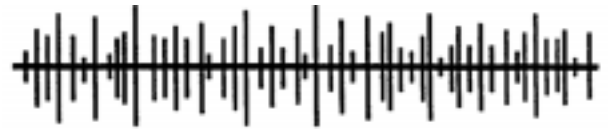


# WHITE NOISE



Volume 9, Number 5

June, 97

## UPFRONT

by Terry J. Taylor, W5JFM



Here is one of the many pictures that I took at the Dayton HamVention, in May of 1997. Of interest is this Timewave booth showing the AEA logo. Most of the AEA packet equipment was being displayed, some with AEA logo, and some with Timewave logo. Interest from hams was very high as seen by the number of people in this picture. Since AEA was one of the premier TNC manufacturers, then the packet community will be very interested in how Timewave implements the AEA product line into theirs. My discussions with the Timewave representative were very productive, and they have a very positive attitude. They are also working as fast as they can to get the TNC line into production. Further up-to-date information can be found at: <http://www.timewave.com>.

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## AN OPINION

by Karl Larsen, K5DI  
k5di@k5di  
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The internet has changed what you see on packet in

several ways. Today I read a very good paper on what happened to AEA, the defunct Ham manufacture company. All the information was gathered from an internet news group. What I see interesting and appreciate is the Hams that are on the internet take the time to transfer goodies to packet radio.

We who enjoy packet radio should not fear the internet. It's another service that is in the throws of changing. Like the earlier message said, "When your internet provider is down" you go back to packet radio. I have two internet providers, juno.com and my University nmsu.edu. I have just seen a large change in juno. Now it is often that I get a message saying the main computer is down.

Since I am a expert on packet radio and run Linux and am getting better but far from expert in that, I am approached by other Hams about packet and the internet. I try with success to talk them into both packet and the juno account. I see Hams using both because I use both. In fact this Linux computer has both the packet bbs From John-Paul F6FBB and a ppp connect to the University. I can pull up Pine in a window and work with that anytime I want. Lots of news and mail every day.

But I choose to write this note on packet radio.

Packet Radio is not dead and the Internet is not going to kill it. I and thousands others look to packet for Ham stuff. They look to the internet for other things like the www where you get data sheets for new electronic devices on-line and to your computer in minutes.

Different strokes for different services.

**CHIRPS**

by Terry J. Taylor, W5JFM

In the last issue of *White Noise*, we began looking at the three timers, called T1, T2, and T3 which operate under the AX.25 protocol to determine when frames are sent, or re-sent. The first timer, T1, and known as the Acknowledgement Timer, was discussed at length. To briefly recap this previous discussion, T1 is set by the TNC parameter setting called FRACK. The parameter is set for so many seconds, with a default of 5 seconds in my PK-96. The formula used by the TNC is:  $FRACK \times ((2 \times d) + 1)$ . The letter 'd' is the number of digipeaters in the link. Notice that if there are no digipeaters (ie.,  $d = 0$ ), then the value of FRACK is not increased at all. On the other hand, if there are two digi's, then  $2 \times 2 + 1 = 5$ , and the value of FRACK would be multiplied by 5. If FRACK was 5, with two digi's, then T1 would be increased to 25 seconds, thus allowing additional time for the packet frame to transverse through two digi's to the receiving station, generate an acknowledgement frame, and transverse all the way back to the originating station. If T1 runs out, with no acknowledgement, then the frame ( or frames if MAXFRAME is greater than 1) is resent under Version 1.0 of AX.25, or a polling frame is sent if operating under Version 2.0 of AX.25. The purpose of T1 is to set the length of time for a TNC to wait before taking further action when a sent frame has not been acknowledged.

You might have to experiment with various FRACK settings on a busy frequency. Setting it too high will take longer before your TNC will RETRY if your frame didn't make it through. Then again, your frame may have made it through, but the acknowledgement hasn't been able to make it back to your TNC yet. All in all, if FRACK is too short for the frequency conditions, then your TNC will RETRY before an acknowledgement can be received, and then RETRY out, with a resulting DISCONNECT. If it is too long, then you will be

losing efficiency if your original frame had a

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collision, since you'll have to wait until T1 runs out before your TNC will do anything. I leave my FRACK set to the default of 5 seconds, and that seems to work pretty well.

Further, realize that when using the network with ROSE, the ROSE Switch will be acknowledging all of your frames, and not the destination station. The Switch takes on the responsibility for acknowledgment to your TNC, and also the responsibility for acknowledgement to downline other ROSE Switches or destination stations such as a PBBS. Therefore, once your TNC receives an acknowledgement from the Switch, it has done its job and is now waiting for a frame to tell it to send more frames.

The second timer to discuss is T2, which is called a Response Delay Timer. This timer determines the amount of time to wait before sending an acknowledgement for an I (Information) frame. Since one or more I frames can be sent at once (depends on MAXFRAME), the receiving TNC should wait a brief amount of time before acknowledging any frames so that all received frames can be acknowledged at once. This would improve throughput. Apparently, some TNC's pause between each I frame sent, possibly during a file transfer. T2 is controlled by the parameter RESPTIME. It is specified in 100 mS increments, from 0 to 250. A value of 10, would be a full second. The default on my PK-96 is 0 (000 mS).

T2 begins when the receiving TNC receives an I frame. When T2 expires, then an acknowledgement is generated by the TNC for all I frames received up to that point. If more frames are still being received, then T2 will begin again, and yet another acknowledgement frame will be generated for the most recent received I frames. If T2 is too short, then more than one acknowledgement frame is generated, whereas only one acknowledgement frame is needed to acknowledge several received I frames. Efficiency, both in terms of frequency use, and throughput, is reduced by the additional ack frame(s). You can experiment with the setting for T2, RESPTIME, with 5 (500mS, same as .5 second) being a good place to start. Apparently, some TNC's, including my PK-96, will acknowledge all

incoming I frames with just 1 acknowledgement frame with RESPTIME set to 0. As long as the carrier is not dropped while I frames are being received, then the PK-96 will acknowledge all received I frames at once.

Next month, we'll conclude with a look at T3.

...CHIRP, CHIRP!

---

Optoelectronics 3000A Product Review  
Brian Mork, KA9SNF

Part 5 of 5

#### OPTIONS

You can buy a precision (0.2 ppm vs 1.0 ppm) timebase for an extra \$100. What used to be a \$45 backlight option now seems to be a non-optional extra expense. September advertisements still quote the lower price for the standard model, but the sales personnel won't sell one that way.

--- time base ---

There are two reasons why I did not want to buy the precision time-base option. One is because a RATIO mode is provided and I already have a precision 10MHz TTL oscillator scavenged from an old LORAN navigation board. 10MHz also happens to be the maximum frequency Input B accepted in the ratio mode (all ratios are A/B). What a coincidence. Works for me!

The second reason is simply that the 1ppm timebase is specified to age at a rate of 1ppm/year. A 0.2 ppm option would be degraded to the 1.0ppm option in only about 10 weeks. In any case, I usually don't need to know the last 2 Hz on a 10000000 Hz signal.

--- backlight ---

When it's on, I can hear a switching circuit bringing

up a high voltage for the luminescent display. It turns off after 10 seconds of inactivity and comes on again when some button is pressed or frequency is acquired.

It looks good. Worth \$45? The native display is plenty readable and the extra light actually makes reading it harder from angles "above" the counter.

#### >>> GOTCHAS

The serial interface is unidirectional. You send it a CR and it sends back 10 digits and a decimal point, in ASCII, 2400bps, 8 bits, no parity, 1 stop bit. It only works in FREQ mode. It provides only the most re-cent number, with no indication of whether this is another sample or the same number it just sent you after your last request. The interface can sink 1.6mA and source 0.06 mA.

Excellent amplifier sensitivity isn't everything. Sometimes it's even a burden. For decent counting, the signal you're monitoring must exceed the noise (combination of \*all\* other RF signals in the bandpass of the selected amp) floor by 10-15dB. Specified sensitivity ranges from -57dBm to -11dBm. The input amp is limited to +15dBm. Ambient noise, including FM stations hovers about -11dBm. Play with those numbers and you'll see that the window for a good count can be pretty small. Try to measure a cordless phone near your transmitter or computer monitor? Probably not. If you live near a broadcast station, good luck. I don't consider these numbers a design flaw given the intentionally wide frequency range of the amps, but it definitely affects your day-to-day operation.

In Damien's review, he emphasizes the importance of a limited bandwidth antenna. Take this recommendation seriously. Wide range frequency coverage means susceptibility to noise. A bandwidth limiting antenna helps mitigate this problem.

#### >>> SUMMARY

The at-your-door price for a 3.5" x 5" circuit board seems a bit high, but the counter is specified to do what I need it to do, plus a few options. Resolving the skittish Hi-Z input problems is a must. The M1 gets around this by simply not having multifunction capability. Paying the extra \$100 for a 3000A with specified capabilities that in real life are marginally usable deserves a second thought.

All models are available only direct from the manufacturer in Florida. Contact Optoelectronics: 5821 NE 14th Avenue, Ft Lauderdale, FL 33334. 800-327-5912 or 954-771-2050. FAX 954-771-2052. (Makes you want to dial ..2051 and see who you get, doesn't it? :)

73, Brian Mork  
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#### An Intro to APRS

Part 5 of 5

KC7LVZ @ WB7VMS.#MURPH.OR.USA.NOAM

The following is a bibliography chronicling the development of APRS:

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[2] HF PACKETS, MODEMS and GATEWAYS, Bruninga, Third ARRL computer Networking Conference pg 6-7, 15 Apr 84. (HF packet specification for 200 HZ shift)

[3] EASTNET - AN EAST COAST PACKET RADIO NETWORK, Bruninga, p 9-11, Third ARRL Computer Networking Conference. 15 Apr 84. (MD, NJ & NY packet map)

[4] THE RACING PROBLEM: A PACKET SOLUTION, Bruninga, p 12-15, Third ARRL Computer Networking Conference, 15 Apr 84. (A connectionless protocol for reporting the location and status of Horses on a 100 mile endurance run. \*(the original APRS concept)

[5] EASTNET - A YEAR LATER, Bruninga p 15-24, Fourth ARRL Computer Networking Conference, 30 Mar 85. (More East Coast maps and the first USA HF map)

[6] LINKING PERSONAL COMPUTERS BY PACKET RADIO, Bruninga, Proceedings, IEEE COMPCON 84 16 Sept 84, (Published the USA packet map, and amateur HF packet standards)

[7] CONNECTIONLESS EMERGENCY TRAFFIC SYSTEM, Bruninga, Packet Radio Magazine, pg 4-5, July 86. (details the design of the connectionless position and status reporting system)

[8] AN UPDATE ON THE CONNECTIONLESS EMERGENCY TRAFFIC SYSTEM, Bruninga, Packet Radio Magazine, Aug 86. (more of the same)

[9] CONNECTIONLESS PROTOCOL for the NDMS, Bruninga, p 19, Packet Radio Magazine, Nov 86. (using the connectionless protocol for emergency comms)

[10] PACKET RADIO AT THE WRECK OF THE AMTRACK COLONIAL, Bruninga, P 13 Packet Radio Magazine Jan 87. (using portable packet for disaster comms)

[11] LANS and WANS, Bruninga, 7th ARRL Computer Networking Conference, 1 Oct 88 (First DC/BALTIMORE area packet maps with APRS symbols)

[12] A WORLDWIDE PACKET RADIO NETWORK, Bruninga, Signal Magazine, June 88,

(shows HF map of 10.149 MHZ activity.

[13] PACKETRADIO IM NOTFUNKEINSATZ BEI EINEM ZUNGLUCK, RTTY magazine 18 Jan 87. (translation of article on APRS at the AMTRACK train wreck)

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[15] GROUND STATION TRACKING VIA PACKET RADIO, Bruninga, AMSAT Journal, Pg 1 May/June 93

[16] TRACKIT RADIO, Stan Horzepa, p 92, QST, July 93

[17] UPFRONT IN QST, p 11, QST, August 93. (excellent pictures)

[18] A DESCRIPTION OF APRS by WB4APR, AND MORE!, PACKET USERS NOTEBOOK, Buck Rogers, CQ Magazine, Dec 93

[19] INTERFACING GPS/LORAN DEVICES TO PACKET RADIO, Bruninga, pg 9-14, QEX, Feb 94

[20] HOMING IN, Radio Direction Finding, by Joe Moell, page 56-59, October 94 issue of 73 Magazine.

[21] HOMING IN, by Joe Moell, Jan 95 issue of 73 magazine.

[22] Ads by PacComm, AEA and KANTRONICS touting GPS packet. April 95 QST

[23] Buck Rogers Column, Packet Notes. CQ magazine May 95 issue.

[24] QST Compares: GPS Compatible TNC's, Steve Ford WB8IMY, QST Oct 1995

[25] Availability of Seventy 9600 Baud Packet Channels on Two Meters, 14th ARRL Digital Communications Conference, Arlington, TX8-10 Sept 1995

[26] APRtrak, A Program for Determining the Locations of Ground Stations and Spacecraft, Proceedings of the AMSAT-NA 13th Space Symposium Oct 6-8 1995, Orlando, FL

[28] APRS in Balloons and HOMING-IN column Nov 95 issue of "73" Magazine

[29] The MIM Module, Mobile Radio Technology, May 1996

-End of Part 5 -

73 de Larry

**PALM BEACH PACKET GROUP MEETING**  
**JUNE 12 1997**

**OPENING AND REPORTS**

The meeting was opened by President Doug (WB4KGY). There were 5 wide eyed and enthusiastic members/guests in attendance.

1. Welcome/NO SMOKING/ Introductions
2. Treasure's Report not available due to Marvin being out of town.
3. Technical Committee report-Doug (WB4KGY)
  1. No problems with switch or APRS
  2. Problems with cross state path corrected with software reload in Arcadia.



**AT THE JUNE MEETING**  
 Tom Kneisel K4GFG discussing Detecting Radio Signals from the Mars Global Surveyor Spacecraft.

Photo by KB4XE

**OLD BUSINESS**

- =====
1. Treasury Review Committee will complete their review when Marvin returns later this month.
  2. "WHITE NOISE" mailed on June 3rd.
  3. Handout of:  
 ROSE Switch list  
 NODE'S list.

**NEW BUSINESS**

- =====
1. FADCA meeting held a Altamonte Springs last month. Joe WB4TEM (FADCA VP) comment about meeting. Joe reported that Dana RODAKIS (K4LK), Florida Repeater Council Director, sent a letter to the officers of FADCA stating that the FRC wants to "start coordinating repeaters below 442.0 MHz". They feel there is a severe shortage of 440 repeater pairs in the Miami/Ft. Lauderdale area. Unfortunately this includes frequencies that the FRC had assigned to FADCA for coordination of backbone links. Included in the list are frequencies currently used for repeater voter links FADCA is responding with a letter stating that FADCA is

going to continue to coordinate it's assigned frequencies.

2. Bring a friend or someone to the meeting next month.

3. If you would like to become involved in an experience of a lifetime, volunteer for a place in PBPG.

4. BARDS meeting June 21st. @ MOTOROLA.

**ADJOURN/BREAK/WORKSHOP**

=====

**1. WORKSHOP/SPECIAL PRESENTATION**

Tom KNEISEL (K4GFG) Presented an outstanding program "HOW'D THEY DO THAT" "Reception of Mars Probe" It was enjoyed by all.

2. Meeting was adjourned @ 21:05 hrs.

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**TREASURE COAST PACKET GROUP  
MINUTES**

JUNE 14, 1997

The meeting was opened by Vice President Joe, K1VAO, at 9:32 AM. After the introduction of those present, the Secretary, Ladd, W2KGV, read the brief report of the last meeting. It was accepted on a motion by Bill, N4XEO, and a second by Wayne, KA1VRF. The Treasurer, Andy, W8BIX, reported that the funds were \$1328.54 with 3 new members renewing. The report was accepted on a motion by Bill, N4XEO, and a second by Wayne, KA1VRF.

**TECHNICAL COMMITTEE:**

Bill, N4XEO, reported that the .050 Switch is working better since the remote control was installed, whereby he can reset the switch from his QTH, eliminating the long trip to the site. He described a new French Switch program, which was working well in Tampa and has many new features. We would need to provide a computer for this switch. Bill said he was going to Tampa next

weekend to checkout the program and to load it into his computer. He also suggested that the Rose Switch remain on .050, for keyboard to keyboard operators and .053 for BBS access. Ladd, W2KGV, so moved, with a second by Wayne, KA1VRF.

**NEW BUSINESS:**

There was a report of pirating (bootlegging) calls on packet and using unacceptable language. Members were asked to print out anything observed of this nature and to note beam headings. Bring such info to the next meeting.

Bill, N4XEO, announced that the PIN net will now be on later on Tuesday since the Fort Pierce Amateur Radio Club Net will now start at 8:00 p.m. Bill also reported that the Vero Beach switch still had problems going to Melbourne. He also said he has been trying to get in touch with KC4IBT, Joe, relative to the problems with the 9600 path to Melbourne. So far he has not been unsuccessful.

The Treasurer, Andy, W8BIX, inquired as to how long he should keep the monthly Bank statements. It was decided that 2 to 3 years of the year-end statement and all of the current year. All checks showing payment for equipment should also be preserved for insurance records.

Bob Stien, WB1HJC, of Stuart was voted into membership.

The meeting was adjourned at 10:03 on a motion by N4XEO and a second by Wayne, KA1VRF.

Attending: WB1HJC, KA1VRF, N4XEO, K1VAO, W8BIX, N4HYK and W2KGV.

NOTE: This is the last meeting until September. Have a good summer!

Respectively submitted:

Ladd, W2KGV

Secretary, Treasure Coast Packet Group