

The Texan

Newsletter of the Texas NTS CW Net (TEX)

Net Manager: Steve Phillips, K6JT, Plano TX
(k6jt@arrl.net, 972-517-3332)

Assistant Manager: Floyd Bumpus, N5EL, Temple TX
(fbumpus@hotmail.com)

June 2006



May went by as quickly as April, but not before 8 TEX members were able to get together for an “eyeball QSO” in Smithville on the 27th. Homer AC5CI, Rodney W5DY, Charlie W5GKH, Jay N5PWG, Pat KD5TXD, and Bert AC5Z were on hand to say “howdy” and watch Steve K6JT present the Pfeiffer Pfist award to Floyd N5EL. You can see pictures, some taken by Charlie W5GKH (who appeared to be the “official” photographer for the event) and some by Steve K6JT, by following the link on the TEX website (<http://k6jt.home.att.net/>). There is also a link there to a movie showing each TEX member saying hello to the group and K6JT presenting the award to N5EL. See the web site for further information and system requirements to view the movie.

There were somewhere between 50 and 60 attendees there at the “7290 picnic”, so a showing of 8 from TEX represented almost 15% of the total. A good turnout, I believe. We all had a great time and after the “formal” program, Floyd N5EL adjusted bugs for Rodney, Steve, and Pat using his skills and a code practice oscillator he had brought along (as well as a railroad telegraph sounder, which none of us but him could copy with any accuracy). Floyd also brought along a homemade “foot” key (very large standard shaped hand key) but we did not have time for a “QLF” (left foot sending) contest.

After “play time”, half of the TEX group ate the barbeque that was brought in and the other half (Bert, Floyd, Rodney, and Steve) enjoyed a good meal together in a nice, air-conditioned restaurant in Bastrop, many thanks to Bert. See the pictures for more details and to get an idea of at least some of the faces behind the dits and dahs you hear on the air.

Hurricane Season is Almost Here

Jim, KB5W, the retiring manager of RN5, sent out suggestions for better preparedness as we enter a new hurricane season. Note that Rick Walker, K4TD, has been nominated and will assume the RN5, Cycle 4 (nighttime), Manager position soon if he has not already done so as of this writing. Jim resigned when he initially planned to relocate to Virginia. However, those plans have changed and we are fortunate to be able to keep Jim in the Central area from his southern Mississippi QTH. He is still the chairman of the Central Area Staff, so if you have suggestions or comments about NTS, you can run them by him.

Here's what Jim says:

"As most of us are aware, CW support to post-Katrina operations were minimal to nil - unfortunately. This was undoubtedly due to my implementing the "7P" parable - "Proper prior preparation prevents p... poor performance". Since I could have done more ahead of time, I'll take the blame. Let's look beyond last year and try to learn from the SNAFU's and short-comings.

One thing that was abundantly clear was the overload of digital stations in and near the strike area of both Katrina and Rita. I don't know the total of unanswered H&W requests that Benson, AE5V, had in his hopper when the situation simmered down to a dull roar. I **do** know that this wouldn't have happened if there had been some liaison between Benson and the CW and SSB folks. We need to avoid jams like this occurring in the future no matter where a large storm strikes in Florida or anywhere along the Coast.

What I propose is a "guard frequency" system similar to the old 500kHz maritime emergency frequency with stations both in and close to the affected area listening on this frequency periodically (every 15 minutes/half-hour/hour) and stations with messages for the area could give a general (CQ) call and have some expectation of being answered by another station. For example, a digital station or SSB station holding traffic for the area would either go directly to the frequency at any time or pass the message to a CW net representative who will periodically check into the phone nets.

As I see it, this would do a couple things:

- It would reduce the level of activity on SSB frequencies, and
- Take the load off the digital stations.

This all presumes that there are sufficient CW traffic handlers who will cross-operate with SSB and, after they've been identified, have some sort of contact with the digital stations.

Katrina and Rita both emphasized the fact that you won't be able to rely on telephones and / or computers. Cell phones are especially unreliable. It will require multi-capable ops who can familiarize themselves with where the activity is and who's involved."

After receipt of comments, Jim settled on the following recommendations:

"We'll use 7111 kHz 1100Z-2300Z and 3711 kHz 2300Z-1100Z - times approximate depending on band conditions and changes in sunrise/sunset (*frequency change noted from Mickey, K5MC – these frequencies coincide with those of the National Emcomm Traffic Service (NETS) sponsored by the WRRL – <http://www.wrrl.org/>*).

One of the Section Managers in the affected area will have to contact the FCC and ask for a declaration of emergency use for these frequencies for the duration of the

emergency. This should be done when storm track probabilities have gotten pretty much down to where they're firm on the strike zone. *(Note: K5MC, the SM of LA commented that the FCC will no longer declare emergency frequencies for HF).*

There won't be much to monitor there before and during the storm. It will also take some time for stations in the area to repair/replace damaged antennas and get the generators going, so I wouldn't anticipate a need for manning the frequency full time until each individual station is capable of doing so.

Net managers, please check with your folks for volunteers - specifically NCS guys who know how to run a controlled net and keep good logs. Depending on the size of the storm (Katrina directly impacted 200+ miles of coastline), the NCS stations should come from outside the strike zone. We can set up an informal sked of 2 hours per station for NCS and others, depending on the conditions of the individual stations.

We will need liaison volunteers to check into the announced SSB nets as well as folks who can periodically check with (or are active) digital stations.

I know from four first-hand experiences that the stations in the impact zone will be busier than the proverbial one-armed paper hanger and won't initially have much time to participate, but things do calm down.

The absolute primary purpose of this guard frequency operation is service to the public. Being able to let someone outside the area know that their families and friends are okay is very satisfying.

We also need to remind all hands that amateur radio doesn't pass injury/death information directly unless it's for the Red Cross.

Finally, I should point out that the "guard frequency" function is NOT intended to replace/substitute for existing Section net functions except as is dictated by existing conditions in the impact area."

How does TEX fit in?

I know that many of our TEX members are also active on the SSB nets (and participated a lot during Katrina and Rita). So you must have some first-hand experience with what Jim is talking about and perhaps some good comments.

There are also many of us who could pull net control duty on CW to help out. Finally, some of us also have digital capabilities (KA5KLU is on HF Pactor and runs a Winlink mailbox and I can access Winlink via VHF packet, for example). By all means, send in your comments. If you wish, you can send them to me and I'll aggregate and pass them along to Jim. This could be very important in upcoming months.

The Temple, TX Railroad Museum

The day after the 7290 picnic, Floyd and I went to visit the Railroad Museum there in Temple, where I was privileged to meet Norm, the other operator that participates with Floyd in giving tours and demonstrations there during the week. Norm is 88 years young and has been working with landline Morse for 70 years. So he's a *real* expert. I could not believe how well he copied the sounder when Floyd was sending landline Morse to him with a bug at what I gauged as about 35 WPM.

I was also able to take a video of Norm describing how it all worked. For those of you who are interested, I will post a link to it on the TEX website when I finish editing and compressing it. In the meantime, here are some pictures of Floyd and Norm at their operating positions. I have also included some text that Floyd uses when giving a demonstration to visitors.



Floyd, N5EL, at his operating position in the Temple Railroad Museum

My Name is Floyd Bumpus, Amateur Radio callsign N5EL in Temple Texas. I've been using International Morse Code for over 48 years. I learned American (Landline Morse) 5 years ago and use it with a retired railroad telegrapher to demonstrate the history of Railroads at Santa Fe Railroad and Heritage Museum in Temple.



Floyd and Norm Demonstrating Landline Morse

International Morse Code is used universally by all countries of the world when code is used. It takes far less power and elaborate antennas than voice. A portable gasoline generator can be setup quickly with a simple antenna strung between two trees to communicate all over the world. It is very narrow bandwidth, a signal occupies only about one tenth the bandwidth of a voice signal. When sending messages by Code there is no confusion about spelling names and some words. Static will sometimes take a whole word or more on voice but only a character on Morse code.

A set of special international Q signals are used for speed, example: "QTH Temple TX" means my location is Temple, Texas. Q signals are not used in voice communication.

Morse Code is most always used on Moon bounce and Auroral scatter because of its efficiency. In Amateur Radio it's the only mode that can be used on any frequency with the proper license. You *can* become fluent in another language, the dits and dahs of Morse Code. Some countries of the world do not require a code endorsement to get a license any longer. To this date, the FCC has not decided about this matter for US Hams. History alone should be a factor. It's still one of the most effective communication methods and dates back to the beginning of radio. *(Editors Note: See article at the end of this newsletter showing why CW is so efficient.)*



Steve K6JT and Norm After the Demonstration

American Landline Morse is commonly just called MORSE. We in Ham radio can use it on the air legally by using the International Morse to give our callsign at least every 10 minutes. There are 13 characters, all numerals (except 4) and punctuations that are different in the 2 codes. There are several Museums around the country who still demonstrate this.

I recommend you go to the Internet and search for the word MORSE to get more information. One of the most interesting articles I've ever read is "The radio Legacy of the R.M.S. Titanic", by Dwight A. Johnson KI5WI.

The Original MORSE was replaced in England by a similar code that eliminated all of the embedded spaces and long dashes found in many of the letters. The new code was called Continental or International Morse Code. The United States and Canada did not adopt this code until early in 1900.

Mr. Morse sent his famous message "WHAT HATH GOD WROUGHT" on May 24th, 1844, on a 37 mile stretch of line between Washington D.C. and Baltimore Md.

73,

N5EL Floyd

Thanks, Floyd, for an interesting tour and your and Wilma's great hospitality!

TEX Net Topics:

The following shows the current NCS and liaison station assignments. I am very happy to report that the Thursday and Friday RN5 liaison slots have been filled by Lee, K5UN. Many thanks, Lee. Hope you will enjoy the challenge. I made a few adjustments to NCS backups as well. We still have 3 open NCS slots, one early and two late. Don was having trouble making the Saturday RN5 liaison slots, so they are now listed as Open. Please consider filling one or more of the open slots on a regular basis. For now, things have been working out all right with volunteers. Thank you all.

TEX CW Net Weekly Schedule

Local	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
NCS #1	W5DY	KA5KLU	K6JT	AC5Z	Open	AC5Z	W5GKH
Backup	W5GKH		N5EL	K6JT	W5DY	W5DY	
NCS #2	W5GKH	KA5KLU	K6JT	Open	N5PWG	Open	W5GKH
Backup			N5EL	K6JT	K6JT	W5DY	
RN5 #1	W5GKH	KA5KLU	W5TFB	K5UN	K5UN	Open	W5CU
Backup					W5DY	W5TFB	W5GKH
RN5 #2	W5GKH	KA5KLU	W5TFB	K5UN	K5UN	Open	W5CU
Backup					W5DY	W5TFB	W5GKH

TEX/1: 7143 (3643 backup) at 19:00 local; TEX/2 3643 at 22:00 local
RN5/1: 7045 (3650 backup) at 19:30; RN5/2: 3650 at 21:30 local
CAN: 7052 (3670 backup) at 20:30 local

RN5 Backups: N5EL, K5JRN, K6JT, KA5KLU, K5RG, W5TFB, AC5XK, W5DY, K5UN
NCS Backups: W5DY, N5EL, K5JRN, K6JT, KA5KLU, N5PWG, AC5XK, AC5Z

Some of you may not know that Roger, K5HHS, has been in the hospital for several weeks now. He is fighting a serious illness and really needs our prayers and support. He is in a recovery center now and has E-Mail access at rog56@the-i.net, so please send him a little note when you get a chance.

We are going to miss having Ken, K5RG, check in from Houston for a while. Seems that Ken has decided to go mountain climbing in Pakistan! Here is an excerpt of what he sent:

"I am departing for the Karakoram region of Pakistan on Monday, May 29th and I thought you might be interested in keeping up with the exploits of Ken's big adventure for 2006. I am accompanying a Field Touring (Perth, Australia) expedition to Broad Peak (12th highest) and K2 (2nd highest) in the Baltoro region of Pakistan. One of the climbers from the US (Alan Arnette) will be posting live dispatches on the expedition's progress at <http://www.alanarnette.com/alan/k2broadpeak2006dispatches.php>

Alan already has a video posted on the dispatch page along with various resource links including the expedition's tie in with the Pakistan Earthquake Relief effort. My chosen charity in this endeavor is Greg Mortenson's Central Asia Institute <http://www.ikat.org/>. Greg is building schools in Pakistan and Afghanistan similar to Ed Hillary's foundation in Nepal. I met Greg in March when he was in Houston. He is also a climber and a fellow member of the American Alpine Club, another organization supporting the earthquake relief effort.

My itinerary is to fly from Houston to London/Heathrow and then on to Islamabad. The dispatches should start on June 5th from Skardu when we start the trek to the Baltoro Glacier arriving at the Broad Peak base camp around June 14th. Right now my plans are to return July 9th with a two day tour of London on the way back, but how long I stay depends on how well I acclimatize, what climbing objectives are feasible for me and when the 'Big Mac' attack hits. The expedition will first attempt Broad Peak as an acclimatization activity prior to attempting the Abruzzi Ridge route on K2. A subset of the expedition is only planning on climbing Broad Peak, so worst case is that I return with them in mid-July. There should be other opportunities to meet my return schedule with the many other expeditions and trekking groups in the area during the normal climbing season. A number of my students at UHCL have given me some inside pointers and contacts in their home country, so I should find myself in good company and I am looking forward to completing my travels to all of the 8000 meter peaks.

A number of people ask me "why?", and rather than give them the Mallory response, my wife Camille found the following Mark Twain quote that seems to answer the question: "Twenty years from now you will be more disappointed by the things that you didn't do than by the ones you did do. So throw off the bowlines. Sail away from the safe harbor. Catch the trade winds in your sails. Explore. Dream. Discover."

Obviously I hope it all works out according to plan and that the web resources keep everybody up to date, but as one of my teachers engrained in me, "flexibility is the keynote of life". Please consider the Pakistan Earthquake relief efforts.

Inshallah, Ken (K5RG)"

We all wish Ken good climbing and good luck! Too bad he won't be carrying ham equipment with him, although he'd have a lot of trouble delivering Houston traffic from the top of Broad Peak. ☺

Statistics:

This month the most check-ins were again by Floyd, N5EL, who had a near perfect QNI record with 59 out of 62 (95%). Pat, KD5TXD, had the next highest with 40 (65%). Those with 50% or better included Rodney, W5DY, with 36 and Jack, W5TFB, with 34. Thank you all for your excellent support.

TEX Net Statistics (May 2006)

			total	NCS	RN5	TTN	DFW	CTTN	TSN
Call		QNI							
W5CDX	Wads	0	10						
*		10							
AC5CI	Homer	12	12						
		0							
W5CU	Sam	7	13		4				
*		6			6				
W5DY	Rodney	18	36	5	2	11			
		18			3	3			
N5EL	Floyd	28	59	1			1		
*		31		1				1	
W5ESE	Scott	12	12						
*		0							
W5GKH	Charlie	8	16	4	4	5			
*		8		8	4				
K5GM	Pete	2	2		1				
*		0							
KJ9J	Newt	1	1						
*		0							
K5JRN	Si	1	1				1		
*		0							
KD5JSS	Dennis	1	1						
		0							
K6JT	Steve	26	56	8	2		24		
*		30		14	2		30		
KA5KLU	Doug	18	29	6	10	1		1	
*		11		5	11	2			
N5NVP	Jim	0	10						
		10							
N5PWG	Jay	0	3						
*		3		3					
K5RG	Ken	3	8						
*		5							
W5TFB	Jack	24	34		6				
*		10			3				
KD5TXD	Pat	19	40			4			19
*		21				2			21
K5UN	Lee	15	20		2		2		
		5			1				

			total	NCS	RN5	TTN	DFW	CTTN	TSN
Call		QNI							
AC5XK	Don	1	2					1	
*		1						1	
AC5Z	Bert	19	19	6					
*		0							
Totals		384		61	61	28	58	4	40
				100%	100%	46%	95%	7%	66%
QTC 1		160	240						
QTC 2		80		Sessions:		61	100%		
Time 1		532	898						
Time 2		366							

TEX Net Stations (QNS)

Call	Name	Location / Notes	Call	Name	Location / Notes
KF9AS*	Megan	Dallas	KA5KLU	Doug	San Antonio
N5BA	Brian	Houston	K5KV	Benny	Star
W5CDX	Wads	Crowley LA	W6LFB	Jim	Denton
AC5CI	Homer	Caldwell	WA5MUF*	Bill	Watauga
W5CU	Sam	Edmond OK	KB5NJD	John	Duncanville
NV5D	Martin	Allen	N5NVP	Jim	Leesville LA
W5DY	Rodney	Goliad	N5PWG	Jay	Pasadena
K5EJL	Joe	Austin	W5RCP	Ron	Houston
N5EL	Floyd	Temple	K5RG	Ken	Houston
W5ESE	Scott	Dripping Springs	N5SIG	Randy	Huntsville
W5GKH	Charlie	West Columbia	KC5T	Bob	Houston
K5GM	Pete	Austin	W5TFB*	Jack	College Station
K5HHS	Roger	Mathis	W5TV	Tom	Nacogdoches
KB5IZO	David	Irving	KD5TXD	Pat	Kingsville
KJ9J	Newt	Pharr TX (winter)	W5U FK	Ken	College Station
K5JRN	Si	Denton	K5UN	Lee	Leonard
KD5JSS	Dennis	Temple	KS5V	Ed	Bulverde (SA)
K6JT	Steve	Plano	AC5XK	Don	San Antonio
KA5KAB*	Carl	Baytown	AC5Z	Bert	Nacogdoches (Lufkin)
KØKJ	Eric	San Antonio			

* Stations with unknown or not working E-Mail addresses.

Operating:

Instead of operating tips this month, I decided to write an original piece about why our use of CW seems to work so much better under adverse conditions compared to SSB. I hope you enjoy reading it and please let me know if I have made some bad assumptions or errors in my logic.

Why does CW get through when SSB fails?

In the past month, two TEX members have mentioned to me that they have trouble copying other stations on the SSB nets they check into (or control) but they are able to copy the majority of TEX stations just a short time later on the same band.

This has implications for emergency preparedness and NTS operation in general, so I gave it some thought. Based on work I've done in the past analyzing satellite communication systems, I think I can at least partly explain why we can copy CW signals better than SSB for the same transmit power output. There may be some of you with more direct (and more recent) experience with signal analysis, so please let me know where I may have made some mistakes and/or a better way to calculate things.

First, let's assume that the key to "good copy" is the signal to noise ratio that we experience when listening to our receivers. If the signal is above the noise, we have a chance of copying it. If the signal is at or below the noise threshold, we don't. Noise power is directly related to bandwidth. For a CW signal, a very small bandwidth is needed. While not everyone may have narrow filters installed, for the sake of example, let us assume that your receiver has a 300 Hz filter (formerly the narrowest on my Ten-Tec Jupiter, which now has a 150 Hz minimum bandwidth filter after recently upgrading the firmware). 300 Hz is plenty of bandwidth for even very a high speed (> 45 wpm) CW signal. However, in order to get anything intelligible from SSB, we would need at least an 1800 Hz filter (and most radios have 2.1 or 2.4 KHz filters for SSB use). Right there, we have a 6 to 1 difference in filter bandwidth. Taking $10 \log(6)$ we thus get 7.8 dB less noise power on the receive side when using the narrow filter. Assuming 6 dB per S-Unit, that is more than a full S-Unit less noise (and if you look at your S-Meter while adjusting filter bandwidth, in a properly designed receiver, you *should* see at least 1 unit less "ambient" noise when using the narrower filter).

So for the same signal strength, we have nearly an 8 dB advantage for receiving CW in terms of S/N alone. But wait, there's more... Two more major effects come into play when comparing a single tone CW signal to a multi-tone voice signal. The first, as implied by my wording, is that your transmitter power is "shared" among the multiple tones created by your voice. The human voice has timbre and harmonics that come about from the vibrations of the vocal chords and that give each of us a distinctive voice. I don't know how many tones are simultaneously generated, and it probably varies with person and with time, but for the sake of simplicity, let us assume at least 4 tones in an 1800 Hz bandwidth on an instantaneous basis. There are probably more. Assuming 4, then our transmitter power must be shared among them when speaking, so we lose $10 \log(4)$ or 6 dB power – another S-Unit when operating SSB just from the multi-tone effects.

Finally, we have the effect of average versus peak power to consider. For CW, all the transmitter power is concentrated in the single dit or dah. But for voice, the average power transmitted will be less. For unprocessed audio, it is probably somewhere around 33%. Of course, speech processing and especially compression can make up

for this, giving 75% or more average power when transmitting at the expense of “fidelity” of the voice. Most operators (other than during contests) do not use a lot of speech processing or compression because they don’t like to be told their audio sounds lousy (which it usually does when processed, but punchy). Using the 33% figure, we get $10 \log(3) = 4.8$ dB disadvantage of SSB versus CW for the same transmitter power setting.

So what does that all mean? It means our signal to noise ratio will be increased by 7.8 dB (noise reduction) + 6 dB (multi-tone) + 4.8 dB (average power) = 18.6 dB when operating CW versus SSB with the same transmit power capability. Since an S-Meter reads signal plus noise, it won’t read all that much higher for the CW signal versus SSB (since the 10.8 dB signal increase is reduced by 7.8 dB noise reduction for a net increase of only 3 dB or half an S-unit), but your brain will definitely have a much easier time picking the CW signal out of the noise with that overall 18.6 dB S/N ratio boost. To put that in perspective, consider that if you were running 100 watts to begin with, to obtain an 18.6 dB S/N ratio boost (assuming the noise stays constant), you would need to increase power to 7,244 Watts! Or, to put it another way, in order to achieve the same S/N ratio for a CW signal as a 100 watt PEP SSB transmitter, you only need 1.38 watts of power. Now we can understand why QRP enthusiasts use CW with such great success and why CW is still the very best mode to use under emergency conditions where power may be severely limited and conditions are poor.

All of this seems to fit nicely with KB5W’s proposal to establish CW “guard frequencies” to be used in the aftermath of a major disaster, when transmit power and antenna capabilities may be severely limited.

Using 7143 for Early TEX

In the past month, I’ve observed that 40 meters has “long skip” about one or two days each week. Furthermore, I have been hearing (off and on) some sort of carrier signal at about 7143.3 that causes difficult copy when present. One night this past week, it was as strong as the NCS. I don’t know where it comes from or if any of you also can hear it, but it seems prudent to change frequency just a little to avoid it in the future. I suggest 7142 to start with, but that is up to the NCS. For some of you, that may not work as well, depending on which sideband your radio uses for CW reception.

Why not go back to 3643 all the time? I have also observed that is not an optimal solution, either. Copy from north to south Texas is marginal at 7 PM on 3643, depending on conditions. On 40 meters, signals from south Texas “boom” into my QTH (some nights even S9+10 dB), while on 80 meters they are only a little above the noise. Conversely, I cannot copy Bert, AC5Z, or Sam, W5CU, on 40 when the band is long.

So let’s keep it as-is at 7 PM, starting around 7143 (or 7142) and changing to 3643 as conditions dictate. NCS’s, try to get there a couple minutes early and put out calls to determine band condition. Then switch to 80 if “local” signals appear to be down.

Until next month, 73, Steve K6JT