issue which will be mailed during July. In late August you will receive the September issue. From that point on the RDJ will be published monthly.

### Dayton Pictures

Throughout this issue you will find a number of pictures that were taken by Betsy, WV7Y, at the RTTY dinner and other places. One dinner picture did not come out and our apologies to the following people at that table: Crawford, WA3ZKZ, John, WA0VQR, Jane, WB0VPK, Dave, WB8MWG, John, WA8CKT, Taka, JA1JDD, Tony, WA4JQS, Stewart, KE5PD, Lib Long, and Anna Marie MacKeand.

All for now. 73

de Dale, W6IWO ■



Bob Foster, WB7QWG, acts out his part in Oh Wah Tah ceremonies



# DESIGN

Richard Polivka, N6NKO  
*No more toroids for a tone generator*

## TO ENCODE OR NOT ENCODE

That is the question. We, as amateurs, have used basically two transmission methods on VHF and higher bands. They have been Audio Frequency Shift Keying (AFSK) or Frequency Shift Keying (FSK). So, what is the big difference? The big difference is the word Audio. In AFSK modulation, the modulation information is carried via audio tones. One audio tone represents one logic state and another audio tone represents the other logic level. In FSK modulation, one transmitted logic state is represented as a discrete broadcasted radio frequency and the other logic state is represented by a separate, discrete broadcasted radio frequency.

Each of the aforementioned modulation methods have their pros and cons. Let's deal with AFSK modulation first. Sending and receiving audio tones is an easy process. Just send the audio tones into the microphone jack and pick off the received audio tones from the speaker jack. That is easy, as long as the transmitted audio is not overdriving the transmitter, causing splatter, and such splatter will not be appreciated by anyone. That is one of the benefits of using AFSK modulation. Probably one of the biggest drawbacks is the data rate limitations. These limitations are because of the nature of the beast. You have to transmit several cycles of tone information for the receiving side to decode. That situation limits the minimum size of the tone burst. Henceforth, that limits the maximum transmission speed. Another limiting factor is modulation bandwidth. The higher the data rate and modulation frequencies used, the more bandwidth that is needed to send the tones. That is why I have constantly said in the past to keep the transmitted tone level down. This helps keep the transmitted bandwidth within the accepted limits.

FSK modulation is distinctly different from AFSK. Where audio tones are sent to convey data in AFSK, discrete transmitted frequencies are used for FSK. As an example, regular AFSK packet uses 1200 Hz and 2200 Hz tones to convey the data on 145.09 MHz. Suppose I want to send that as FSK. To do so, I would not use the audio tones but instead use the straight data to control what RF frequency would be sent. I want to send a signal that has a maximum shift of 4 KHz

centered on 145.09 MHz. Since the shift is 4 KHz, the deviation from carrier center will be +/- 2.0 KHz. With that in hand, one data level would use 145.088 MHz and the other data level would use 145.092 MHz. The limits to data speed here are a function of channel frequency and frequency deviation. FSK modulation is simpler than AFSK but not as easy to implement. Where you have an audio tone generator for AFSK, you have to modulate the transmitted frequency directly for FSK. That usually takes building a varactor modulator to "rubber" the transmit oscillator. Another drawback to using FSK is that in order to transmit square wave data effectively, you need a large occupied bandwidth. A sine wave can be represented by a single frequency as where a square wave is a summation of sine waves consisting of a fundamental frequency wave and all of the odd harmonic frequencies of the fundamental at decreasing amplitudes. Since that would create massive amounts of splatter, the square wave is filtered by a low pass filter to minimize the needed harmonics that are used to reproduce the signal. This results in a rounded data wave being sent. In the more advanced FSK modems, the output signal is generated from a ROM lookup table and allows for compensation of individual modulation curves in the varactor modulator.

This article describes a modulator that will allow the MLT-3 code to be sent as a series of audio tones. There are a couple of ways to send the tones. One way is to have three individual oscillators and gate the appropriate audio tone to the output.

Nice and easy but sending phase discontinuous tones are not the best thing for keeping splatter down and the output spectrum nice looking and within the channel. The second option is to use a sine wave VCO. Most VCOs that are out there are square wave generators. There are some that are sine wave oscillators but they are not easy to get. To that end, I have included a VCO that, with a little tweaking, will work for our purposes. This is a variation of a standard phase-shift oscillator where the two resistors in the phase shift network are replaced by FETs Q2 and Q3. This oscillator will stay phase continuous and may exhibit some output level shifting. The level shifting should not present a problem for this system. This VCO is shown in the circuit below. Magnify circuit for better readability. All parts can be found locally or through mail order.

The adjustment of the oscillator involves setting R10 and R5 to achieve the results needed. You need a low tone of 1200 Hz and a high tone of 2200 Hz. The middle tone should be around 1700 Hz.

I have left out several items, such as an output buffer and output adjustment. That is because the circuit will have to be tailored to your radio.

## IN CLOSING

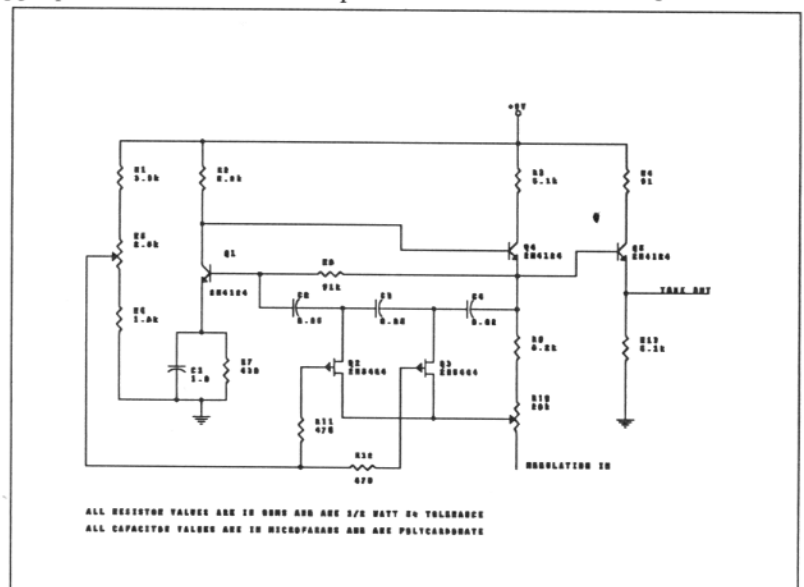
We have so far covered the data encoder and the modulator for the project. The art of Amateur Radio needs to be elevated and constant improvement will result in raising our standards. This is my contribution. Next month, we will cover the demodulator, which will be able to decode AFSK and FSK modulation. 73 for now.

de Richard, N6NKO ■

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## Part III, You Can't Get There From Here

A Mini-DXpedition to VP8

by Crawford MacKeand, WA3ZKZ, VP8CMY

Next day the bands seem dead, dead, dead. One QSO all day with Bill W8ZZO in Ohio. Bob is not home for lunch. He works at the Cable & Wireless Ltd. satellite station just down the street, which provides VP8 with its commercial communications, and it seems that there are problems with some of the signal levels in the earth station. I head for town to try and set up a flight on the Falkland Island Government Air Services FIGAS to anywhere they may have space and do some shopping for woolens for the family, and some film and books for myself. A few more contacts, G, ON, DF and PA, but there is horrendous TVI in the evening when the bands are hopping, so hamming is deferred until diagnosis and repair is practicable. I drive around Stanley, a little braver now, and watch the Chilean plane fly out. Rozz decides to take me for a walk, and we cross the track at the back of the yard, over the fence for the racecourse and up Sapper Hill. Fortunately I have already visited the Royal Engineers' office in town and obtained a free copy of the minefield map, a necessary reference for anyone planning to do any walking in the Stanley area. Clearing the plastic mines left by the invaders when they tried to secure Stanley as a base, seems to present a thus far insuperable problem and there are still very many fenced off areas. There is a monument on the top of Sapper Hill to the men of the Royal Engineers who fell here and elsewhere in 82. Remains of British and Argentine positions, one dugout with the remains of a groundsheet still flapping in the wind, are visible on the hillside, which is now topped with a VHF station in the island's internal telephone network.

A cruise ship, the "Ocean Princess", is in the harbor and groups of tourists in their

issue red jackets are wandering around. I feel like an old hand! But as a result there is no space for dinner at the Upland Goose Hotel so we put that off for a few days. The bands are better in the evening ... WWV says the flux is 160 and an A index of 6, but the TVI is worse. Bob thinks he has water in the coax where it goes under the track at the back of the yard. Saturday morning he decides to unearth the problem and finds a badly corroded connector that looks as if it has lost a battle. A one man job, so I head off to the harbor and take pictures of some of the old ships wrecked in the harbor. The "Jhelum" is the oldest, a wooden sailing ship from the early 1800s, now just a hulk. At the other end of the harbor in the area curiously called the Canache, is the "Lady Elizabeth", an iron sailing ship of the late 1800s, still with her masts and some spars. Rain starts to fall and sets in for a steady session. It's still windy, but then it's almost always windy here, out in the South Atlantic. Hence the multiplicity of guys on the Cushcraft. The PL259 is repaired and sure enough the TVI has gone. I work a few German stations in the afternoon.

This evening we have guests ... another Bob, the DAP manager in Stanley and his Chilean XYL, who it turns out was in the seat in front of me on the way over from Punta. My Spanish comes in handy again as Ellie's English is rusty. I think she must be half of the Spanish speaking population. Dinner is a work of art, but Rozz does not appreciate it as she is banished to the porch. No time for more hamming tonight.

Sunday is Land Rover day. A sick transmission, so Bob replaces the prop-shaft with a borrowed one and will repair the ailing article at a later date. The bands are poor another is indicated. Out beyond



Jhelum (circa 1800s)

Stanley Airport is an old lighthouse, now disused and Bob takes me to the camp out over the Diddle-Dee and dunes. What a field day site this would be! A promontory out into the ocean, an old lighthouse to string the long wires. And no bugs. I think they are all blown away before they get any chance to bite.

Next day Bob suggests I take the Land Rover up the Moody Brook track. Moody Brook is notable for three things. It supplies water to Stanley. It is still heavily mined, and is the former site of a Royal Navy spark transmitter from the first World War. Fortunately the mined areas are away from the old station. The tower bases are still there, and I can still see where the little steam railway ran that brought coal for the steam engines for the generators, all the way from the Navy warehouse and pier on side of the inner harbor. The station was built in about 1915; it must have been 100 KW of spark, and very few records exist of the then super secret installation. By 1922 it was closed as being already hopelessly out of date. Not much else remains except foundations and some of the ground wires. I wish I could have seen such an enormous spark station in operation ... but I am also glad that the QRM is no more.

I push on up the track which is an old route out of Stanley, and a strategic one in 1982. The concrete paving stops before the little bridge at the radio station and from there onward the potholes get bigger, deeper, longer, wetter and wider. The remains of one of the old telephone pole lines parallels the road and then heads up over Wireless Ridge to the North. I park the truck and walk up the side of the valley, after careful consultation with the minefield map, of course. The pole route with its single copper party line and earth return has been superseded for several years now by VHF radio links but it and the Wireless Station are mute reminders of our old technologies. I find many strange cushion plants and other growing things, but soon head back to the Moody Brook track. However, not much farther and I decide to give it best, when I reach a pothole which I swear was bigger than the vehicle and with no place to turn around or go around. Bob says to me later, "You should have gone on through, the old Rover will go up the side of a house", but then it is his truck. I return and we go out for dinner. Good, even to cheesecake. And then the bands are pretty good. I QSO with Tony WA4JQS/VP8BZL of the VP8SSI team, and he sends his regards to the VP8 gang.

A regular day. Bob and Danuta at work. Rozz and I intent on our important concerns. The bands are off again and it is a Monday morning, so I finish a thriller and head into town to look at a shop that

had eluded me and see more of Stanley. The shop produces some postcards and I take many photographs of the old ships in the Canache. "Gentoo" and the "Golden Chance" besides the "Lady Elizabeth". Some of the best shots at the water's edge ... careful about those mines again. The old ships are huddled together where they were abandoned so many years ago. "Lady Elizabeth" holed on a rock but used as a warehouse till the 30s. "Golden Chance". What a hopeful name for an old second or third hand North Sea fishing boat. I suppose it's only in remote spots like this where the cost of scrapping would be so high that these few relics remain.

By now it looks as if no suitable FIGAS flight will come up, so I will get another look at the islands on my flight out. My official license arrives in the mail with a VP8 callbook which is Government issue. Also we query the CE3GDN mailbox and there's a message from Charlie AE3H back home. We watch "Rumpole of the Bailey" on TV then I excuse myself and work a fair number of stations. ARQ is not wonderful for running a string, and PAMS doesn't support RTTY, but I discover that if I work FEC then the guys get the idea pretty well. The opening finally closes with real DX. A KL7 with a very strong signal. He tells me he has been reading the mail and watching the propagation move my responses steadily right across North America. Trans-equatorial propagation is always an interesting mode, but here it covers almost everything.

Next morning Bob fills the Land Rover from jerry cans. The first gas station in VP8 is just being completed on the road to the Stanley Airfield and is not yet open. I work a few stations including Dean ZP6XD and head out further afield. Since I have decided that camp driving is not for the inexperienced in a borrowed truck, I take off to travel the length of all the metal roads. First out to the end of the Teal Inlet branch. Eventually it comes to a shuddering halt in a bog just beyond a big yellow bulldozer. The Scotsman driving it tells me that the road has another two miles to reach Teal Inlet, so I sidewalk superintend for a while and then back to the main road and to Mount Pleasant. The low green buildings house for the most part a Royal Air Force station and it is about as interesting as any such place ever was. It is smart and military and takes me back to my own service life, too far back. I pass the guard house and look into the two small stores I find on the station. The road back, like the Moody Brook trail, follows another long abandoned pole line, and seems much shorter in this direction. I take a photo of one of the unique skull and crossbones road signs. It says "SLOW -- MINEFIELD." Not good to skid on the gravel and sail through the barbed wire fence.

This evening Bob and Danuta and I head out to the peat bank again and replenish stocks, though the contractor will soon bring the main supplies back. Then we discuss possible arrangements for their first visit to the States and the Dayton Hamvention. Next morning after two last QSOs with PA3CTH and CE3GDN, it is time to pack, with the enthusiastic help of Rozz. I warn Bob that if either the FT 1000 or Rozz is missing after I have left he will know where to look. He could get them back after Dayton after all. I eat a very light lunch despite Danuta's heroic efforts .... not good to forget the absent toilet in the Twin Otter .... I make my farewells and Bob takes me out to the Airfield. Just six passengers this time and we fly out along the south coast. I recognize many now familiar landmarks from the air, and only a few hours later we arrive at the Punta Arenas airport. A head wind has made us late and the Customs and Immigration have departed. But, no problem. The DAP man puts us all in a couple of cars and we race off to the Policia Internacional in downtown Punta where two friendly young officials stamp our passports and apparently waive Customs. My flight is not until tomorrow, and I took care to get the name of a good restaurant from Ellie in Stanley. She is a native daughter. So I dine at the recommended restaurant with a new acquaintance from the plane. A very good meal of local seafood and Chilean wine, and I then overnight in the same hotel as before. A quick look around the City Museum in the morning, and I buy some postcards to supplement the pictures I took on an empty camera. Then the airport bus and the plane to Santiago.

The Andes are misty but the volcanoes stand out clearly in the distance on the right and the almost infinite blue Pacific on our left. Landing in Santiago I am met by Don CE3GDN and his lovely wife Ximena and little daughter Cristina. She is seven years old and has a large placard VP8CMY/WA3ZKZ, but even so Don identifies me first. We have a sandwich and a beer and have a very pleasant chat in English and Spanish. Not too often do you get to meet DX on his home territory, but Don is from Little Rock while Ximena is Chilean. We say adios and my flight is called.

It's a very long night till we land in Miami for US Customs and Immigration. I call home and two flights later I am in Philadelphia meeting my XYL, who had a great vacation in Costa Rica and my daughter, who has been at work. Her turn will come one day. Nothing left now except to drive home, unpack and put my feet up, and finally send off APLink messages to VP8BFH, VP8BOQ and CE3GDN saying I am home, and thanks to all for an unforgettable experience.

de Crawford, WA3ZKZ/VP8CMY

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Jim Jennings, KE5HE

Modify your HAL PCI-4000 update for FSK.

With the new PCI-4000/M by HAL Communications, there is a need by most hams for a means of converting the AFSK output of the PCI-4000 to FSK. This will allow narrow RTTY filters to be used. I discussed this with Bill Henry while at Dayton. He said that he had already done it and provided me with the circuit that is presented this month. It is a quick inexpensive fix for the problem and will be a boon to those that want to work the FSK modes on the PCI-4000/M.

Please understand that only the FSK modes can use this adapter, it cannot be used with Clover. However all you need to do is to parallel connect the AF output of the PCI-4000/M to the TX AF input and this adapter using a Y phono connector cable. Then run FSK for the FSK modes and LSB for Clover. The adapter should be shielded and located near the rear panel of the transceiver.

Figure 1 shows the schematic of the adapter. The Exar 2211 FSK Demodulator/Tone Decoder is used. The audio tones (they are very clean since they come directly from the PCI-4000/M) are fed into pin 2 of U1. The frequency of this input is compared with an internal tone of the IC that is determined by C3, C4, R3, and R4. The internal tone should be set to 2210 Hz for normal 170 Hz shift tones. If the input tone is below 2210 as a mark tone (2125 Hz) would be, the output at pin 7 is "high". If the tone is above 2210 as a space tone would be, the output at pin 7 is "low". The FSK to the transceiver is provided by the open collector of Q2. Q1 is used as an inverter in case the FSK signal to the transceiver is "upside down". The polarity of the FSK output is changed by moving the jumper on J5 from one side to the other.

Figure 2 shows a printed circuit board layout for the adapter and Figure 3

shows the parts layout for the board (see ED note). Bob, W4NPX, has agreed to supply circuit boards or ready-built adapters for those that do not want to tackle these chores themselves. Bob's mailing address is:

Bob Blodinger, W4NPX  
5003 Madison Court  
Charlottesville, VA 22901

I made a very satisfactory board using the the DynaArt Designs TTS paper. This is an iron-on paper that works very well with a Xerox type copier. You can get 5 sheets for \$14.95 plus \$4 S/H and have enough for lots of boards if you follow their instructions on how to conserve paper. The board material and etchant is available from Radio Shack. The address for DynaArt is:

DynaArt Designs  
3535 Stillmeadow Lane  
Lancaster, CA 93536  
805-943-4746

There are 2 ways to set the internal tone frequency. Use the following steps for the first method:

1. Disconnect input (J2).
2. Install Test Jumper (J4).
3. Connect Frequency Counter to TP1.
4. Adjust R4 for 2210 Hz on the counter.
5. Remove the counter and Test Jumper.
6. Reconnect input (J2).

For the second method:

1. Send RYRYRYRY.. in Baudot from the PCI-4000.
2. View FSK output from transceiver with a scope.
3. Or, put a voltmeter on the FSK output of the adapter.
4. Adjust R4 for symmetrical M/S output (Mark and Space of equal length).

Note: You may have to change the Mark Polarity with the voltmeter method. You should read from 5 to 12 volts with no input from the PCI-4000 and the FSK line connected to the transceiver that should be turned on. If the reading is near zero, then change the Mark Polarity. Then send the RY's and adjust R4 for a voltme-

ter reading to one half the static reading.

The circuit should be mounted in a metal box. Connect J1 to 5 to 15 volt source, preferably from the transceiver. Connect a Y cable from the AF OUT of the PCI-4000 to the AF IN of the transceiver and also to J2 of the Adapter. Connect J3 to the FSK input of the transceiver.

## Parts List

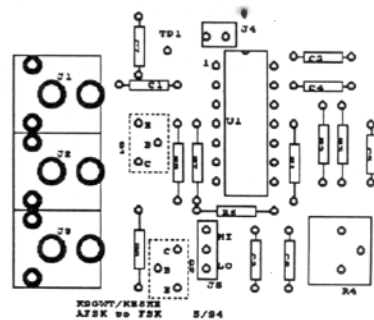
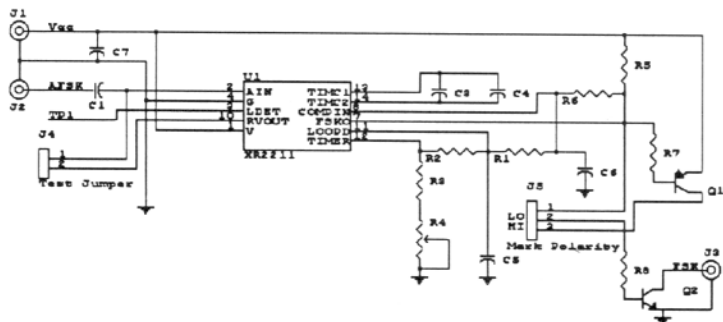
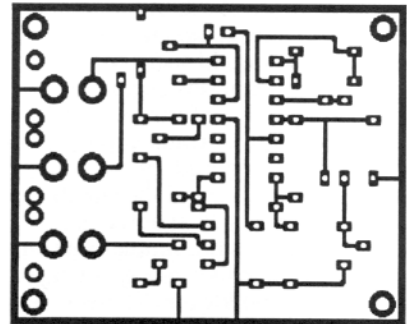
- C1, C2, C7 - 0.1 MFD Ceramic
- C3, C4 - 0.01 MFD Polystyrene, 5%
- C5, C6 - 0.0047 MFD Poly or Mylar
- Q1 - 2N2907 or equal PNP
- Q2 - 2N2222 or equal NPN
- All fixed resistors 1/4 watt 5%
- R1 - 100K
- R2 - 240K
- R3 - 18K
- R4 - 10K Horizontal trimpot, (Mouser 569-91AR-10K or equal)
- R5 - 5.1K
- R6 - 510K
- R7, R8 - 22K - J1, J2, J3
- Phono Jack, (Mouser 16PJ097 or equal)
- J4, J5 - 2 and 3 pin header (2 shorting plugs required)
- U1 - Exar XR-2211 (or Digi-Key NJM2211D-ND) or equal

Good luck with the project, let me know how it works.

God Bless,

de Jim, KE5HE ■

ED: Bob, W4NPX, advises that the circuit diagram is correct but there is an error in the circuit board layout. J4 must short between pin 2 and pin 10 of the XR2211 chip.





## DX NEWS

Jules Freundlich, W2JGR

*More and more DX showing up on Pactor.*

The digital community has lost one of its true pioneers. J. Harvey McCoy, W2IYX, who held the original patent for FSK RTTY, became a silent key on 17 April 1994 at the age of 83. Harvey, in recent years, was best known as the Editor and Publisher of the Long Island DX Bulletin. I had the good fortune to be associated with Harvey for almost two decades, first as a member of the Long Island DX Association, of which he had been President, and subsequently as a regular contributor to his bulletin. For some insight into his early activities, see DX NEWS in the RTTY DIGITAL JOURNAL of October 1993, page 5.

The first ADRS Digital DX Forum at Dayton produced some interesting, although inconclusive, statistics on mode usage. 100 percent of the attendees said they operate RTTY, 70 percent operate Amtor, 66 percent operate Pactor, 36 percent operate Clover, and 7 percent operate G-TOR. It will be interesting to see what the trend will be a year from now. (A marked increase in DX Pactor activity is evident in the DXDOINGS below.) Wanted country lists for RTTY included A5, A6, A7, A9, EP, FT8W, FT8X, FR/T, JD1, JX, OJO, PY0/S, S0, SV/A, T5, T31, TI9, TL, TN, VK0/H, VK0/M, VP8/G, VP8/SH, VU4, XU, YA, YK, 3DA0, 3V, 3Y/B, 3Y/P(?), 5A, 7O, 8R, 9M6, 9N, 9X, ZL8, and ZL9. Dxpeditors, take note!

### DX DOINGS

(Signals are 45.5 Baud RTTY unless noted.)

**BELIZE, V3** - Bruce, V31JU, who had been quite active early in the year from his rain forest QTH of Gallon Jug, advised that he went QRT during March when his KAM Plus died during Warranty. It worked fine on Pactor/Amtor, but did not Rx RTTY. Hopefully, he will be back on the air by the time you read this. Bruce is quite enthusiastic about the digital modes, and expects to be active on G-TOR also. He has a Teletype Model 43 (in the USA) and might be willing to swap it for a membership in the ADRS plus a copy of RTTY contest software. Bruce can be reached by telephone/FAX at Country Code (501) 21 2002. 21 is a new exchange in Belize, and may not yet be recognized as a valid code by the AT&T computers.

You may have to seek operator assistance, if direct dialing doesn't work.

**CENTRAL AFRICAN REPUBLIC, TL** - A chance meeting with TL8NG at Dayton revealed that if you can catch him on the 15 meter GW3GDP SSB net after 1400Z, he will make a RTTY schedule with you. Don't expect him to stay on the RTTY frequency for long, as he made it very clear to me, he does not care for RTTY pileups. QSL to WA1ECA.

**EASTERN MALAYSIA, 9M** - 9M6HF is often active on 20 meters around 1815Z. Asians QSL to JH1ROJ. All others QSL to WE2K.

**GUERNSEY, GU** - Look for GU/DC9KZ, GU/DL9YAJ, and GU/DL6ET for about 3 weeks starting 1 June. They will operate other modes besides RTTY. QSL via bureau to their home calls.

**HONG KONG, VS** - VS6GA is active both on 15 and 20 meters any time between 1330Z and 1700Z. QSL to KG6ZQ.

**IVORY COAST, TU** - Jim, TU4EI, newly arrived here, can be found on 20 meters around 2250Z. QSL via W3HCW. For those looking for a Pactor contact, watch for TU2HS around 1145Z on 14073 khz. QSL route is needed.

**KAMPUCHEA, XU** - XU7VK continued operations during May, and was reported on 20 meters between 1430Z and 1545Z. QSL to Laci Szabo, P.O. Box 24, H-4151 Puspoklandany, Hungary.

**LEBANON, OD** - For Pactor, look for OD5NA around 0520Z on 14080 khz. For RTTY, try OD5PL on 20 meters around 0800Z. QSL OD5PL to HB9CRV. QSL route for OD5NA is needed.

**MICRONESIA, V6** - If you are looking for a Pactor contact, look for V63JM around 0610Z on 14095 khz. QSL route is needed. A one week trip to Pohnpei is planned by Ken, V73C and a group, commencing on 9 June. They have amps and antennas to have four stations on the air at once, and will concentrate on SSB on the WARC bands, and on all bands on RTTY and CW. If things are slow on CW and SSB, they will switch to RTTY on request. Callsigns will be V63BC by AH9B, V63VA by N5MIH, V63SB by AD1S, V63FC by AH6ML, V63AB by V73A, and V63KW by V73C. QSL via OK-DXA, P.O. Box 88, Wellston, OK 74881.

**MOROCCO, CN** - The ever popular Frank, CN8NP, in addition to his usual RTTY operations on 20 meters, now

sprinkles in a little Pactor around 2000Z near 14073 khz. For QSL route see DX NEWS in the RDJ for February 1994, page 7.

**OMAN, A4** - A41KD can be found on 15 meters around 0130Z, and on 20 meters around 1145Z. Look for A45XC on 20 meters around 1430Z. QSL routes are needed for both stations.

**PAPUA NEW GUINEA, P2** - P29RB is active on RTTY around 1145Z on 20 meters. Look for him on Pactor at about 0140Z on 14077 khz.

**PITCAIRN ISLAND, VR6** - Added to the ever growing RTTY population on this Pacific outpost is VR6ME, who may be found on 20 meters around 0030Z. QSL to P.O. Box 24, Pitcairn Island, South Pacific Ocean, via New Zealand.

**SAINT PAUL ISLAND, CY9** - A triple Whammy! Look for action here between 10-19 June by a group of Wisconsin hams, which will include Scott, N9JCL/CY9, Tom, K0SN/CY9, Bob, AA9GZ/CY9, Paul, WC9E/CY9, and Ken, WB9OBX/CY9. Check 7085 and 14085 khz. QSL to K0SN. And then in August a group of VEs will operate CY9, CW1 from August 12-16. Following them, from 19-25 September, will be the group of Navassa/Desecheo fame consisting of Randy, N0TG, Murray, WA4DAN, Ron, AA4VK, and Bob, KW2P. Callsigns will probably be /CY9. QSL to N0TG.

**SAO TOME & PRINCIPE, S9** - Glenn, S92ZM is an American working at the VOA station. When not handling VOA activities, he spends his spare time operating RTTY, Amtor or Pactor. In addition to working 20 meters, as reported last month, recent operations have favored 15 meters. Amtor/Pactor operations favor 21070 khz plus/minus a few. He can be found almost any time around the clock, so keep aware of propagation to S9 from your QTH. His new Cushcraft R-7 vertical antenna will allow him to work 10-40 meters. For QSL route, see the RDJ, April 1994, page 19.

**SAUDI ARABIA, 7Z** - 7Z1AB has entered the Pactor fray, and has been reported around 0550Z on 14080 khz. QSL via KN4F.

**TAIWAN, BV** - BV7WB has been reported on 20 meters in the middle of the UTC day around 1430Z and also around 1730Z. QSL route is needed.

**TOGO, 5V** - Mike, 5V7BB, formerly TU5BB in Abidjan, is an American at the Embassy in Lome. He has recently discovered the joy of Amtor, and may be found near 14075 khz. around 0130Z. QSL to his home call, N5YVF.

**TONGA, A3** - A35CT has been reported on Amtor around 0330Z on 14069 khz. QSL to Box 2990, Nuku Alofa, Tonga.

TUVALU, T2 - If you were lucky enough to work T28RW recently, that was Ron Wright, ZL1AMO. QSL to his home CBA.

UNITED ARAB EMIRATES, A6 - It's nice to see A61AD back on RTTY. Look for him on 20 meters around 2045Z. QSL to WB2DND.

U.K. SOVEREIGN BASES ON CYPRUS, ZC - ZC4SW has shown up on Pactor on 21076 khz around 1525Z. QSL to GODVF. ZC4ZZ works 20 meters around 1715Z. QSL route is needed.

ZIMBABWE, Z2 - Z21HD shows on 20 meters around 1945Z. QSL route is needed.

## DX ADVISORY COMMITTEE (DXAC)

With Walvis Bay and the Penguin Islands having been turned over to Namibia, these two countries have been deleted from the DXCC list. As of 1 March, there were 326 countries on the DXCC list. You will need 317 countries, as of that date, to make the Honor Roll

Bob, W4VQ, chairman on the DXAC has announced that the question of new country status for Pratas Island is back on the committee's agenda. Dr. Bolon Lin, BV5AF has been in contact with the DXAC, and has furnished answers to committee questions. As of mid May a vote was not yet scheduled.

## MAILBAG

As a result of my previous comments on band planning, I received a note from Jerry, AI9W. Here, in his own words, are some of his thoughts. "Enjoy the DX News in the RDJ.....Would like to see a specific mention under each station mentioned in DX Doings as to if the station is strictly RTTY, or what other modes they operate. Agree strongly that something needs to be done regarding the use of the digital sub-bands. Kept track of QSOs in the last month and find that I had over 24% of my QSOs aborted due to QRM from BBS's/MBX's that were chirped up after a QSO had been underway for at least one minute. Understand that most of this was due to the "hidden xmitter" but while that accounts for a large part of the problem, many times I hear someone trying to chirp a BBS or MBX up rite on, or very near the frequency on which a QSO is taking place. That's just plain bad operating. Guy wants to get into the BBS or MBX and maybe doesn't have a lot of time so turns on the amp and tries to over-ride the QSO taking place. I feel this is a result of mixing uses on the sub-band, plus just too little space for the activity taking place on the sub-band. I have a feeling that there is not going to be a workable sub-band assignment anytime in the

near future. I am also getting to the point where I think the only way the situation is going to be alleviated is for stations to just start spreading out on their own volition.....There should be an area set aside for MBX's/BBS's where "keyboard to keyboard" QSOs should not take place. While problems do occur with mixed mode interference, I would not even suggest that you could find a workable plan to separate the sub-bands by mode, only by use.....73 de Jerry AI9W

Your suggested approach is already being used by the Clover community, Jerry, vis-a-vis 20 meters. MBX's are on 14064, 14065, 14066, 14067, and 14068. Keyboarders informally gravitate to 14065.5. Amtor/Pactor afficianados, take note.

## RUSSIAN PREFIXES

Here is the latest listing. Complete conversion is not yet complete. If in doubt, ask for the QTH.

OLD	COUNTRY	NEW PREFIX
UA	European Russia	RA-RZ, UA-UI
UB	Ukraine	UR-UZ, EM-EO
UC	Belarus	EU-EW
UD	Azerbaijan	4J, 4K
UF	Georgia	4L
UG	Armenia	EK
UH	Turkmenistan	EZ
UI	Uzbekistan	UJ-UM
UJ	Tajikistan	EY
UL	Kazakhstan	UN-UQ
UM	Kyrgyzstan	EX
UO	Moldova	ER
4JIF	M-V Island	RIMVA-RIMVZ
4K2	Franz Josef Land	RIFJA-RIFJZ
4K1	Antarctica	RIANA-RIANZ

Copy this list and keep it handy at your operating position.

## MISCELLANEA

Jacques, 9X5LJ, who promoted "Peace and Friendship" from the mists of Rwanda, with his XYL, Monique, was evacuated to the safety of Belgium just as marauding bands were entering Kigali in early April. He left his Amtor mailbox running on 21073 khz to see how long it would take before his house was looted. (It was still running the 25th of April). Jacques was subsequently hospitalized, suffering from hepatitis and malaria. We hope that his recovery will be swift and complete.....Alex, WB6AFJ worked TI9YO on RTTY on 23 August 1991, but is unable to get a QSL card from TI2SAH. Any help out there?..... The Icelandic Radio Amateurs (IRA) sponsors two awards, the Icelandic Radio Amateurs Award (IRAA), and a brand new one, the IRA Zone 40

Award. The latter, covers contacts (by mode) with stations in TF, OX, JX, JW and 4F1FJA-Z. For details you can write to: IRA Awards Manager, Brynjolfur Jonsson, TF5BW, P.O. Box 121, IS-602 Akureyri, Iceland.....Jean, J28JJ had high hopes of putting Yemen, 7O on RTTY during May, but the sudden eruption of civil war in that country has definitely put those plans on hold.....If you are of a mind to travel to southeast Asia in November, drop in at the Seanet convention in Melaka, which will be held 11-13 November. For information on registration and accommodations contact Sangat Singh, 9M2SS at telephone number +603 +256 1571, or FAX +603 +253 7373.....Requested documentation for Romeo's P5RS7 operation has been received at ARRL Headquarters. Following translation from Korean, an evaluation of its validity was to be made.....W2JGR is looking for keyboard to keyboard QSOs on Clover with DX stations. Drop a note with suggested times/frequencies at TY1PS or W2TKU.

## HAVE DX NEWS?

Leave a message in the W2TKU/4(1) mailbox (AMTOR or CLOVER), find me on RTTY or via any of the following.

Packet message addressed to:

W2JGR@WB0GDB.#STP.MN.USA.NA

Telephone: (612) 377 7269

FAX: (612) 374 8161

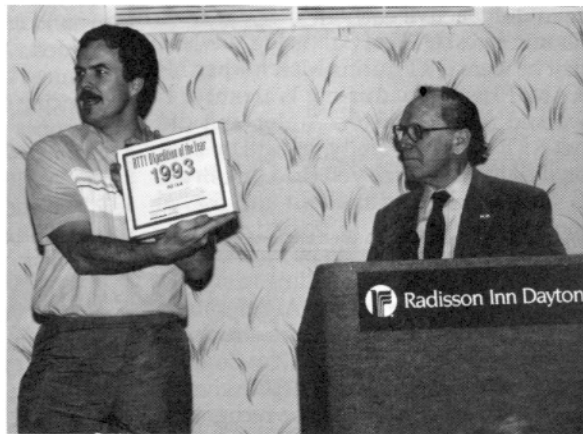
or use the U.S. Postal Service.

THANKS - Thanks to the following for all your information: AI9W, I5FLN, J28JJ, KW2P, N4SO, ON6RO, S92ZM, TL8NG, V31JU, V73C, WB2CJL, W2TKU, W6GO, and ZS5S.

See you all next month. For now, bye bye from Minnesota, PAX....73

de Jules, W2JGR ■

1. W2TKU/4 scans 7070, 7076, 14072, 14076, 14078, 21074, and 21080 khz. on AMTOR. On CLOVER, he scans 7066, 7068, 10136, 14066, 14067, 14068, 21064, and 21066 khz.



1993 DXpedition award to Randy, KOELI. Presenter, Jules, W2JGR

# 1993 CQWW RTTY DX CONTEST RESULTS

Alpha/Numeric Groups after call letters denote the following: Classification (SOH=Single Op High Power All Band, SOL=Single Op Low Power All Band, SOA=Single Op Assisted All Band, MOH=Multi-Op High Power, MOL=Multi-Op Low Power, MOM=Multi-Op Multi Transmitter or Single Band Entry by Frequency.) and Final Score.

<p><b>AFRICA</b> MADERIA ISLANDS CR3Y SOH 1,031,894 OP: CT3BX <b>MALAWI</b> 7Q7XX SOL 29,784</p> <p><b>SOUTH AFRICA</b> ZS6EZ 28 121,264 ZS4NS SOL 936</p> <p><b>ASIA</b> <b>ASIATIC RUSSIA</b> UW9CY 14 73,284 UZ9CWY SOL 23,490 OP: UV9CAZ UA9SCX 14 12,312 RA9XF 14 5,544</p> <p><b>CHINA</b> BY1QH SOL 76,140 OP: BZ1QL</p> <p><b>HONG KONG</b> VS6BG SOH 469,476</p> <p><b>ISRAEL</b> 4X0A SOH 615,725 4Z4UT SOL 45,990</p> <p><b>JAPAN</b> JA3YBF SOA 221,298 JH1AEP SOH 204,754 JH7QXJ SOH 119,906 JR5JAQ SOL 108,540 JH7BMZ SOL 44,376 JH4RHF 14 38,077 JF3LGC SOA 36,848 JA3BSH SOL 36,366 JN3TMW SOH 35,814 JA7LMZ 14 34,489 JH2ABL 14 33,936 JA9DDF/2 SOL 26,754 JA1WYQ SOL 22,995 JA7MAD 21 19,110 JH1HRJ 21 17,216 JA2MOG 14 13,455 JA4RTX SOH 13,104 JA2NNF 7 4,840 JH1BH 14 4,140 JA7SUR SOL 4,018 JQ2LGS SOH 3,040 JH8KYU/1 SOL 1,716 JICQA SOL 1,479 JA4MES SOL 315 JH1HGF 14 187 JR4GPA 28 70</p> <p><b>KAZAKHSTAN</b> UN5PR SOL 214,635 UN6P SOL 6,776</p> <p><b>MARITIME MOBILE</b> KM6LP/MMSOH 250,984</p> <p><b>MONGOLIA</b> JT1CS SOL 32,708</p> <p><b>OMAN</b> A45ZO SOL 42,230 A45ZW 21 11,319</p> <p><b>SINGAPORE</b> 9V1ZM SOL 190,800 OP: VE3XO</p> <p><b>SOUTH KOREA</b> HL5BHH SOL 17,073</p>	<p><b>TURKEY</b> TA2FT 14 30,303</p> <p><b>TURKMENISTAN</b> UH8EA SOH 911,180</p> <p><b>EUROPE</b> <b>BALEARIC ISLANDS</b> EA6PZ 14 136,070</p> <p><b>BELARUS</b> RC2CR 14 11,822 UC2LEG SOH 4,558</p> <p><b>BELGIUM</b> ON4ACG SOH 58,460 OO6CQ 14 1,517</p> <p><b>BULGARIA</b> LZ1BJ 14 229,536</p> <p><b>CROATIA</b> 9A5Y 21 199,251 OP: 9A3NM 9A1CCY 7 36,450 OP: 9A3LG</p> <p><b>CZECH REPUBLIC</b> OK1AJN SOL 175,185 OK1AWQ SOL 140,800 OK1DJO 21 18,810</p> <p><b>DENMARK</b> OZ5MJ SOL 182,088 OZ4FF 14 328</p> <p><b>ENGLAND</b> G5LP SOL 210,081 G4XDD 14 41,031 G0NWG 14 12,584</p> <p><b>ESTONIA</b> ES7FQ 14 159,852 ES7GN 14 26,325 ES4MM 14 4,864</p> <p><b>EUROPEAN RUSSIA</b> UA4LCQ SOL 120,646 UW3AT SOH 98,991 UA6LP SOL 39,680 RA1AW 14 33,283 UA4ANZ SOL 832</p> <p><b>FINLAND</b> OH2BP SOH 463,100 OH3LIM SOL 338,823 OH2LU SOA 214,600 OH2OM SOL 22,568 OH2DW SOL 18,055 OH3MFP 21 6,909 OH3TY 21 4,797 OH1TD 14 2,772 OH3KJP 21 1,300 OH6UP SOL 468</p> <p><b>FRANCE</b> F5OBK SOL 128,968 F6IIE SOL 123,327 F5OIE SOL 117,120 F5TCN SOL 28,892 F6CYV SOA 28,320 F6DZD SOL 27,795</p> <p><b>GERMANY</b> DL0WW SOA 135,575 DJ5LA SOH 387,296 DF3CB SOA 382,775 DK3VV SOL 120,564 DL1BFZ 14 45,668</p>	<p><b>DL2BQV SOL 20,352</b> DJ2YE 7 13,340 DL3OV 14 10,725 DK5KJ SOL 7,020 DLISBF 14 2,325 DJ6TK 14 1,260</p> <p><b>GIBRALTAR</b> ZB2/SM4DHSol 209,922</p> <p><b>GREECE</b> SV2BFN SOH 237,006 SV1BJV SOL 214,830</p> <p><b>HUNGARY</b> HA9OA SOH 398,904</p> <p><b>ITALY</b> I2UIY SOA 854,496 IK6CGO SOA 440,232 I2TQU SOL 275,892 I2DMI SOA 215,277 IK0HBN SOH 136,318 IK0CNA SOL 111,870 I2HWI SOL 96,720 IK0PCJ SOH 94,874 IK2HKT 14 70,908 IK6GZM 14 558,275 IN3XUG 14 42,432 IK3ASM SOL 27,170 IK1QLD SOL 20,685 I0KHP 7 17,170 I2KFW 21 13,020 IK1VCH SOL 2,124</p> <p><b>LATVIA</b> YL2GD SOH 108,325 YL3FW SOL 48,100</p> <p><b>LIECHTENSTEIN</b> HB0/HB9NLSOH 130,014</p> <p><b>LITHUANIA</b> LY1BZB 3.5 22,936 OP: LY2BKF</p> <p><b>MOLDOVA</b> ER0F SOH 347,360 OP: RB5FF UO5OIS SOL 35,722 UO5OFW SOL 3,180</p> <p><b>NETHERLANDS</b> PA0XPQ SOL 170,496 PA0YN SOL 4,747 PA3BUD 7 1,664</p> <p><b>NORWAY</b> LA4LN SOH 258,664 LA7AJ SOH 228,930 LA6VIA SOL 7,524 LA2KD SOL 4,730 LA8RL 14 756</p> <p><b>POLAND</b> SP9UNX SOL 144,115 SP3SUN 7 25,333 SP5CBA SOL 18,584 SP3EJJ SOL 6,710 SP3BGD 14 416</p> <p><b>ROMANIA</b> YO3FRI SOL 20,000 YO9ALY SOL 7,480 YO5BQ SOL 2,048 YO3FWC/P 7 1,850</p> <p><b>SCOTLAND</b> GM0/WN1G SOL 148,874</p>	<p><b>SLOVENIA</b> S51DX 14 293,433 S53MJ 21 101,280 S57DX 3.5 27,608 S53AA SOL 20,832 S52SK 3.5 72</p> <p><b>SPAIN</b> EA3BT SOL 120,046 EA2CNT SOL 52,520 EA5FKI 7 30,888 EA3GCV 21 22,074 EA3GGR 14 3,825 EA2A 14 3,384 EA4BNQ SOL 2,196 EA3GCT 14 820 EC2BAW SOL 11,060</p> <p><b>SWEDEN</b> SM0HTO SOH 732,700 SM5FUG SOH 503,557 SM5FQQ SOL 128,040 SM4RGD SOL 57,120 SM7ATL SOL 38,844 SM7BHM SOL 27,260 SM7AIO SOL 12,006</p> <p><b>SWITZERLAND</b> HB9BCK SOA 116,186 HB9HLE 21 2,625</p> <p><b>UKRAINE</b> UB4HQ SOH 374,400 UB5TAU SOL 123,520 RB4III 14 39,368 UB5LXB 21 20,130 UB4AR 14 12,834 RB0HZ 7 7,560</p> <p><b>WALES</b> GW0ANA SOL 124,532</p> <p><b>YUGOSLAVIA</b> YU7AM SOL 240,120 YU7AE 14 1,488</p> <p><b>NORTH AMERICA</b> <b>ALASKA</b> NL7DU SOL 59,280</p> <p><b>BAHAMAS</b> K8UNP/C6A SOL 479,577</p> <p><b>BERMUDA</b> VP9MZ SOL 45,493</p> <p><b>CANADA</b> VY2SS 14 374,550 VE7SAY SOH 270,900 VE6KRR SOL 176,448 VE7IRA SOL 108,965 VE6JAV SOL 82,820 VE2AXO SOL 64,080 VE2JR SOL 51,816 VY9QR SOH 40,656 OP: VE5SF VE2BOB SOL 27,615 VE7BDQ SOH 7,973 VE4COZ 14 4,620 VE2FFE 14 3,393 VE4GN 14 1,620</p> <p><b>DOMINICA</b> J73WA SOH 220,148</p> <p><b>HAITI</b> HH2PK SOL 702,512</p>	<p><b>MEXICO</b> XE1/JA1QXY 21 45,441</p> <p><b>PANAMA</b> HP1AC SOL 184,697</p> <p><b>PUERTO RICO</b> KP4DDB SOL 57,412</p> <p><b>USA</b> K4JPD SOA 688,347 OP: AE6E W3FV SOH 664,284 NV1G SOH 659,890 N4CC SOA 645,540 KING SOH 606,350 OP: WF1B WF7B SOH 527,562 NO2I SOA 497,835 N2DL SOH 438,894 W9KDX SOH 423,645 N2FF SOA 374,030 WB7AVD SOA 356,631 KG5EG SOH 350,328 K0RC SOH 347,602 WF5T SOH 325,728 WX0B SOH 320,501 AB4MJ SOL 300,960 N6GG SOH 277,339 AA0KA SOH 273,783 W1BYH SOL 244,608 AA5AU SOL 243,858 WB3D SOA 224,143 KK4DK SOL 222,762 KT6V SOH 212,121 NA2M SOH 191,574 WA7EGA 14 174,290 K4SB SOL 169,128 AA4M/6 SOA 165,910 NN2G 14 160,876 NX7K SOH 159,300 WB8MTT SOL 151,844 KA4RRU SOL 150,732 K4IBP SOH 145,125 NN5T SOL 144,536 W9NGA SOL 133,792 N1OAZ SOL 132,6551 W1BH SOH 128,956 K2PS SOH 128,316 WA6SDM SOH 126,072 KD1GG SOH 125,832 W2UP 7 125,656 AA1BX SOL 119,280 K7WUW SOH 118,917 N9NCX SOL 110,210 K0BX SOL 105,288 A17B SOH 104,220 KA3JFI 14 99,580 WS7I 7 91,500 N3GSC SOH 88,740 A10Y SOH 86,344 WA0PUJ SOH 85,500 K5KLA SOL 83,027 N0FMR SOA 82,877 KL7DN/1 SOL 81,606 W2KHQ SOL 81,597 W3KV SOL 80,920 W3GG SOH 80,550 K14MI SOL 80,179 WF5E 14 78,771 WB8YJF SOL 76,987 WW1Y SOL 74,336 K4KIY SOL 73,260 WA6UFY SOH 68,145 W6YJG SOH 67,473 N1JAC SOL 64,548 KM6HB SOH 63,984 NR1J SOH 61,650 W2JGRR/0 SOH 58,984 W6JOX SOL 57,702</p> <p><b>N1FIO SOL 57,558</b> AB8K 21 56,389 N2QCA SOL 54,646 KL7TF 7 53,331 NY2U SOL 52,548 W4IF SOH 50,570 WA5JWU SOL 50,500 N6MW SOL 48,160 WZ6P SOL 47,424 N5FG SOL 46,650 NM7N SOL 46,618 WN1E SOL 45,150 KC7UP SOL 44,928 KI5GF SOL 44,778 KC9UU SOL 43,282 K1IU 3.5 39,710 N6MSQ SOL 39,476 K8TL SOL 35,640 WA6FIT SOL 35,032 W0ML SOH 34,226 KN4CG SOL 32,357 K4E8M SOL 30,504 AC4HF SOL 25,990 AA0GY SOL 25,016 NO1J SOL 24,420 KD2YG 7 24,087 KE9CU SOL 23,762 KS4S SOL 22,770 N1JM SOL 21,168 N5NMY 21 21,097 AA5VN SOL 20,758 KE2XF SOL 19,530 K5EC SOH 19,285 W1VXV SOL 17,630 KA1CLV SOH 17,550 AA1CB SOL 17,200 N1Q6C 21 16,182 WB9MLY SOH 15,548 W3GU SOL 15,100 K4FFP SOL 14,792 WA8FLF SOL 14,553 K6MC SOH 11,310 K3UA SOL 11,109 WA4MCZ SOL 11,023 W61WO 14 9,362 N1DIQ SOL 8,625 WA0RJY 14 8,520 AB0G SOL 7,828 W6KNB SOL 6,722 AC4PQ SOL 5,440 N5NMX 3.5 5,085 W2HCA SOL 4,851 WA2AS SOL 4,158 W7WHY SOL 1,683 AA6YX SOL 1,505</p> <p><b>VIRGIN ISLANDS</b> KP2BH SOL 65,670 KP2N 21 60,378</p> <p><b>OCEANIA</b> <b>AUSTRALIA</b> VK6HD SOL 201,760 VK2RT SOL 102,459 VK3EBP 14 10,899 VK8BE 14 720</p> <p><b>GUAM</b> KN4DG/KH2 14 2,793</p> <p><b>HAWAII</b> AH6JF SOH 324,184</p> <p><b>INDONESIA</b> YB3OSE SOL 79,440</p> <p><b>NEW ZEALAND</b> ZL2AMI SOH 102,297 ZL2JON SOL 19,900</p>
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PHILIPPINES  
DU7AFT SOL 2,958

### SOUTH AMERICA

ARGENTINA  
LU8EKC 21 129,500  
LU8FDZ 14 63,630

BRAZIL  
ZV2BW 21 147,972  
PP5JD 14 86,736  
PU2LSR 21 81,300  
PY2PD 14 27,608  
PY2HF 21 1,156

CHILE  
XQ8ABF 7 64,584  
OP: CE8ABF  
CE3JSX 21 16,936  
CE3RLT 7 3,864

COLOMBIA  
HK1LAQ SOL 93,572  
HK3MCM SOL 16,758

ECUADOR  
HD3W 7 7,452  
OP: HC3AP

NETH. ANTILLES  
PJ2MI 7 79,928  
PERU  
OA4ANR SOL 3,114

VENEZUELA  
4M5RY SOL 688,509  
OP: YV5KAJ  
YW1A 7 65,835  
OP: YV1AVO

### MULTI-OPERATOR

ASIA  
ASIATIC RUSSIA  
UZ9CWA MOH 2,580,660

JAPAN  
JLIZCG MOH 614,713  
JBYBB MOM 586,249  
JA9YAV MOM 133,770

KAZAKHSTAN  
UP5A MOH 19,096

SAUDI ARABIA  
HZ1AB MOH 859,216

### EUROPE

BALEARIC ISLANDS  
EA6MR MOH 403,550

BOSNIA-HERZE-  
GOVINA  
T91ENS MOL 5,616

CROATIA  
9A5D MOL 374,115

EUROPEAN RUSSIA  
UZ3PWJ MOH 128,700

FRANCE  
TM7C MOH 1,889,859  
F6EXX MOL 582,417

GREECE  
SV1SV MOL 193,338

ITALY  
I2EOW MOH 1,309,756  
IK2QEI MOH 787,035  
IK1HSR MOH 376,596  
IV3FSG MOL 260,568  
IK1TWC MOL 94,640

LIECHTENSTEIN  
HB0/DL0GK MOH 905,135

MACEDONIA  
4O9S MOL 21,000  
NETHERLANDS  
PI4COM MOH 1,099,875

POLAND  
SP3PLD MOL 151,822  
SP6YFU MOL 9,022

ROMANIA  
YP0A MOL 246,243

SLOVAK REPUBLIC  
OM3KFF MOH 939,028  
OM3RJB MOH 80,367

SPAIN  
EA7GXX MOL 226,781

UKRAINE  
US7I MOL 601,474

WALES  
GW5NF MOH 665,575

### NORTH AMER- ICA

ALASKA  
NL7VJ MOH 140,940

CANADA  
VE7ZZZ MOM 708,414  
VE3FJ MOH 430,416  
VE3UR MOL 53,935

ST. MAARTEN  
P8X MOL 235,545

UNITED STATES  
W3LPL MOM 2,984,817  
KS9W MOH 628,630  
AB5KD MOH 575,212  
KB8ECG MOM 201,966  
KE7GH MOL 177,184  
KF4KL MOL 164,994  
N7UJJ MOL 52,152  
KA3DSX MOL 37,752  
K0LIR MOH 25,707

### OCEANIA

FIJI  
3D2YS MOLT 373,354

HAWAII  
NH6T MOH 1,138,070

### SOUTH AMERICA

BRAZIL  
PT5W MOL 3,344  
PU2VJJ MOL 1,104

### CHECK LOGS:

N2HTT, F-10726, F-10370, SP2HIC, CX7BF, SM6APB, YB6INU, CE3BFZ, RA9IB, SP4CHY, LA9FFA, VE6ZX & SP2EIV.

This contest continues to be the premier digital contest. Thanks to everyone who helped make this possible. 73

de Roy, KT1N

## BARTG AMTOR/PACTOR CONTEST

July 9-10, 1994

Sponsored by British Amateur Radio Teledata Group

### CONTEST PERIOD:

AMTOR: From 0000Z Saturday to 0000Z Sunday (24 hours)

PACTOR: From 0000Z Sunday to 0000Z Monday (24 hours)

No rest periods.

BANDS: 80, 40, 20, 15, and 10M

### CATEGORIES:

1. Single op, Amtor
2. Single op, Pactor
3. Single op, Combined
4. Multi-op, Combined
5. Short Wave Listener

(Single transmitter only)

EXCHANGE: RST + QSO NUMBER + TIME in UTC.

Use FEC for calling, and ARQ for contest message exchange.

**MULTIPLIERS:** Each DXCC country, including first QSO with W, VE, and VK, counts as a multiplier on each band. Also, each call district in W, VE, and VK will count as an additional multiplier on each band. In addition, each continent (6) counts once, not once per band. Stations entering in combined categories count multipliers only once per band, *regardless of mode*.

**QSO POINTS:** Count 1 point for each completed QSO. Same station may be worked on other bands. Duplicate QSOs on same band receive zero points and must be clearly marked in the log.

**FINAL SCORE:** Total QSO points x total multipliers x number of continents (max 6)

**LOGS:** Use separate logsheets for each band. Logs must show: BAND, DATE and TIME, MODE, CALLSIGN, MESSAGE Sent and Received, new MULTS, and POINTS claimed. Summary sheet must show full scoring, times of operation, and address for correspondence. Include names and callsigns of all multi-op station operators. Any incomplete entries will be classified as check logs. Computer generated logs containing all specified information are welcome.

**DEADLINE:** ALL LOGS MUST BE RECEIVED BY 10 SEPTEMBER 94 TO QUALIFY.

Please send your contest or check logs to:

JOHN BARBER G4SKA  
PO BOX 8  
TIVERTON, DEVON  
EX16 5YU, ENGLAND

**AWARDS:** Trophies will be awarded to the winning stations in each category, and certificates will be awarded to the top 3 stations in each category and the top 3 single operators for each mode in each continent.

Comments on the contest would be much appreciated. Please include them with your log.

**N6GG COMMENTS:** This is a brand new contest, and it has band multipliers. BARTG has brought in their well-known and well-liked RTTY contest format and fitted into a unique Amtor/Pactor combination mode. It's a bright idea, and a way to spread testers around in the digital modes. The contest will also provide a clever comparison as to which mode has the advantage in QSO rates, and FEC pileups, and switching from FEC to ARQ in the QRM, all in one weekend. Place your bets: Which mode has the edge? It looks like split frequency operation could be used to advantage, but might be awkward to find frequency areas clear of QRMing other splits. Notice that there are no rest periods. Each mode is 24 hours long: first is Amtor, then Pactor. Any station worked on Amtor may be worked again the following day using Pactor. But combined entries count mults only once per band, *regardless of mode*. This means that if you work a PY station for a mult on 20M Amtor, you can't count a 20M PY as a mult again when you work him later on Pactor. Stay tuned (up).



# INFORMATION SUPERHIGHWAY

## The government viewpoint

Wayne Renardson, NZ4W

*Will this titanic battle grab our spectrum too?*

Vice-President Albert Gore Jr. dreams of highways. He watched his father, Senator Al Gore (D-Tenn), as chairman of the Senate Public Works Committee, preside over the creation of the interstate-highway system "I remember sitting in the room when they voted to make the signs green on the interstate system", the younger Gore recalled. Forty years later, Gore believes the government has a role to play in constructing a new electronic information highway where instead of automobiles, bits and bytes of data will flow in a two-way stream, connecting every home, business, school, library, and medical center in America.

Soon after assuming office, the Clinton-Gore administration established the Information Infrastructure Task Force, headed by Commerce Secretary Ron Brown, with Gore as its guiding light. The committee's report, released in September 1993, concluded the private sector should build the system, with government playing a supporting role to insure "affordable universal service, to keep the highway democratic, and to protect the property and intellectual rights of its users."

The private sector interests include huge conglomerates involved in cable TV, telephone, computers, broadcasting, publishing, and digital electronics. Drawn along ideological lines, the battle for control of the system, and the role of government, is beginning to take shape. Liberals like Herbert Schiller, professor emeritus of communications at the University of California, see the government's role as being paramount. "I think the direction toward increasingly paying for information is dangerous," Schiller said. "Inevitably, it will restructure the population into payers and non-payers."

While many companies presently provide huge databases of information for sale, Schiller, in a spirit reminiscent of the early hackers, believes information should be social. "Libraries are free. The public library should be our standard for the twenty-first century." Gore believes the government's role is to steer the enterprise away from the shoals of both monopolistic business practices and bureaucratic government regulation."

Government regulation has been a mainstay of the communications industry since the Communications Act of 1934. Government, realizing that the airwaves were a finite commodity, assumed the power to license users of this precious,

scarce resource, including the power to punish those who violated the rules. But wires and cable are not finite, and any new system will require a reexamination of the scarcity principal upon which our current regulations exist.

The federal court's 1982 breakup of AT&T prevented the seven Bell Operating Companies (BOCs) from entering the video business, equipment manufacturing, or offering long-distance service. A TV network is allowed to own a cable-programming network (like ESPN), but not a cable system to deliver the information into the home. The intent was to encourage competition. If rival cables are permitted into people's homes, should either of the wire owners also be allowed to own the programming or data transmitted over the wire? As one of the major players said, "If I make more money showing my stuff on my wire than showing your stuff, I will show my stuff."

But as Barry Diller, Chairman and CEO of QVC, Inc. said, "The only overriding issue is to be sure we have at least two 'wires' into each home. Instead, we have a lot of excruciatingly complicated regulations that can only produce poor results. No one has a clue about what's going to happen—not me, not the regulators, and not the legislators."

Daniel Boorstin, former Librarian of Congress, once reminded us that "nothing really happens unless it's on television," and video may be the mode driving the technology behind the superhighway. Video-on-demand is the current buzz word, meaning users will be able to order any movie, TV program, or video production any time since they will be stored in digital format. If you want to watch *Sleeping in Seattle* at 4am, it should be available. In an experimental test conducted at Viacom's test site in Castro Valley, CA, consumers were allowed to order any movie anytime from a library of 16,000 titles. Participants can be voracious when it comes to video, ordering an average of 7.5 movies a month from a pay-per-view service. As Jay Leno said, "We all wanna see naked people."

This fall, GTE will test a service in Cerritos, CA that allows viewers to guess NFL plays ahead of time—and compare their football strategy to other viewers around the country. There are even rumors that consumers would be allowed to pick their own camera angles or demand a slow-motion replay. Viacom is already testing genre-specific versions of their

MTV, Nickelodeon, and VH-1 channels, allowing viewers to select the videos to be seen on their channels. Sega and Atari are developing versions of *Trivial Pursuit* that pit one user against their neighbor, who is playing the same game on their television.

Home shopping television is here, but it is largely passive. Consumers are shown what the retailer wants to sell, but soon they should be able to select whatever they want to buy from a variety of options and order it from their remote control.

If video is the driving force behind the technology of the information superhighway, what can we expect from television? How far is it for the amateur digital user to make the leap from the wedding of their computers and RF transceivers to adding another cable and modem to a future digital television screen? Is high-definition television (HDTV) going to enter the life of the future amateur radio operator?

The current standard for television was developed in the late 1940's by the National Television Standards Committee (NTSC). The NTSC standard dictated a 4:3 aspect ratio—a picture must be 12(4) inches horizontal and 9(3) inches vertical within an ideal 15 inch diagonal set. But movies made for the theatre can have aspect ratios as high as 16:9. As a result, movies shown on NTSC must be cropped or have the edges of their frames discarded during the transfer from movie to television format. HDTV promises a 16:9 aspect ratio, with the average screen being about 32 inches horizontal and 18 inches vertical. Models from Phillips and Thomson/RCA are available today.

NTSC also mandated resolution, setting weak standards incapable of using the extremely high resolution of 35mm and 70mm films. This weak resolution results in a loss of detail and textural quality that is present in the source but absent in the resulting picture. HDTV employs a 1050-line or double the current NTSC scanning standard, non-interlaced or linear method of scanning, which is close to the 1200 lines deemed necessary for true 35mm resolution. And by painting all 1050 lines progressively from top to bottom 60 times/second, flicker is eliminated. Various competing systems have offered protocols, with the FCC choosing Zenith's HDTV format on February 24, 1994.

The issue of who will control the superhighway is an ongoing debate. The citizens of the United States have a well-deserved reputation for being vigilant toward government. George Orwell's 1984, published in 1948, gave many citizens a satirical but frightening look at what can happen when governments are ceded too much power over the lives of a country's citizens.

In remarks to the Television Academy's 1994 Superhighway Summit in Los Angeles, Vice-President Albert Gore outlined the government's role in the future highway. The Clinton administration plans to introduce legislation that will adhere to five principals:

- Encourage private investment
- Provide and protect competition
- Provide open access to the network
- Take action to avoid creating a society of information "haves" and "have-nots"
- Encourage flexible and responsive government action

Gore reminded his audience that in 1844, Congress funded Samuel Morse's first demonstration of Morse code and the telegraph. Morse wanted Congress to endow a national system to be built by the federal government. But Congress refused, insisting that private investment supply the capital to build the lines and fuel the content of the system. Gore suggested that "we must choose competition again and protect it against both suffocating regulation on one hand and unfettered monopolies on the other."

The marketplace should be defined by information conduits, information providers, and information consumers, while the government will ensure that the information marketplace will permit everyone to compete with everyone else. According to Gore, "the opportunity to provide any service to all willing customers" is part of the program. He stated that cable companies, electric utilities, and long-distance companies "must be free to offer two-way communications and local telephone service." And it is the Federal Communications Commission (FCC) that will be authorized to reduce regulation for electronic communications carriers that "lack market power."

Gore discussed the administration's support for the Brooks-Dingell bill, which proposes a framework to permit long-distance and local telephone companies to compete against each other. The legislation transfers jurisdiction from the federal courts to the Department of Justice and the FCC, who will have review and regulatory powers over the system. The administration will continue to bar the "acquisition of existing cable companies by telephone companies within their local service areas" so no single entity controls access to homes and offices. But to increase diversity and benefit end-users, "we will permit telephone companies to provide video programming over new, open access systems," according to Gore.

The issue of open access strikes deep at the heart of everyone. Who shall decide who can access the system? Preserving the free flow of information is paramount in a free society. How can you sell

your ideas or programs if an intermediary, who is also your competitor, has the means to block access to consumers? Using the railroad as a metaphor, Gore recalled that when railroad tracks were different sizes, a passenger could not travel from one system to another. Standardized tracks permitted the creation of a national system that allowed anyone to go anywhere. "Accordingly, our legislative package will contain provisions designed to ensure each carrier's network will be readily available to other users," he said.

Views from the private sector run the gamut, but most favor minimizing the role of the government. Eli M. Noam, former New York Public Service Commissioner, suggested, "The information superhighway concept is less a blueprint than an inkblot test into which every interest group projects its own fantasies for funding and policy. The bulky bills pending in Congress will lead to built-in congressional micromanagement in a dynamic industry, instead of simplifying the 1934 Communications Act."

Agreeing with Noam is Charles Lee, chairman and CEO of GTE Corporation. "The accelerating pace of technological progress, coupled with intense marketplace demand for new products and services, has overwhelmed the legislature and regulatory framework in which our industry operates," he claimed.

The libertarian point of view is best expressed by Peter Huber, a fellow at the Manhattan Institute. Discussing the merging of data, voice, and video, and the role of competition, Huber stated, "The main obstacles to competition are legal. BellSouth, PacTel and the other regional phone companies; AT&T, MCI, and other long-distance carriers; Time-Warner, Cox, and other cable companies; Hughes, Hubbard and other satellite concerns; McGraw, GTE and other cellular carriers—all should be freed completely insofar as they wish to invade each other's territories and service sectors. None of the pending bill before Congress go far enough. Vice-President Gore doesn't have \$300 billion to spend on the information superhighway. These guys do. Set them free, and they will."

It is apparent that the government, allocating broad regulatory power to the FCC, is going to play a role in shaping each of our futures. Wireless technology, which will have a dramatic impact on digital communications, has yet to be fully explored. As Stanley Hubbard, Chairman and CEO of Satellite Broadcasting suggested, "The high-power, direct broadcast satellite (DBS) our company is involved with will begin the end of May 1994. A wireless approach could sweep the country and make regulation meaningless."

If you wish to send E-Mail comments to President Clinton or Vice-President Albert Gore, Jr. they can be reached via America Online: ClintonPZ,, CompuServe: 75300,3155, GENie: WHITEHOUSE, MCI Mail: 5895485, or the Internet: president.whitehouse.gov

de Wayne, NZ4W ■

If the marketplace decides that people want to receive 150 channels with a pizza-pie sized dish rather than pay a lot of money for fiber optics, it could have a profound impact on what's going on in Washington." And sooner than later, it will have an effect on everyone, particularly amateur radio licensees, who presently occupy large segments of the finite spectrum.

*Next month, in the concluding article, Wayne will discuss the amateur radio community and its potential gains and losses on this highway—ed.*

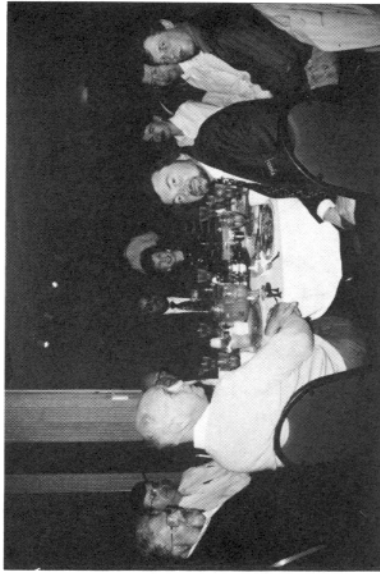
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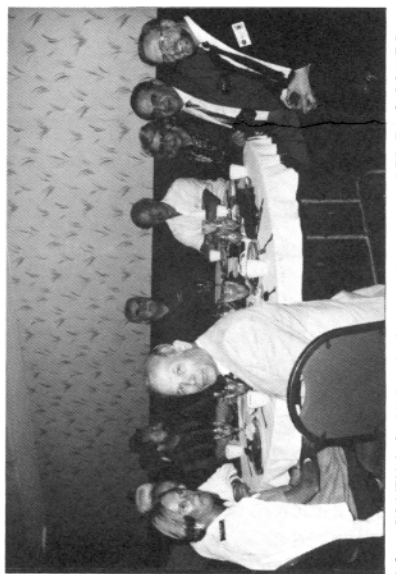
# RTTY/DIGITAL DINNER - DAYTON 1994



Vic, W6MM, Craig, WA8RZ, David, KB1P, Clark, W9CD, Phil, KB8LJ, Janis, XYL of Phil, Tom, DL2FAK, Peter, DL3FCI, Manfred, DG9FAT, Tom, WA8DXD



Michael, W5ZFA, Shirley, N5GGG, Wondy, K5KR, Tiffany, YL with AA5AU, Don, AA5AU, Randy, WX5L, Barbara, XYL of Randy, Keith, KESGA, Pat, pending, Rae, XYL of Michael



Robert, W4NPX, Jody, VP9JM, Walter, KB6BT, Hans, N8PGR, Frank, WA1ECA, Lowell, WB0MGS, Nellie, XE1CI, Arte, 4X6UO, Ted, W2FC



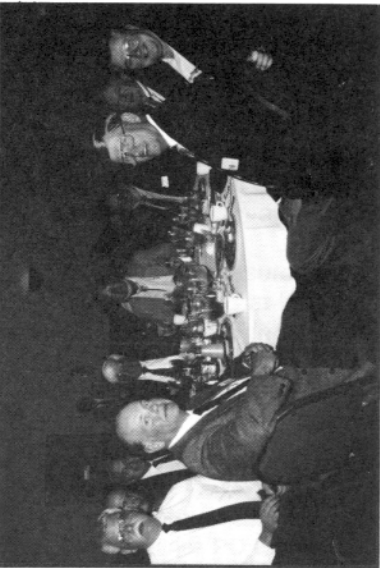
Ken, K9H, Larry, KA0JRO, Mark, WB9HF, Tom, WB9RWQ, Mark, KA96Q, Bob, K1UOL, Paul, W4ZB, Gerald, WA96AR, Randy, KOEU/9G1XA, Bob, WA9AKI



Dewey, W8GE, Lloyd, N1OAZ, Raynard, WA0EEY, Ralph, WB0ESF, Jim, W8EXI, Valda, VE3LJB, Ray, VE3UR, Charles, WB8FAI, Ann, WB8RYH,



Chris, WO1V, Rich, N6GG, Frank, WA1UR, Bob, WB7QWG, Ray, WF1B, Jim, WB7AVD, Steve, N2QCA, Jay, W57I, Ron, A8SKD



Price, W0RU, Joe, K0BX, Ed, WA5VJF, Dan, AA0NZ, Win, KB0KK, Jim, KESHE, Bob, KC9UU, Bud, N10F, Al, W0DKI, Ken, NA0Y



Lenonard, KB2HK, Helen, WB1A0B, Johnny, W1JY, Bea, XYL of Plez, Plez, W1CCX, Robert, WB2CJL, Jules, W2JGR, Frank, N2FF, Richard, AC2D, Bob, KE2FE



Eddie, G0AZT, Radhames, HI3AB, Genevieve, HI3ADJ

Pictures read clockwise from front left



# Measuring FM Power Amplifier Output

by Phil Anderson WØXI

Accurate measurement of VHF power amplifier output is easy given proper equipment and setup. However, many amp users aren't familiar with the requirements for accurately measuring an amp's output. Before you call your dealer or the factory to report "greater-than-expected power output" or "low power output," check out the test arrangement outlined below, and see if you meet all the measurement guidelines listed.

## What You Will Need

A good equipment arrangement for measuring power performance of a 2-meter amplifier is pictured below. To accurately determine an amplifier's power output, we recommend measuring both the input and the output with two high-quality wattmeters, such as the Bird 43 Thru-line. You'll also need an FM rig to drive the unit under test (UUT) and a good dummy load made for 2-meters to terminal the output of the amplifier. Finally, you'll need a DC supply and heavy cabling capable of meeting the voltage and current specs of the amplifier.

## Measuring the Output

Apply DC power to your FM rig and the UUT, key the FM rig's MIC, and measure the voltage at the supply terminals of the UUT. If the voltage is near 13.8 VDC (spec. for most models), then proceed. Key the MIC again and observe amp input and output power. If values are close to those specified, reverse the input meter slug to check that reflected power from the UUT is minimal. If it is, turn the meter slug back to the forward position and note input and output powers.

## Power Measurement Guidelines

If you can answer "Yes" to all of the following measurement guideline questions below, then the power indications are probably correct. If you cannot answer "Yes," then it is very likely that your power measurements are inaccurate and may result in substantial errors.

- Are you using quality meters designed for the frequency and power levels involved? Bird model 43 meters with slugs of the appropriate frequency and power level would be ideal. Poor quality VSWR meters, such as those designed for CB or HF use, are not adequate. Most "inexpensive" meters will not do the job. Don't count on do-all multi-band meters.
- Are you using a dummy load, and is it appropriate for the power level and frequency? Oil-can dummy loads, even if spec'd for VHF, are generally not suitable for VHF and UHF. Wire-wound dummy loads are also unsuitable. Although

high-power dummy loads that present 50 ohms to the amplifier are expensive, there really is no good substitute.

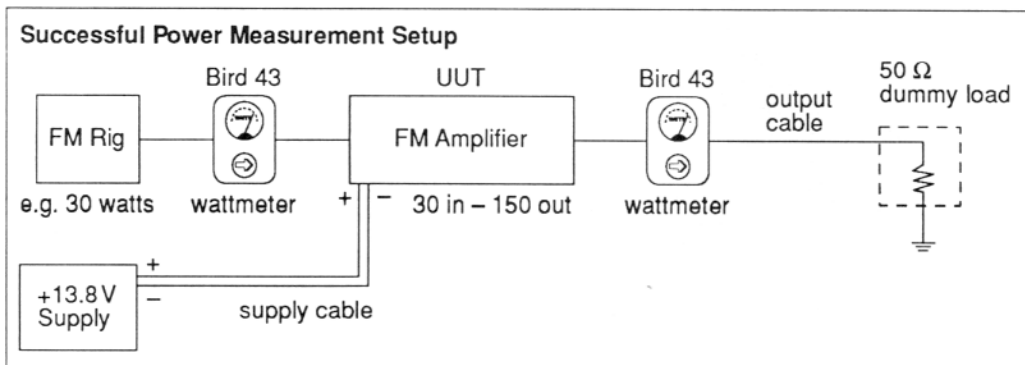
- Are you using your antenna as the test load, and does it present 50-ohms of pure resistance to the amp? Antenna impedance is rarely resistive but has a reactive component at the frequency of operation. To check the reactance, remove the UUT and see if your rig can deliver full power to your antenna, and reverse the slug in the wattmeter to check for reflections. Reflections indicate that the antenna is not purely resistive which will distort the power measurements considerably.

- Are you using good quality coax? If you happen to be using twenty or more feet of poor quality coax, you'll reduce power in your setup considerably. (We use cheap coax, purchased locally in 50 or 75 foot lengths with PL-259 connectors attached, as a VHF 3 dB attenuator. Half the power is lost in 50 feet!) To check the quality of your coax, remove the outer covering on a small section and inspect the braid. If it doesn't fully cover the inner cable and dielectric, its quality is insufficient and will substantially reduce the power output.

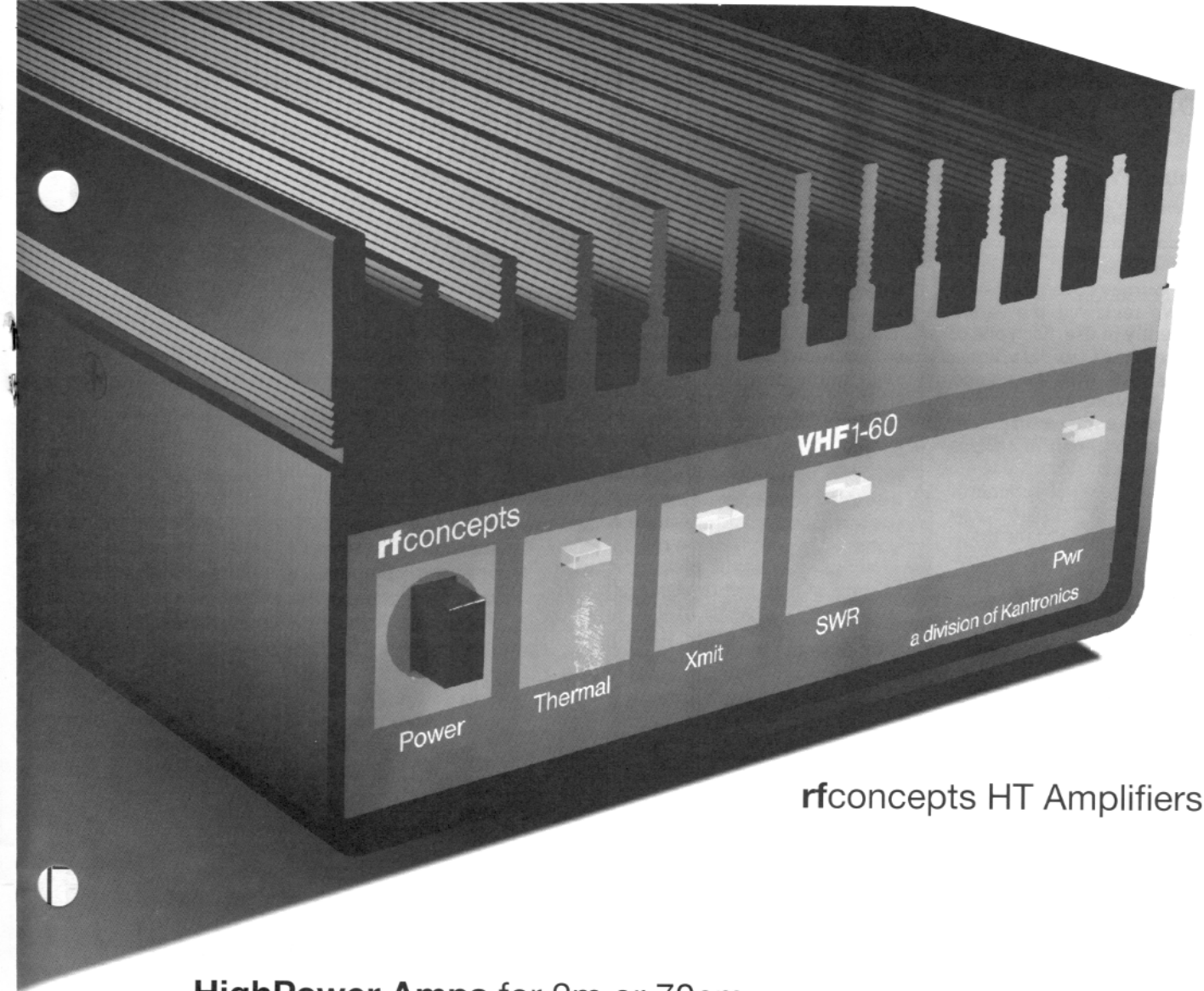
- Are you using a quality power supply, one with 13.8 VDC and sufficient current, and is the wire in the supply cable to the UUT sufficiently large? Your power measurements will be inaccurate if the UUT does not receive sufficient voltage at its power terminals. If your power supply delivers 13.8 VDC at its terminals but the cable drops a half volt due to high cable resistance and large currents, amp power output will drop quickly! It's handy to have current and voltage meters on your supply. Excessive current indicates that the amp may be oscillating and is, therefore, detuned.

- Does your rig deliver full power when driving the UUT? Most modern rigs are designed to reduce power if they detect a load other than 50 ohms. Reduced rig output will, of course, reduce power amp output. If your rig isn't producing full power, check for power being reflected from the amp to the rig. Do this by reversing the slug in the input wattmeter and check for reflected power. It is possible that the amp's input circuit tuning may need to be touched up.

While it is generally easier to make accurate measurements at HF, it is possible to measure true power at VHF or UHF using the proper equipment. A good dummy load, quality meters, and high quality cable of the appropriate size will contribute to accurate power measurements at VHF and UHF.







## rfconcepts HT Amplifiers

### HighPower Amps for 2m or 70cm

Add power to your 2m (VHF) or 70cm (UHF) handie talkie with **rfconcepts'** VHF1-60 or UHF-50. Given 1 - 8 watts of input, the VHF1-60 will produce 60 watts of output power. With 3 - 8 watts of input, the UHF-50 produces 50 watts.

The VHF1-60 and UHF-50 are designed for maximum performance and reliability. They feature frequency discriminators to eliminate false keying by out-of-band signals. Thermal sensing circuits cause amplifier shut-down at temperatures exceeding 131 degrees F, and automatic level control circuits reduce power output when an antenna mismatch exists.

Each amp measures a compact 5x9x3 inches, uses 13.8 VDC at less than 14A, and accepts a maximum RF input of 8 watts.

The **rfconcepts** VHF1-60 and UHF-50 HT amplifiers. Added power for today's 2m and 70cm HTs, automatically.

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# Compression Part II

Peter Schulze, TY1PS

*A new adventure in compression techniques*

Part one of this journey covered lossless compression. We reviewed the varied techniques currently in use. Each one of them reduces the size of our data files, a step that translates into increased throughput. We venture now into less certain but even more interesting territory, the lossy compression of images and sound. I say less certain because the lossy compression passes the contents of any information file, but not necessarily with the same characters as in the original. Is this a worthwhile method of moving mountains of data more effectively? Yes, of course it is. Let's start with some examples of lossy graphics compression and you will see why it is so valuable.

## Image Compression

Today's computers come equipped to display and treat graphics as they should be, in all their full color glory. VGA (and better) screens are today's standard. We all enjoy these fine displays which allow us to manipulate any graphic, from line art to the finest full-color photographs. But all these images have one thing in common—they require huge amounts of space that cram our hard disks to capacity in a big hurry. A typical color photograph of average size runs to about 400KB in size. Lossless compression using traditional methods might reduce it to a bit less than 200KB. But that is still far too large to transfer within a reasonable amount of air time. However, graphic files have an inherent advantage over the other data files we find on our hard disks. Slight modifications of the file structure do no harm to the visual quality of the original picture in the file! Compression tricks the eye and this little edge creates significant benefits, as you will see.

JPEG. The most widely used method of lossy image compression is the creation of the "Joint Photographic Experts Group," or JPEG. The method uses mathematical methods to determine the "importance" of the various information contained in the picture file. A simple example—slight variations in the shades of a blue sky are deemed to be less important than the sudden change from black to white caused by a black line in the picture. The second step throws out the less important (in the example, the sky would be made the same blue all over) while the black line would remain intact. Once the unimportant details are

thrown out, lossless compression reduces the 400 KB image to a 10-20KB file. The amount of discarded information is subject to a certain amount of control so reasonable results can be obtained through careful trial and error. Once reduced to 20KB or less, the file becomes a candidate for transmission via HF radio.

JPEG has limitations, though. The color insert convincingly demonstrates that the quality loss reaches serious proportions as the compression rate increases. There would be little pleasure in transmitting to a friend the last image (the furthest to the right) of Tini and Angelika. So, under these circumstances, we would choose to use but a small fraction of the compression potential of this mode. And then live with the larger file size.

**Fractal.** This new approach to image compression showed up recently. A mathematical system, this mode employs fractals and the formulae behind them. A fractal is simply a formula describing an image. Nonsense? While it sounds a bit suspicious research proves that fractals accurately describe not only pictures of fantasy but real world photographs as well. Once developed, the formula describing a given image becomes the vehicle for transmitting the image to the receiving station. And the compression reaches a formidable rate because only the formula describing the picture is transmitted! Formulae contain relatively small amounts of data. It is this remarkable achievement that leads to the attainable compression rates of 95% or even higher.

There is a drawback. An impressive amount of computer time is needed to create the formula and compress the image. Several minutes are often needed on the fastest 486/66 machines. Only the compression part of the cycle pays that price, however. At the other end of the link, the reconstruction of the image is very fast and displays almost instantly.

Look again at the color insert. The superiority of fractal at high compression rates is very obvious. There is virtually no loss in the basic quality of the image. The visible softening, while actually a degradation of the image, is not unpleasant. And it is far more satisfying, even under extreme compression, than the JPEG system delivers.

Express 2.04 (my software for the Hal PCI-4000 Clover board) uses both JPEG and Fractal (licensed from Iterated Systems, Inc.) image compression, allowing transfers containing full color high quality pictures in a few minutes. There are many other applications in and around our computer/radio world. On Amateur satellites, JPEG compression is used to store pictures taken by the satellite's cameras in their mailboxes. Microsoft chose Fractal for their "Encarta" CD-ROM multimedia encyclopedia. These are but two examples.

## Digitized Sounds

Lossy compression found another use in digitized voice transmission. With the appearance of low cost sound cards the recording, storing or playing back of voice or other sounds has become routine. But there are other uses for these files. Digital radio moves these sounds with amazing fidelity over HF and this adds an entirely new dimension to your links.

Again, files containing recorded voice are of the very large variety! A mere few seconds of speech translates into hundreds of kilobytes and a collection of them will quickly fill your hard disk. Lossy compression saves the day again for it reduces files to a size that can be transmitted at acceptable speed. Speech is much like an image when digitized. Large amounts of the time in the recording are the equal of silence. These pauses between words or syllables comprise a significant share of the total file. Reduced to complete silence by compression, only information about the length (in milliseconds) of the silence is transmitted. This so-called "silence compression," all by itself reduces the file size by 20 to 40 percent.

The compression system next goes to work on the definition of the signal. Normally an audio signal digitizes at a rate of 11Khz or more. This means 11000 eight-bit samples are taken every second! A sampling rate of that magnitude allows for signals up to 5.5Khz to be recorded. But for speech, a bandwidth of 2.5Khz is acceptable. Thus we simply remove every second sample and still have adequate quality, and, once again, cut the file size in half.

The recordings we get from sound cards are made of samples of eight bits, giving 256 possible values for each sample. Reducing the definition will reduce the size of the file as well as the quality of the signal. Experimentation shows that reducing the definition to four bits (instead of eight) is quite acceptable. This gives us another 50% cut in size. The signal now may be compared to what we receive over the average phone line.. more

# DIGITAL JOURNAL

## Special Color Supplement

prepared by Peter Schulze TY1PS

### Example 1 - Fractal Picture Compression



My wife Bibi  
Original Picture  
Filesize : 883112 bytes  
transmission time: 4 hours



Compressed Picture  
(Fractal Compression at Factor 10)  
Filesize : 47076 bytes  
transmission time: 14 minutes



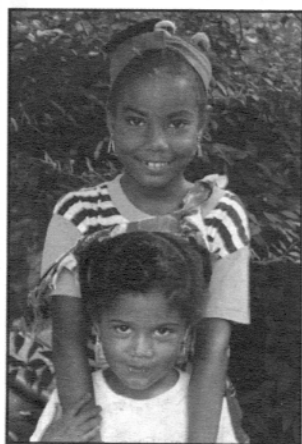
Compressed Picture  
(Fractal Compression at Factor 15)  
Filesize : 34062 bytes  
transmission time: 10 minutes



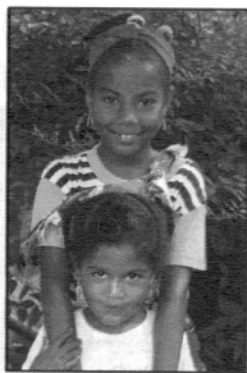
Compressed Picture  
(Fractal Compression at Factor 30)  
Filesize : 17775 bytes  
transmission time: 5 minutes

This example shows the degradation of image quality due to compression with the fractal image compression method. The original Image is 9 x 13 cm and has been scanned in 24 bit color at 95 dpi. Transmission times using Express / Clover assuming ideal conditions.

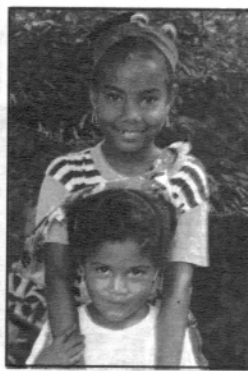
### Example 2 - JPEG Picture Compression



My daughters Tini & Angelika  
Original Picture  
Filesize: 353694 bytes  
transmission time : 2 hours



Compressed picture  
(JPEG Compression 5)  
File size : 79201 bytes  
transmission time: 25 minutes



Compressed picture  
(JPEG Compression 15)  
File size : 21091 bytes  
transmission time: 8 minutes



Compressed picture  
(JPEG Compression 50)  
File size : 8397 bytes  
transmission time: 3 minutes



Compressed picture  
(JPEG Compr. maximum)  
File size : 4679 bytes  
transmission time: 1.5 min.

Here you can compare image quality when using JPEG compression. The original Image is 7 x 10 cm and has been scanned in 24 bit color at 95 dpi. Transmission times using Express / Clover assuming ideal conditions.

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# HAL DOES IT FASTER

ARQ Link To K9GWT CLOVER  
Tune For Equal Amplitudes MAX

T1 \_\_\_\_\_  
T2 \_\_\_\_\_  
T3 \_\_\_\_\_  
T4 \_\_\_\_\_

	MOD	SNR	FRQ	PHS	ECC	TPR
MY	16P4A	53	0	11	0	100
MY	16P4A	54	0	11	0	100
HIS	BPSM	59	0	7	0	100
HIS	BPSM	58	0	7	0	100

Now you can send and receive data at higher rates on HF with a mode... plugs into your PC. The PCI-4000/ PC-CLOVER system plugs into... higher PC and brings you a new era in data transmission... PC-CLOVER system includes binary data transfer... higher efficiency. The CLOVER system is... for differences in propagation conditions... common error correction to insure error-free... efficiency. The PC-CLOVER system comes... add CLOVER to your PC.

**NOW WITH RTTY, AMTOR, & PACTOR!**

CLOVER DIS WORD R001 1001 21:04

Name: DATA.WKS	Byte Count: 18476
File Size: 12160	Xfer Time: 00:01:33
Compressed: 5200	Xfer Rate: 136
Protocol: PKLIB	% Complete: _____

HAL PC-CLOVER

Press ESC Key To Stop Binary File Transfer

Rev up your HF data with the PC-CLOVER system from HAL. CLOVER is the revolutionary modulation technique designed for the HF band. It uses 4 tones, up to 16 phases and 4 amplitudes to really SCREAM on HF. And, it does all this in a 500 Hz bandwidth.

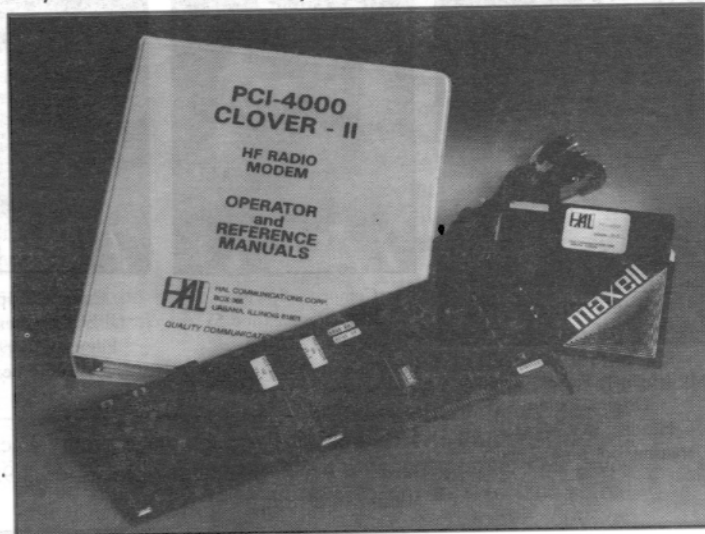
Supercharge your station with CLOVER. All you need is your HF radio, 286 or higher PC, and the PCI-4000/PC-CLOVER system from HAL.

Don't be left in the dust. Call HAL and order your PC-CLOVER system and get ready for SPEED.

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than good enough for our needs. Express 2.04 for Clover uses all of the above methods to reduce the size of the digitized voice transmissions. It will not allow a live conversation over HF, of course, but it allows us to attach voice mail to messages or pictures. On 9600 baud UHF, however, I assume we could have a live QSO in digitized voice!

## Conclusion

Data compression is a huge and dynamic field. Fortunately, constant research is going on to give us better and faster methods of compression. Among the existing methods, each has its own distinct strength which makes it appropriate for a specific application. No one method is "bad" or the other "good." It depends heavily on the data to be transmitted and the circumstances under which the transmission must take place. For this reason, a flexible approach to data compression is the best way to make the most efficient use of the technology. With one exception, all systems in use in the amateur world today rely on one of the possible methods. Pactor relies on Huffman coding; packet, LZW variations; Hal chose to implement PKzip as the sole method of data compression in their binary protocol for Clover.

A more flexible approach is needed to maximize the compression benefit from existing methods and to allow future developments the easy implementation they deserve. The latest version of Express, for example, uses a variable protocol that sends the compression method along with the data transmitted to the other station. This allows for a virtually unlimited number of compression techniques and creates an environment that welcomes new systems. In the current version of the program, Express chooses from seven methods of compression!

I hope this brief introduction to the world of compression gave you an understanding of how it works. If you understand the basics you will be in a position to understand what lay behind all the new programs we see coming up in digital radio. If you have any further questions or want to get more details about how to implement compression into your own programs, don't hesitate to drop me a note. Reach me at:

TY1PS@TY1PS.BEN.AF  
CompuServe as 72253,2602  
Fax +229-313879  
mail to:  
Box 06-2535, Cotonou, Benin (W. Africa).

73 de Peter Schulze, TY1PS ■

## MINIPROP PLUS

Steve Holton, N2QCA

*This one is a "keeper" for my shack.*

My review of CAPMAN in the March issue, brought a copy of MINIPROP PLUS version 2.02 to my mail box from it's author Shel Shallon, W6EL. This program offers an interesting contrast to CAPMAN. To begin with it's resource requirements are quite modest - any IBM PC or compatible with 512k RAM, DOS 2.11 and a graphics adapter. A math co-processor is not required but is strongly recommended to speed up computations. The program uses 294K bytes of disk space and can be run from a hard disk or from diskette. The program sells for \$60 in the US and Canada and \$65 elsewhere.

My first attempts at installing/running it managed to lock up both my machines requiring the old Big Red/White Switch to recover. It turns out that MINIPROP uses both text and graphic modes and both the program and the install program choked on the 36 line text mode that I normally use. Once identified, this was problem was easily overcome and I started to play with the program.

One thing I really liked about the program is the fact that the interface is very intuitive. I was able to get it setup and running without having to give the excellent 52 page manual more than a passing glance. Of course, to get the full benefits of a program such as this will take some study of the documentation and some usage, but it's a real pleasure to get on the air so easily. The manual contains enough basic information to enable someone who has never used a propagation program to get started. This answers one of my pet peeves—programs and manuals that assume you have already used several programs of this particular type, that all you need is some reference information. To me this is all wrong, yet it is a common failing among all types of software. Off the soapbox, but you'll probably be subjected to more from me along this line in the future.

Having started the program for the first time you must select options and enter the default location, i.e. your QTH, specifying the latitude and longitude as well as the time offset from UTC. The time is the offset of your computer's clock. It handles machines, such as mine, that are set to UTC just fine. Having saved this initial setup you have a choice of five principal options: mode-searching and quick-look prediction options; a map of the path and terminator; frequency map and a DX compass.

The first three options all deal with propagation between two points (terminals in the nomenclature of MINIPROP). You can specify a point by its latitude and longitude, your default (F7), or from the atlas provided. The atlas has more than 370 locations which you can access by prefix or name to make your selection. The atlas can be extended or modified via the Atlas Utilities item on the main menu. To complete the definition of the path to

be analyzed you must specify the date if you wish other than the current date and the conditions. The conditions can be entered either as a solar flux value or sun-spot number. The solar flux values are broadcast on WWV at 18 minutes past the hour (WWVH at 45). Other sources are discussed in the manual. Optionally, you can also provide the geomagnetic K index to be factored into the calculations.

Having selected two points you can compute and display the results. The path and terminator map displays a world map with the path indicated along with the terminator (gray line) and the location of the sun. If you wish you can select "now" and the map will be automatically updated minute by minute with the slowly moving gray line. There are two levels of propagation predictions, the quick look and the mode searching. On faster machines the mode searching is so fast that you'll probably use it all the time. On my 33MHz 486 it takes about 4 seconds to perform the mode searching computations.

There are a number of display options for the results. There is a tabular summary at 2 hour intervals, you can zoom into half-hourly intervals, view a graph, or see the number and configuration of the hops. You can also select the long path and examine those results. The MUF calculations are based on techniques developed at the BBC for the F-layer and an E-layer method published in an ITU (CCIR) report. D-layer effects are also considered. The quantity of computed results and their graphical plots are not as comprehensive perhaps as CAPMAN (probably also indicative by the speed of the calculations) but this is offset, at least for the average user by the speed, ease of use, and integration of the input, computation and results display of MINIPROP PLUS.

In addition to the point to point computations there are two displays based on a single location. The frequency map shows on a world map the highest available frequency that is less than the short-path MUF. This is displayed in terms of the 5 principal amateur bands. The DX compass displays the MUFs in each of 12 directions - like a compass rose. These displays, as well as the path and terminator map allow you to specify a new date or time and re-display the new results directly from the results display screen.

If you get the impression that I like this program, you're correct. For me it's the right combination of an easy to use, well documented program that's as sophisticated in it's propagation predictions as I'm likely to need. This one is a "keeper" for my shack.

de Steve, N2QCA ■

1113 Sunset St., Yorktown Hts., NY 10598

# CONTESTING

Richard Lawton, N6GG

DARC announces New Digital Contest!

## RTTY Contests - Coming Events

Date:	Contest:
JUN 11-12	ANARTS WW Digital (Australian)
JUL 3	DARC CORONA 10M Digi (German) --NEW!
JUL 9-10	BARTG AMTOR/PACTOR (English) --NEW!
JUL 16-17	DARCHF RTTY Part II (German) --NEW!
AUG 20-21	SARTG WW RTTY (Swedish)
SEP 4	DARC CORONA 10M Digi (German) --NEW!
SEP 24-25	CQ WW Digital (USA)

### -- REMINDERS: --

SP DX RTTY Contest (April) log entries mailing deadline: JUN 15, 1994.

Mail logs to:  
SP DX RTTY Contest Manager  
Christopher Ulatowski, SP2UUU  
P.O. Box 253  
81-963 GDYNIA 1  
POLAND

VOLTA RTTY DX Contest (May) log entries mailing deadline: JUL 15, 1994.

Mail logs to:  
Francesco DiMichele, I2DMI  
P.O. Box 55  
22063 CANTU  
ITALY

### -- COMING UP: --

#### ANARTS WW RTTY/Digital Contest

June 11-12, 1994

Sponsored by Australian National Amateur Radio Teleprinter Society

CONTEST PERIOD: from 0000Z Sat. to 0000Z Mon. (48 hours)

Maximum operating time allowed: 30 hours for Single op entries and SWLs. There are no restrictions on the duration of rest periods. Multi-op stations may operate the entire contest period. Summary of operating times must be submitted with each score.

BANDS: 80, 40, 20, 15, and 10M. (five bands)

CLASSES: (A) Single-op; (B) Multi-op; and (C) SWL.

MODES: All digital modes permitted; RTTY, AMTOR, FEC, and Packet.

EXCHANGE: RST + Zone + Time (UTC).

MULTIPLIERS: Each ARRL DXCC Country, and each call district of VK, JA, VE, and W count as separate countries on each band. QSO's with one's own country is not valid for multiplier count. (W6 may work W7 or W5 for mult, but not W6.) Each continent QSO counts as a multiplier (maximum of six).

QSO POINTS: Use Exchange Points Table to determine QSO points. (See the Table on page 9 of April '94 issue of RTTY/Digital Journal) Table is also in the RTTY Contester's Guide, page 24.

SCORING: Total QSO points x total multipliers x number of continents worked. (max. 6) After the above calculations, world stations add 100 points for each VK QSO on 20M, 200 points for each VK QSO on 15M, 300 points for each QSO on 10M, 400 points for each VK QSO on 40M, and 500 points for each VK QSO on 80M.

AWARDS: Awards will be issued for 1st, 2nd, and 3rd place on world basis, and also on a country basis.

LOGS: Separate logsheets are required for each band. Logs must show: BAND, DATE and TIME (UTC), CALLSIGN, MESSAGE Sent and Received, NEW MULTIPLIERS, and QSO POINTS. Summary sheet must show: Your callsign, name and address of operator, bands used, points claimed for each band, number of VK stations QSOed, total points claimed, and signature/s. Multi-op station logs must contain the signatures and callsigns of each operator.

Logsheets, summary sheets, multiplier and dupesheets, EXCHANGE POINTS TABLE, and a Band Use Chart for recording ON/OFF TIMES are all available for copying from the RTTY Contester's Guide, published by the RTTY Journal.

Logs must be received by the Contest Committee by September 1, 1994.

Mail to:  
Contest Manager, VK2BQS  
Jim Swan  
P.O. Box 93  
TOONGABBIE, N.S.W. 2146  
AUSTRALIA

COMMENTS: For single op stations, this is a 30 hour contest (out of the 48 hours). Multi-op stations may operate the full 48 hours. QSO points are determined by the Exchange Points Table. This table is based on the 40 CQ Zones and is arranged so that the further away the QSO is from your Zone, the higher the points scored. (PLEASE NOTE: CQ Zones DO NOT

count as multipliers.) Each VK, JA, VE, and W call areas count as separate countries on each band. This contest counts band multipliers, making the low bands more active, and giving more bonus QSO points, too. Don't forget to work the continents for additional mults. Try to keep track of your operating time, as single ops are only allowed a maximum of 30 hours out of the 48 hour period. Your Summary Sheet requires that you list your TIME ON/OFF records.

#### DARC CORONA 10M Digital Contest

July 3, 1994

Sponsored by Deutscher Amateur-Radio-Club e.V. (DARC)

CONTEST PERIOD: Sunday, March 6, from 1100Z to 1700Z (6 hours)

NOTE: Contest will take place on the first Sunday of March, July, September, and November of each year.

MODES: RTTY, AMTOR, PACTOR, and CLOVER

BANDS: 10M ONLY

CLASSES: A - Single op B - multi-op C - SWL

CONTEST CALL:

for RTTY: "CQ CORONA TEST DE ...."

for AMTOR/PACTOR: use FEC (mode B) for "CQ CORONA TEST de selcall XXXX"

Use ARQ (mode A) for answering and contest exchange. Contest exchange in any other mode is subject to disqualification.

EXCHANGE: USA stations: send RST + QSO nr. + name + State

All others: send RST + QSO nr. + name

CONTACTS: Additional QSOs are allowed with same station on different mode after a 15 minute interval, or after a QSO with another station.

MULTIPLIERS: Each DXCC/WAE country, and each USA state, and each call district in JA, VE, and VK, (NOT USA). Count only the first QSO with a USA station as a DXCC/WAE country multiplier.

QSO POINTS: Count 1 point for each completed QSO.

FINAL SCORE: Total QSOs x total multipliers.

AWARDS: To top stations in each class, country, and district mentioned above.

LOGS: Use separate logsheets for each mode. Logsheets must contain: Date, Mode, Time UTC, Callsign, message sent/received, name, USA-State, first-time multiplier prefix, and QSO points. Also required is a Summary sheet with a list of claimed multipliers. If entry is multi-op, please list names and callsigns of all ops. Comments are very much appreciated.

DEADLINES: All logs must be received by 60 days after the Contest. Mail to:

Werner LUDWIG, DF5BX  
P.O. Box 12 70  
D-49110 Georgsmarienhutte  
GERMANY

**COMMENTS:** This is an all-digital 10M contest, except for HF Packet, and it is 6 hours long. It occurs on Sundays, 4 times a year. There are no multipliers for USA call areas. Just the STATES count for mults. This means that only your FIRST USA QSO in the contest will count for a DXCC/WAE country mult, along with the State mult. No indication was made about counting multipliers again after changing digital modes. No mention was made in the official rules about how to count KH6/KL7. Are they USA states or separate countries? Most contest rules count them as separate countries. I plan to do that. It makes more sense and is less confusing. With the propagation forecasts looking rather poor for 10M, this Contest will really be a 6-hour challenge. Let's see if the really high power stations can ionize some paths for us. Stay tuned (up).

## SENDING YOUR EXCHANGE AND CALLSIGN

### WHEN CONDITIONS ARE ROUGH

I've received several letters recently, suggesting better ways to send the message exchange in a contest. It's a good point. Since this is usually a stored message in a buffer and triggered by a Function key, there should be no problem when conditions are good. But when the QRM is heavy, or the path is marginal, things happen that can completely garble the exchange, and your call, too. Sometimes even repeats have to be repeated. To handle this I have loaded a Function key that asks for a repeat: "??-AGN-??"

Here's some suggestions and ideas that should help correct this dilemma:

■ Since ALL exchanges must include the RST signal report (traditionally required because of QSL card verification for awards, etc. but in recent years is being completely misused, and is not an honest report anymore), the trend on CW is to skip sending the letters "RST." Everyone knows that "599" means "RST 599." This can be a big help on RTTY during marginal conditions because there is no troublesome flip of letters to numbers separated by a space. It seems like during marginal conditions, any time there is a space sent it allows trouble to squeeze in. If you feel more comfortable sending "RST 599," try using a hyphen "-" between the RST and 599. That makes it "RST-599."

■ During the '94 ARRL Roundup I tried a number of different ways to send the exchange, just to see if I could improve the throughput. (The exchange in the Roundup is RST + a two-letter state abbreviation.) One letter I received stated that during the ARRL '94 Roundup, using a hyphen had fewer request for repeats than a slash (/) between parts of the exchange.

■ Here's what worked best for me: I set a Function key to send a Carriage Return/Line Feed just before "599--CA" and immediately followed that with a

**duplicate CR/LF 599--CA (NO spaces).** This accomplishes three things:

- Letters are separated from numbers by two hyphens, making it easier to read.
- The Carriage Return/Line Feed forces the TNC of the receiving station to start a new line, thus resetting it to start precisely at the left edge of the screen without a possible previous garble.
- The two received "599--CA" are stacked exactly one above the other, making it easy to find, read, and compare on an otherwise garbled screen.

■ For those using the "RTTY by WF1B" Contesting software, the way to make the CR/LF is to press **Ctrl-P**, then **Ctrl-M**. This is also a good way to send your call in a pileup - namely stacking your call sign, and clearing the receiving station's two lines for your grand entrance, as explained below. (It's nice for stacking 2-line CQ's, too. Short ones, please!)

■ Those new to RTTY contesting may wonder why so many callers use "DE" in front of their call sign. On CW it's a sign of a newcomer to CW contests joining the fray. But on RTTY it's the sign of a smart, SMART, contester using the amazing WF1B software. This software recognizes all call signs preceded by a "DE" and highlights them on the screen. Not only that, the highlight also tells you if you've QSOed before (DUPE), or whether it's a new multiplier. In addition, **you don't even have to type the call sign to answer the caller;** just press

the "Home" key to place it in the sending/logging window. The **Insert** key is thereby cocked, ready to send his call sign and the exchange. Fantastic!

■ Here's how to precisely stack your call sign on the left edge of the receiving station's monitor using WF1B's software: press **Ctrl-F7** to load message buffers and select your favorite "DE URCALL Function key;" Next, type **DE URCALL** then **Ctrl-P**, then **Ctrl-M** (NO spaces, except between DE and URCALL). That creates the CR/LF in the message buffer. Next, type **DE URCALL** again. That's it! (It's not necessary to force your TNC to start a transmission with a CR/LF. It

does that automatically anyway.)

In summary, the stacking method should help the receiving station's operator to make quicker and more accurate decisions, especially on the call sign. Sure, it takes more time to send both your call sign and exchange twice (at RTTY speed of 60 wpm it's about 3 seconds). But it certainly beats sloppy operating with the possibility of losing multipliers as the log checker scans through the logs. And how about this sad scenario: "One-shot" assumes that the rare DX got his one-shot call sign correct, but ends up getting his QSL card returned, minus the "Green Stamp," with that embarrassing phrase, "YOU'RE NOT IN THE LOG." Sloppy ops lose more bucks that way! Kind of a built in fine, isn't it?

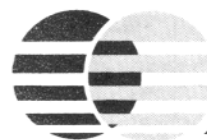
I'd like to hear from you on this. Did I light a lightbulb out there?

((73)) See you in the pileups,

de Rich, N6GG ■

P.S.

*Drop me a line with an idea to share,  
Or, drop me a line with an item to air.  
Drop me a line with anger to bare...  
But don't drop ME... 'cause I care!*



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## LAST WORD

Jim Mortensen, N2HOS

*News & views from the publisher.*

**Change of Address.** It is the season I guess. Due to unforeseen circumstances, we must change our address for all matters relating to membership, advertising and editorial. While the New York address remains the "official" address, for all practical purposes, this new address will serve the needs of all our members and advertisers. Please address all correspondence to PO Box 2550, Goldenrod, FL 32733-2550. The mail moves from there to the appropriate location. This is just one more of the interesting developments in our early history!

**There is neither space nor time to talk of Dayton's rain,** the crowds in Hara, the wiped-out flea market nor the tow trucks working the mud puddles they called parking lots. But we should make note of a few of the successful digital events, winners in spite of the weather, the timing or the lure of other attractions. The Digital Forum on Sunday morning drew a larger crowd than anything but the arena itself. We heard about G-TOR from the Kantronics team of experts, a bit about the year-away Pactor II from SCS and a lot about the marvels of Express 2.0 software for Clover. As usual, each presentation came to us direct from the developer or author of the subject at hand. It was a good showing by any measure. Had the Forum been on Saturday we would easily have filled Room #1, Hara's largest and best of its poor lot of meeting rooms. Our thanks to those who took the time and effort to make it a first class event.

On Friday, the ADRS forums were also well attended. The discussion centered on the concerns of the keyboarder, with a lot of emphasis on where the new modes fit on the crowded bands. As discussed in the last issue, it will take some time before different patterns of clustering develop, but we all must strive to lead the newcomers in the right direction. And all of us must remember to LISTEN before we transmit! We learned not to program events like the DX and Contest Forum at the Radisson once Hara opens on Friday. Seems like the magnet of new equipment and low prices (or fantasies of same) drew everybody despite the limited transportation options. Without Dale Sinner's arrangement of bus transportation, it would have been very difficult indeed.

The Saturday dinner sold out as usual and was rich in fellowship. It reminded us of what Dayton is really all about.

Forget the gear, the pressure of the crowds, the humidity in Hara, the washed out flea market . . . when you drive or fly away you remember the days and nights in terms of the people you met, ate or drank with, talked to or about; the contacts planned later on, the meeting next year. The warmth of the relationships overcame both rain and chilly Sunday mornings and made Dayton worth it one more time.

**Welcome to the Digital Digest readers!** As we announced at Dayton, the Digital Digest folds its readership into the Journal effective with this issue. We trust the DD's readers feel very much at home in this new environment. Of course the Journal is different, yet the similarities probably outweigh the differences. We focus on the needs of the world's digital keyboarders and the Journal, now the single voice, will continue to serve that special audience to the very best of our collective ability. We welcome you into the ADRS as well and trust you share the Society's enthusiasm for all of the digital modes. As always, we encourage your comments and opinions about the Journal or about any article contained in it. And we happily note the addition of Tom Arvo to our staff as well. We wasted no time in putting him to work. The "Digest" section of the magazine will develop under his experienced leadership. The first attempt can be found on page 25.

**Enroute home,** I had a wonderful stop-over in Atlanta. Usha (VU2UGI) and Gul (VU2GI) Thadani met me at the airport for about ninety minutes worth of catch-up conversation. The two of them have given the VU QSL card to more American hams than any other. I am quite sure of that claim for I have been their QSL manager for several years. They have been in Atlanta for a bit over a year to get their son Vik (US born) into Georgia Tech. He enters in August and they will return to VU late in the year. But, instead of going back to their old jobs they will be going into full-time religious historical studies, something that has captivated them for many years. They are a unique couple and I am fortunate to count them as friends. Ted W2FG shares the relationship and he has visited them in Bombay and even has a VU license to prove it!

**More Change of Address.** It is that time of the year, once again. Gen and I shifted our headquarters from Indian Rocks

Beach to Briarcliff Manor before this issue went to press. If you need to reach me, the phone is 914 762 2507, fax 914 762 4613. And, use CIS 71753,1077 for the fastest turn-around.

**Help Wanted.** Oh, there are lots of openings this month. While not much can be said for the cash compensation, there is a great deal of glory attached to each one of these tasks. To qualify you must meet all of the specifications. The sole requirement is your agreement to do what you volunteer to do! That's all we ask.

First, Paul W4ZB is the director in charge of our new hamfest initiative. The ADRS must, it was agreed at the Dayton Board meeting, participate in a selected list of major hamfests beginning late this year. Whatever else is required, we need volunteers to man the booths, answer questions, sell a few products and collect funds for new or renewed ADRS memberships. While the list of hamfests is not finalized, the presence of a corps of volunteers is going to influence the choice to be sure. So, if you live in or near a city that has a hamfest that draws ten thousand or so amateurs each year; if you have a burning desire to help us do this necessary work, please contact Paul now. His CompuServe number is 70743,3517.

Second, and this one has no geographic restrictions whatsoever, involves CompuServe. The ADRS is in the midst of setting up a continuing forum utilizing the vast resources of this system. We need two things. First, we want to hear from as many of you as possible about the subjects we should be prepared to cover within the forum. By way of example, let me list a few thoughts overheard at Dayton: 1) we should have hardware and software manufacturers available as a "helpline" service 2) all hardware and software reviews should be posted on the forum 3) all Journal writers should be available for E-mail questions and discussion 4) several "experts" should be available one or two nights a week for live discussion in a roundtable. You get the drift. Let us hear from you about your thoughts on the subject.

This is the tough part. We need volunteers to make it work. We need a chairperson (I hate that term) or director, someone who is willing to log in every day and monitor the traffic, answer it or direct it to the appropriate individual. This person would also have the responsibility of reporting on the Forum once a month to the readers of the Journal. This all takes a bit of experience, of course, but you need not be an expert in every mode or every phase of digital practice to pull it off. Reliability and dedication are the two "musts."

We also need a panel of experts. And here you can be knowledgeable in but



one small part of the digital spectrum and qualify. The emphasis is on the word panel, or group, who together cover the entire range of digital activity, and who, in unison, deliver answers to the many questions we anticipate.

If you would like to take part in this worthy experiment, please let Jim KE5HE or me know of your interest. By the time we hear from you we should have the framework in place. We will keep you posted as we approach the launch of this new member service.

**The Board Meeting** (on the Thursday evening before Dayton began) focused on other subjects relating to growth of the Society as well. It was agreed that we would develop a packet bulletin service, develop a relationship with the various packet groups around the country, expand our international exchanges (see the BARTG letter in this issue), expand the development of unique software, and so forth. We have only begun the journey.

The Board also appointed Paul W4ZB an additional director and Al N9BAC as an Assistant Treasurer. Both were officially elected the next day at the membership meeting. Al, a very welcome volunteer, is computerizing our accounting system. He prepares all of our statements and files the necessary forms with the IRS, among others. Finally, it was agreed to hold the 1995 membership meeting at Dayton, though it was also pointed out that if the transportation and forum problems repeat themselves then the Board would (albeit reluctantly) ask the membership to select another site for the 1996 meeting.

**ARRL Digital Conference.** If there is a place as bad as Dayton in April, it may be Minneapolis in August (I know. I used to live there). Be that as it may the Digital Conference is being sponsored by the TwinsLAN ARC on August 19-21. There is an interesting program that contains something for all. The ADRS will be there. Johan KC7WW will present a paper on the subject of home brew DSP modems, a paper that will be published in the September and October Journals. We thank Johan for his generous contribution of time and talent. Attend if you can make it. Contact Carl Estey on the land line at Internet:estey@skyler.mavd.honeywell.com. Or call Paul Ramey at 612 432 1149.

ON6RO and other Belgian amateurs are creating a summer-long special event station (see the Digest section). It is the 50th anniversary of D-Day, and in September, the 50th anniversary of Belgium's freedom, so the station is also paying tribute to soldiers of many nations who participated in those great events. Belgium's "other" battle for their country--the Ardennes, or the "Battle of the Bulge" began 50 years ago this December 16th. To those of us who were in it from the first day to

the last some six or seven weeks later, it remains the biggest battle of them all. Such scope and ferocity dwarfed our Italian campaigns, the invasion of southern France, the struggle in the snows of the Alps of Southern France. This was the longest and coldest winter of our lives to this very date some 49.5 years later (though some survivors of this past winter might argue the point). One of the memorial seals Rene' sent over brought back many memories. Printed in full-color are the city and village names that made headlines then--St. Vith, Stavelot, Malmedy (where I saw the first German jet airplane--on the very day the weather broke and the air force returned to support us). I would suggest they add to the list a very small village named Trois Pont, the scene of some of the most bitter cold and fighting. They were memorable and never-to-be-forgotten days and nights, long nights that aged some nineteen year old paratroopers beyond their years. . . I wish I could be there to join in the memorial activities. I can't but I will certainly link with them during the summer and fall.

The bonus issue will be in the mail by August 1st. Don't miss this special treat.

Imagine a sixteen page issue devoted exclusively to the newest modes--Clover, Factor and G-TOR. Mix in the three authors--Bill Henry, Tom Rink and Phil Anderson. The result is an extraordinary blend of information too good to pass on to your friends. Save it.

**Software horror stories of the month:** WordPerfect 6.0a. Seven disks to upgrade the fiasco called 6.0. The result? The program won't even run! Believe me. Scam of the month: Word 6.0--"Millions have switched. Word reads WordPerfect files and retains the format." Nonsense! A fax to and a returned phone call from the Word marketing manager assured me that there was no problem. The disks they would overnight to me would solve the problem. They arrived. Yes, Word can read WP5.1 or 5.2 but hasn't even heard of 6.0. How do they get away with it? My second fax has not been answered. My advice to myself: Never, Ever upgrade anything until next year!! The horror story of last month will be continued soon.

73 de Jim, N2HOS SK ■

## DX News FALSH

Avis Island will be activated July 21- 25 using the callsign YW0RCV. The occasion marks the 191st anniversary of the Venezuela Navy and 60 years for the Venezuela Radio Club. VRC will sponsor this all mode (SSB, CW, and Digital) all band (no WARC) event. QSL to IARU Bureau via YV5AJ, Radio Club Venezolano, POB 2205, Caracas, 1010-A, Venezuela. See September DX News column for more details.

## LOOKING BACK

21 Years Ago (RDJ)

- ✕ DXCC Plaque # 4 awarded to ON4CK. FG7XT 110/102 -- no cards received yet. WB6RXM 68/58
- ✕ K4EEU describes his completely solid state receiver designed for autostart monitoring.
- ✕ W9ZTK uses TD for CW ID.
- ✕ Some more firsts for RTTY: CT1DV, Portugal; 9G1WW, Ghana; YJ8JS, New Hebrides.
- ✕ Narrow Shift now used by nearly all stations. Much easier on the ears -- especially during contest hours.
- ✕ LU2ESB (ex FO8BS) wins SARTG contest. WB6RXM 21st.
- ✕ I5MPK wins WAE contest. Poor activity. WB6RXM high in NA.
- ✕ DXCC Plaque # 5 to W5QCH, # 6 to W8CQ. FG7XT 127/116 -- no cards received.
- ✕ Some CW ID getting sloppy. Six "dits" don't make a 5. "WB" shouldn't sound like "JS."
- ✕ Sid May, G4CTQ, first-ever from Zambia, now looking for gear to activate St. Kitts.

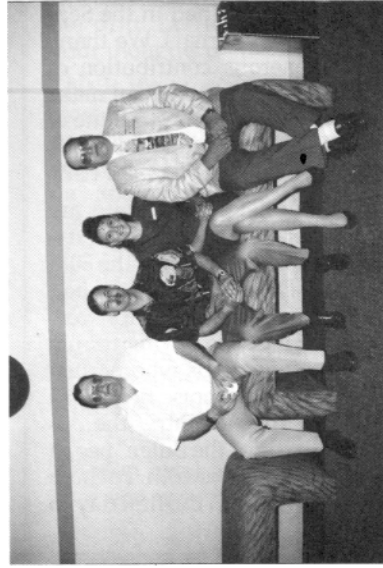
# MORE DAYTON 1994 (Dinner & Other)



Jack, WA9FVP, Will, NOPEA, Curt, W06N, Mel, K0PPX, Dave, NOIT



Eddie Schneider, GOAZT, Ray Origeisen, WFIB, Peter Schulze, I71PS, & Jack Albert, WA9FVP, is their topic, DXing, Contesting, Filters or Compression?



Jay, WS7I, Don, AA5AU, Tiffany, YL with Don, & Ron, AB5KD, Are three grown men trying to talk a lady into cooking on their next DXpedition?



Peter, TY1PS, Arthur, XE1LL, Bill, K9GWT, John, W3BE, Dale, W6IWO, Roy, KTIN, Bibi, XYL of TY1PS, Jim, N2HOS, Valter, TY1VH, Sandra, YL with Valter



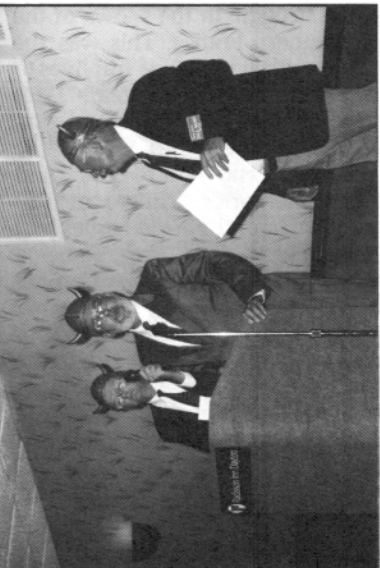
Larry, K4LLQ, Ken, K59I, & Bob, KC9UU



David Speltz, KB1PJ, Chairman of the ARRL Digital Committee speaks to dinner group on digital projects under way by the committee.



Vic Poor, W5BMM, Bill Henry, K9GWT, & Craig McCartney, WA8RDZ, no doubt discussing bits and bauds, Hospitality Suite.



His Grossness, Bob, WB7QWG, (center) gives orders to his two assistants, Frank Moore, WA1URA, and Dale Sinner, W6IWO prior to Oh Wah Tah Initiation.



Phil Susman, KB0LUJ, presents new Friendship Award to Jules Freundlich, W2JGR.

Pictures read clockwise from front left

# DIGITAL DIGEST

Tom Arvo, WA8DXD

News, Views, Tips & Reviews

Welcome to the premiere edition of *Digital Digest* -- The Column. We're excited about being here and look forward to bringing you up-to-date info on the "goings-on" in the digital world. Here you'll get news, insights, opinions and operational tips to help make your digital operating all the more enjoyable. We begin this first installment with an introduction and insight into BARTG, our UK peers in digital communications.

## BARTG -

### A Letter of Introduction

It seems appropriate in this first letter to explain a bit of history, to explain what BARTG is about. There is a club behind those HF contests you read about or in which you participate. The British Amateur Radio Teleprinter Group was founded in 1959, when teleprinters were the state-of-the-art in data comms. Our founders founded "a self-help group . . . to learn about the new art of RTTY . . . to help others get active in this new mode."

Today (since the mid-80's) at the British Amateur Radio Teledata Group we hope . . . "to encourage and promote interest in RTTY, Packet, Pactor, Amtor, fax and similar activities." But at heart, we are still just a group of digital enthusiasts who enjoy helping others get started in, or become more expert in, the many modes we have today. Teledata was a word carefully chosen so as not to be specific as to mode, while allowing us to keep the BARTG acronym.

The PC, when it finally found it's way into the radio room, caused the rapid growth of our membership. Software that emulated the old teleprinter was all the rage and, despite the lack of standards, RTTY survived and prospered. Then someone came up with the idea of expanding beyond those constraints and packet hit the UK. Well, "hit" is the wrong word. Packet dawned in the UK in quiet fashion. Our packet expert reckoned that the number of TNC's didn't increase during the first year or so. They were being passed from one amateur to another as one became interested in, and another got bored with the new mode. The packet station count remained in the 900-1500 mark but the callsigns of the active stations changed!

Now, packet is an established part of the UK amateur scene. Some 15-20,000 stations are active, a substantial percentage of the 60,000 licensed amateurs. Like the USA, one feature of packet which is proving to be of doubtful virtue is the ease with which bulletins can be issued. Gripses and arguments are no longer the preserve of the local radio club. Within a few minutes, all of the UK can know about

them! I personally find that the bulletin facility is often used by those whose typing speed is greater than their thinking speed!

Clover is our newest mode. It is now available from a UK based retailer but the cost is rather high. The customer could buy an HF radio such as the Kenwood TS50 or Icom 707 (as opposed to the Yaesu 707 or Boeing 707!) for less than the cost of the Hal board. And there might still be more cash to lay out if there is no PC in the radio room.

Aside from our famous HF contests, we are well known as a hardware vendor, too. The popular BMKMulty software (by G4BMK) is often combined with our Multyterm interface or modem. Multyterm, in terms of historical perspective, complemented the popular Versaterm which had replaced the much earlier ST5 RTTY terminal unit. Thus, hardware has been in our blood since the very beginnings. Books, especially for the beginner, are part of the tradition as well. For over a decade we have created and marketed matching books to the guide the beginner to and through most of the new modes.

Many members join because we publish DATACOM, the quarterly BARTG Journal. Each issue now runs to 100-plus pages of digital news. About one fifth of the magazine is devoted to "Packet International," a section devised when the UK national radio society (the RSGB) gave up the publication of its own packet newsletter. Apart from the Journal, we keep in touch with our members via a series of transmissions under the GB2ATG callsign. These take place during the first whole week of each month on HF. The text is also available on the packet network.

BARTG is best known internationally for its contests and awards scheme. These form a popular feature of our work in promoting data communication and provide the user with a target, a challenge and a piece of paper to pin up on the shack wall!

### PEOPLE

BARTG always has been a committee-run group rather than the work of a single individual. Over the years we have had the benefit of the expertise and time of many hard-working and knowledgeable people. The current committee is no exception. Among them:

**Bob Canning, G0ARF** . . . who actually is too busy to be a member of the committee but finds time to write and distribute the text for the GB2ATG news transmissions.

**Ken Godwin, G0PCA** . . . who runs the company store! He handles component sales and manages the inventory and production of units such as Multyterm.

**Arthur Bard, G1XKZ** . . . is the finger-worn person who edits and produces (and posts) DATACOM to all members. This horrendous time-consuming task, made worse by the marked reluctance of many members to put pen to paper to produce the articles, without which, there would be no DATACOM. Unlike the RDJ, our magazine is composed mostly of ad hoc items. Regular columns are in the minority.

**Ian Wilks, GW3FSW** . . . likes to have a stand at some of the 200-plus radio rallies (hamfests) held around the UK. Ian arranges the stands, stock and staff as necessary. For those who do know about the UK road system, a round trip of 400 miles, in addition to all of the above, is more than a full day's work.

**Andy Matheson, G3ZYP** . . . handles publicity for BARTG. Mostly on packet, he also issues news to the commercial radio magazines as well. His aim is to maintain a high profile for our group.

**Mike Kerry, G4BMK** . . . is the "BMK" behind BMKMulty. Mike also holds the BARTG callsign G4ATG. Indeed, at one time, G4ATG and G4BMK were two-thirds of the active Pactor stations in the UK!

**Nigel Roberts, G4KZZ** . . . a name familiar to all those chasing a BARTG award. He issues the paper to the suitably qualified applicants.

**John Barber, G4SKA** . . . a long term member of the committee and now manager of contests. Until you have run a contest you have no idea! By the way, John now has a box for all contest mail — PO Box 8, Tiverton, Devon, EX16 5YU.

**Peter Adams, G6LZB** . . . another long term member. Peter now runs the membership operation. He is in touch with each member each year as dues become payable and handles non-member inquiries as well.

**Mark Ashby, G6WRB** . . . is controller of the purse strings, the treasurer. Not content with this mere task, he also handles the sale of books, both those published by BARTG and others. (We do carefully select and sell books which might otherwise not be available in the UK).

**Alan Hobbs, G8GOJ** . . . the longest serving member, but still young enough to get around without a Zimmer frame! He is our expert on all things to do with mechanical teleprinters and is, in fact, one of the UK's such experts. He is the co-author of the RSGB's "Teleprinter Handbook."

**Peter Nicol, G8VXY** . . . another long term member has run, since 1970 the BARTG annual rally that caters to the digital amateur. He no longer has to move crates of teleprinters, tuning forks and the like into a small village hall outside London. While we are still near London, the village hall has given way to a 10,000 square foot room under the terraces at Sandown Park near Heathrow airport. And the teleprinters gave way to the cardboard

(cont'd on page 28)



## TO WRAP OR NOT TO WRAP ... That is the question!

Have you ever seen someone's text formatted something like the following example? Do you know for sure that you are not sending out text formatted this way? It doesn't seem to be a respecter of modes. You see it on Packet, Amtor Pactor and RTTY. You see it in keyboard to keyboard QSO's and you find BBS and mailbox messages looking like this:

Hello, Bill, the name here is Bob and the QTH is Garrisonville, VA. near Washington, DC. The rig here is a brand "X" transceiver with a matching brand "X" TNC.

This alternating long and short line format is a result of two conflicting automatic word wrap settings somewhere in the system. Terminal programs often have an automatic word wrap feature that can be set to insert an end-of-line sequence (return plus line-feed) when some preset number of characters have been typed. TNC and multi-mode controllers often have a similar line length function built into their firmware in order to enhance operation with a "dumb" terminal. Some controllers have one setting which applies to all modes while with others it applies to only some of the modes. To confuse matters even more, some controllers have a screen width function for the receive end which automatically sends an end-of-line sequence to the terminal when some preset number of characters have been received without an end-of-line function. For a TNC this is the SCREENLN command. Most terminal programs also wrap the text when they hit the right side of the screen (usually 80 characters for PC software).

All this can become very confusing unless you sit down and really think about what is happening. Let's analyze the text in the example to understand what happened there. The sending station has his controller set to wrap at 58 characters and his terminal software to wrap at 65 characters. As he is typing, the terminal sends 58 characters to the controller, thus the controller sends an end-of-line sequence and a new line is started at the receive end. The terminal has no way of knowing what the controller did so it just keeps on counting characters. When the total reaches 65 characters the terminal sends an end-of-line to the controller and yet another new line is started at the receive end. Since the controller knows what the terminal has done it resets its counter and begins the count to 58 again. Any time more than 58 characters are typed on a line, the line gets divided into a 58 character line followed by a shorter line. If the operator manually hits the return key prior to typing 58 characters then the counter in both the terminal and the controller are reset and that line is sent as typed.

### How do you configure your set-up to prevent this problem?

1. Let the terminal software do the wrapping. Turn receive and transmit word wrap functions OFF in your controller. Most controllers have some parameter value which disables the function entirely. The TNC-2 for example, disables SCREENLN when you set it to zero. If you can't disable it then set it larger than 80 characters where it should never be activated.
2. Set your terminal program receive width to maximum. Many programs are fixed at the screen width which is usually 80 characters but may be only 78 to allow for a box or some type of border around the receive window.
3. Set your terminal transmit word wrap width to something less than 78 characters. Use less than 78 in case the terminal program at the receiving end has a width limited by a border around the receive window. A good value is 75. If the receive end is using a C64 or some other terminal that only displays 40 characters per line then you will need to set your word wrap width to something less than 40 characters for a proper display.

If every station you hear seems to have a problem, then you should suspect a conflict between your own controller and terminal program receive widths. If some stations can send you full lines without a problem then your receive side is okay. You should advise the rest of the stations of their problem so they can check for a conflict between their terminal program and controller transmit widths.

One way to test your own system is to log into a mailbox and send yourself a message. Just type in text without returns and let your software wrap the words for you. Read back the message and see if it displays full lines as you typed them. If so then all is well. If not, then either you have a problem or the mailbox has a problem. You need to try other mailboxes to determine which is the case.

Ask other stations how your text is being displayed. If you are continually advised that you have long and short lines then you may have a word wrap problem. Don't forget that some controllers can have different settings for different modes so it is quite possible to be okay on one mode while having a problem with a different mode.

Oh yes, for keyboard-to-keyboard QSO's don't forget to start every transmission with an end-of-line by hitting the return (Enter) key. The other station's cursor will probably be setting in the middle of a line where it was left when he turned it over to you. Beginning with an end-of-line will insure that both cursors are lined up and prevent an improper wrap on the first line of a transmission at either end of the exchange.

In the days of the mechanical teletype printers, we used to start each transmission with five spaces, two carriage returns, a line feed and a letters function. Five spaces made sure the return spring (even if it was old and worn) had enough tension to bring the carriage all the way back to the first column. Two carriage returns were used just in case the carriage didn't unlock on the first one. Then a line feed to move the paper up to a new line. The letters function was just in case the carriage was still in the shifted (figures) condition. Since today's technology has eliminated the need for springs and mechanical linkages we can get by with a simple carriage return and a line feed.

--Bob Lewis AA4PB

## OPINION

### Howard M. Krawetz P.E., N6HM... RESPONDS

I did not mean to create such a stir with my letter several months ago, but I think Tony Deprato's, WA4JQS, letter (OPINION, RTTY Journal, April 1994) cries out for a definite and quick rebuttal.

First a bit of background. I was first licensed in 1949 as WN5EHF. I put together all my own Heathkits. I later designed my own transmitter around four 4E27 vacuum tubes. I tuned this transmitter by the glow on the tantalum plates. (I had no trouble working the rare ones in the pile ups.) However this transmitter was designed with such high Q that I had to adjust 32 knobs just to move 100 KHz. It was a great piece of workmanship and all my fellow hams came to see it and praise it, but no one wanted to work it!

When I was working 40 hours a week I also did not want a computer in my office. When I retired three and a half years ago I also got an 8088 computer and my KIDS taught me how to use it. Today, I have five computers in the house. I have built several from parts. Although I can dabble in BASIC a little, I am not a programmer.

My point is we can all get our egos inflated by doing something special, but if others can not use it or won't use it, it really has little value except to us.

I live in Sunnyvale, CA and we have an amateur radio emergency service group sponsored by the City. This group has many no code technicians in it. With training, they make very good operators and provide a necessary service to their community. I doubt that any of them could build or repair their own HT's, but they know how to use them properly. I am also teaching many of these people how to use



packet radio and am building that into certain aspects of our emergency plan (and yes Tony, I am using old Procomm for DOS). Anyone can make something complicated. The brilliance is in making the complicated simple for more people to use. The attitude of destine for appliance operators is arrogant and condescending.

Both Apple and Microsoft have gone out of their way to try and develop software systems that are easy for people to use. Our digital software designers should take a page from the winners in the business and develop software that is simple and intuitive to use. It would make our digital modes more acceptable to more people.

All I suggested previously is that we use the KISS method (keep it simple stupid) in developing software operator interfaces for digital modes. Now I also suggest we consider doing away with the "appliance operator" attitude toward some of our fellow hams that may not be as astute in some limited and narrow areas. □



### James H. Scott, W9KV... CONCERNED

I am writing about a matter of great concern to me and I am sure many other CW and digital mode operators.

I was active on RTTY many years ago and returned to HF digital operation on Amtor and Pactor about a year ago. I have found these new modes very enjoyable and have had a number of fine QSOs using this mode, mostly on 20 meters. I am also active on CW including QRP operation.

Several events in the past and finally an event today have led me to write. The event today was the sudden appearance of a Clover station on 14.059 khz. This person came on this frequency in spite of the fact that there were CW (probably QRP) QSOs under way on and around this frequency some of which were participating in a QRP contest. The previous events were two instances when I was in Amtor contact with a friend on about 14.065 khz. In these instances our contacts were completely disrupted by clover stations coming on the same frequency.

I wish to say again that I enjoy and support digital operation. However, what appears to be a complete lack of common courtesy and disregard for the FCC rules concerning interfering with existing contacts on the part of Clover operators concerns me very much. I am also quite concerned about the continuous spreading downward on 20 meters of digital operations especially when such lands on top of existing QSOs.

As editor of the only US digital publication I would urge your attention to the following:

1. Reaching a consensus among digital operators on band plans that recognize the needs of both the digital and non digital operators.
2. Urging upon the consciences of digital operators and especially Clover operators that they listen carefully before beginning transmission. This rule as we all know is almost as old as amateur radio itself.

Amateur digital operation will continue to grow. I believe it is incumbent on the ADRS and the Journal to do their part in seeing that this growth is both courteous and disciplined. □



### Peter Schulze, TY1PS... SURPRISED

Bob, AA4BP surprised me when he claimed in the March issue that passing 100KB of binary data over HF would result in an 800KB file and consume more than two hours of transmission time. I cannot know how Bob calculated those values but they most certainly do not reflect today's technology used for such purposes. I suggest to him

and to all readers to re-read the numerous articles that appeared over the past several months regarding Clover, Express, data compression and error correction. These articles concern themselves with the current potential of the new HF modes.

What follows is a summary of what throughput can be achieved with Clover/Express via HF and within a 500Hz bandwidth! I took some real world files from my hard disk and passed them through the data compression routines of Express. The transmission times shown are the effective values using Clover, including all overhead for error correction, protocol and link management.

Example 1: Formatted test file: Readme.wri (this is the text file that comes with Windows 3.1). The original size was 98944 bytes. Express automatically selected Arithmetic Coding as the compression style and reduced the file size to 21472 bytes. The transmission times vary significantly according to conditions, of course. But even under the worse case, using BPSM (robust mode 7.7 bytes/sec) the link time was 46 minutes. A startling difference appears when we to the best case using 16P4A (fast mode, 69.6 bytes/sec). The entire file moves in five minutes!

Neither best nor worse is normal. Experience has shown that a link between Benin and Florida typically runs in the 8PSM mode (normal mode 69.6 bytes/sec). This "average" link produces a completed transfer in twelve minutes!

Example 2: Now, we switch to a binary file called EMM386.EXE (as supplied by DOS 6.0). This file with which we are all familiar weighs in at 115806 bytes. After automatic compression we measure the worst case at 95 minutes, the best case at eleven minutes and the average or normal at 25 minutes.

These examples show without doubt that very fast speeds can and have been achieved regularly on HF over links of over five thousand miles. More methods are in the making and I am persuaded that we will see big improvements in the very near future.

By the way, when the link is lost under Express, the software picks up the transfer at the exact point of interruption. This unique feature applies even if the link is lost several times. We have demonstrated this on trans-Atlantic transfers over and over again. Even 500K .EXE files. When complete, the file executes without a glitch.

I hope these figures help all to understand that passing binary data on HF is no waste of spectrum or bandwidth but a very efficient method for passing large amounts of data worldwide. And it moves at low cost and independent of any other network or infrastructure.

Bob also blames, in part, the hardware manufacturer for not having adequate support for simpler software. Being a software author, let me add some comments to that pot of tea. First, yes, what he says is true for some units. I gave up writing software for the PacComm/Pactor and SGS (German) Pactor controllers. These units have such a bad "host mode" that it is impossible to write useful software for them. And that is why there isn't any good software for these units! On the other side of the equation, all of the AEA units and the Hal PCI-4000 contain excellent programming interfaces that are easy to use and of good design. Thus there are many programs for the PK-232.

All software suppliers or designers face one common problem. Users keep asking for more and more features! As a programmer I usually start out with something simple, then when the first release is out, the cry for more bells and whistles can be heard across the land. Thus, the program becomes increasingly complex and, therefore, more difficult for the beginner to use. I think the only solution is to create programs requiring different levels of expertise. We already see that in some TNC's coming on the market and the trend should continue in this direction. If we pursue that course, we should see hardware/software combinations that are acceptable for the beginner, but also increase in complexity as the skills of the user develop. Such a solution would be best for all. □

## RUSSIAN HAMS NEED YOUR HELP

The following is an excerpted transmission received over Clover from UA4LCQ. If trying to read the actual transmission becomes a bit mind boggling we've summed it up for you here. Hams in Russia are in desperate need of most anything and everything which pertains to getting operational on the digital modes. Of special need are modems and software. If you can help, contact:

Yuri Katyutin, UA4LCQ  
P.O. Box 1200, Ulyanovsk, 432035 RUSSIA  
Tel/Fax: (842-2) 34-57-71  
by AMTOR - UA4LCQ ULCQ.#ULY.RUS.EU or contact:

US FAIRS HQ  
Dave Larsen, KK4WW  
P.O. Box 341, Floyd, VA 24091-0341 USA  
Fax: 703-382-2935  
by AMTOR - KK4WW KKWW.#FLD.US.NA

FROM UA4LCQ PART 2

R:940501/OO45z @:W2TKU.#SRQFL.FL.USA.NA WINLINK  
SARASOTA #:2987 R:940430/2108 30258@KB1PJ.NH.USA.NA  
R:940429/1738 116181@WA1URA.IN.USA.NA

NOWADAYS IN FORMER USSR THERE ARE ONLY 2 FULL APLINK MBO. (BOTH ARE FAIRS) U5WF-LVOV, AND MY UA4LCQ, FREQUANCY 14075.0 WORKING 24 HOURS. WE ARE PLANING TO GET TO WORK PACKET MBO ON 10 MHZ... THERE ARE RATHER MANY PACKET MBO (I MEAN ABOUT 10 MBO) ACTIVETY WORKING -IT IS MINI-PROGRESS HIHI).. RATHER ACTIVETY WORK RTTY MODE - UH8EA,RB5FF,RW3QC,UA3TN, E.T.C. BUT AS I'VE ALREADY TOLD YOU IN PART 1 PROBLEMS APPEAR AND APPEAR AND ACTIVETI IN CONSTANTLY DISAPPEARING.

WE WOULD BE A GLAD TO BE HELPED IN ANY WAY.THE WORST IS THE SITUATION WITH THE SOFTWARE AND MODEMS. THAT'S WHY I APPEAL TO ALL WW HAM'S WITH REQUEST TO HELP US WITH WHAT THEY CAN.AND I PROMISE THAT YOUR HELP WILL COME TO ITS DESTINATION.PERHAPS YOU'VE GOT BROKEN EQUIPMENT AND WITH THE HELP OF ITS SCHERNE OR DISCRPTION WE CAN REPAIR IT AND GIVE TO OUR RUSSIAN HAM'S ....

BEST 73, YURI/UA4LCQ/KD4STR/S21 ZL

[Received via CLOVER at KB1P]]

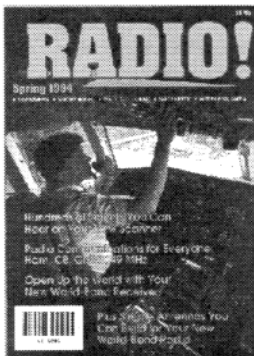
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## 50 YEARS REMEMBERED



It has been 50 years since D-Day... the Normandy Invasion and the Allied Forces liberation of Europe. Although the information we received is a bit sketchy, the Belgium Radio Club of Liege, ON5VL would like to get in touch with, and pay tribute to, as many of those hams who participated in the Allied Forces liberation of LIEGE or BASTOGNE as possible.



ON5VL



SECTION DE LIEGE

UNION BELGE DES AMATEURS EMETTEURS

29 Rue St Laurent

4000 Liège

J020SP

TO RADIO

If you were there, please contact ON5VL to get all the information on planned events, dates, times, etc. The address is:

ON5VL

Union Belge des Amateurs Emetteurs

29 Rue St Laurent

4000 Liege, Belgium J020SP

... and please mention you saw the announcement in the RDJ



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(cont'd from page 25)

boxes full of PC's and related gear. In a quiet year, the event attracts 2500 visitors and is run by a small group of volunteers, all coordinated by Peter.

**Ian Brothwell, G4EAN** . . . that's me. I am currently the Secretary of BARTG but specialize in filling posts on a temporary basis until permanent volunteers can be found. That has kept me busy until quite recently, so now I can actually get on the air and actually use the data comms which BARTG espouses!

This letter should give you, the reader of the RTTY Digital Journal, an inkling of what BARTG is all about. While it is likely that future letters will be written by myself, I will endeavor to encourage/coerce/blackmail some of my committee colleagues into giving you their viewpoint of the digital world.

73... Ian, G4EAN



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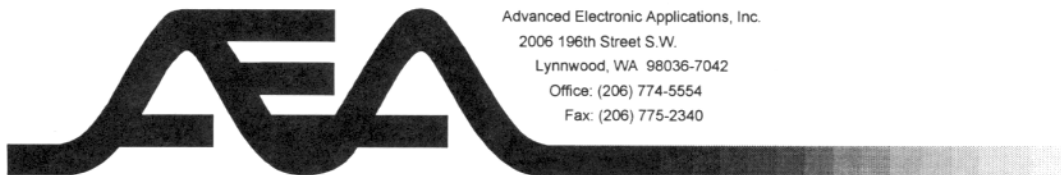
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If you decide to send us a letter, include every bit of information you can think of that involves your equipment: set-up, software and its release date, firmware date, steps you took to incur the problem, a diagram or schematic if you think that'll help, and so on. (If you don't supply enough information then we can't solve your problem.) Also make sure your letter is legible and you include your daytime phone or fax number, and return address.

AEA also provides technical assistance by way of fax (206-775-2340) and your personal computer through CompuServe's *HamNet* e-mail. If you're already a CompuServe subscriber, enter GO HAMNET and leave mail for us in Section 13, or send your e-mail directly to our account (76702,1013). We try to have an answer back to you the same or next business day.

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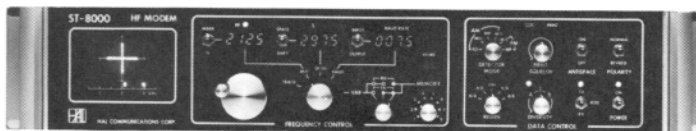
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