



Region Four News

Navy-Marine Corps Military Affiliate Radio System



June 2003

PROUDLY SERVING THOSE WHO SERVE

Volume I, Issue 1

Welcome To The World Of Region Four!

This month we embark on a new era in our Navy-Marine Corps MARS. With conditions as they are in our world today, it looks as though our services will be more needed as we seek to fulfill our mission of providing emergency communication services to our military. Once again we are in the midst of change, but that is not new. Some of you used to pick up message traffic using teletype machines. Then came computers and RTTY. With continued improvements we were provided with AMTOR, and not long after, PACTOR. We seldom use RTTY now because AMTOR and PACTOR provide us with better copy, and who can forget the number of fills we used to have to get when using RTTY? Change does come and with it, improvements.

In this current change, if past is prologue, there are a lot of good accomplishments to which we can look forward. I doubt if any of us expect a return to the good old days of 20, 30, 40 or more MARSgrams each day. The days of several hundred or more phone patches at a single sitting/session are a thing of the past due to cell phones and e-mail. Still, there have been times when only phone patches were available for communications between shipboard personnel and their loved ones at home. With the present threat of terrorism here at home, the danger of storms and the expanded utilization of our military forces at home and abroad, our Navy-Marine Corps MARS---you!---continue to be a much needed asset of our military and our nation. So hang in there!

The Captain of a ship may be a brilliant man, an outstanding leader, one who works well with his men and who enjoys their respect. But the success of his leadership depends upon how well the crew performs. We have an outstanding leader as our new Region Four director---**Curtis, NNN0AS4**. Curtis has been NNN0ASC ONE for many years, and on several occasions when we've been between Directors, has been acting NNN0ASC for months on end. He has always been a consummately skillful and caring leader. Our Navy-Marine Corps MARS has benefited greatly from the unselfish service he has given us down through the years. How good it is that we have a man of such proven character and capability, and so highly respected, as is our new Director! Curtis, congratulations! Your crew stands ready to give you our very best as together we *proudly serve those who serve!*

DON'T FORGET OUR REGION CONFERENCE!

MAKE YOUR RESERVATIONS NOW IF YOU HAVEN'T ALREADY.

Finally, this issue of the **Newsletter** has an article about Charlie, NNN0LUK, and an outstanding article about **Sound Card Basics** given by Bill, NNN0TJC, NNN0GAA Ten. Another issue of the **Newsletter** will come out next month. In the meantime I welcome your articles

Charlie — NNN0LUK KY

On February 12, 1809, the 16th President of the United States, Abraham Lincoln, was born in Hodgenville, Kentucky. One hundred and twelve years later, on November 21, 1921, our own Charlie was born, in this same Hodgenville, Kentucky, to George and Hallie . It can be said, then, that Hodgenville, KY has produced at least two outstanding men who have contributed much to this country; Abe as President and Charlie as an Aerial Phototopographer in the Army Air Corps, and as an active member of Army, and later, Navy-Marine Corps MARS.

Many of us gravitated toward, drifted into, amateur radio for a variety of reasons. Charlie's interest in amateur radio grew out of his hobby of flying model airplanes. In addition to the fun of flying these airplanes, he became intrigued by the radio aspect involved, and decided to investigate amateur radio to see if he could get a different frequency on which he could operate his planes. However, this investigation led to his taking and passing the exams in 1951 while living in Indianapolis, and the callsign issued to him was K9CRM. So he sold his airplanes and bought amateur radio equipment!

In 1956 Charlie moved to Kentucky. Since he no longer lived in Indiana, his next amateur license had a 4 vice a 9, and the new callsign issued to him was K4OQN. It was while living in Kentucky that Charlie became interest in MARS. He first applied to Army MARS and on January 7, 1957 was issued the callsign AA4OQN. You will immediately note that his Army MARS callsign had the same last three letters as did his amateur callsign. That was the way things were done in those days. MARS dropped the amateur letter prefix and added AA (Army) in its place and retained the number and remaining amateur letters. It was in the neighborhood of twenty years ago that Charlie applied to, and was accepted as a member of, Navy-Marine Corps MARS. This time the callsign he received was NNN0LUK --- no relation to his amateur callsign!

A number of amateur radio operators in those days usually built their transmitters and other assorted gear and bought receivers. Charlie bought receivers and built his transmitters, tuners and power supplies. The first receiver Charlie bought was a Drake 1A. Later on he won, at a hamfest, a National NC300. After building his first transmitter, he bought a Heathkit DX100 transmitter and built it. Of course, in those days these were AM transmitters. The receiver he used with this DX100 was a Hallicrafter. In addition to amateur radio, Charlie had another expensive hobby: photography. While in the Army Air Corps he flew on a number of missions photographing enemy beaches and other potential battle zones, all the while making aerial maps that were used by various intelligence agencies preparatory to landings on enemy shores.

Charlie married his sweet, precious Jessie on 22 February 1948. They had two girls and two boys. We all know Charlie as NNN0ASC Three and NNN0ASC Four---now NNN0AS4-Three and NNN0AS4-Four---and we've been used to hearing him as NECOS on the 2X1B Net---now the 4X1B Net. Over the years he has been giving his very best efforts to Navy-Marine Corps MARS. He is intensely interested in seeing that all of us abide by the directives given us in NTP-8 (C) and in the Region Ops Guide so that our operating procedures flow along more smoothly. We have a large number of very faithful members in Navy-Marine Corps MARS who, over the years, have contributed so much of their time and financial resources to the ongoing success of our beloved MARS, to whom we owe a great debt of gratitude. Charlie is one of those, and today we salute him for his many years of service to Navy-Marine Corps MARS!! Blessings, Charlie!

Sound Card Basics

Introduction

The following article is intended for those who have been hearing about sound cards and new digital modes but thought it was too complicated, too expensive, too technical, or whatever. Sound card digital is easy, it's fun, and it's cheap! I'd hope that MARS stations without AMTOR FEC capability would be sure to read the article, and hopefully, there is something here of interest to all MARS operators.

It's easy. You download a freeware program (or two). You plug one end of an audio cable into your transceiver and the other end into your computer. This is all you'll need to receive. (To transmit, you'll need another audio cable, this one with a two-resistor 100:1 attenuator.) We'll cover all the details.

It's fun. In addition to operating AMTOR FEC on MARS nets you can work QRP DX with an attic antenna. You can copy WX faxes. You can send and receive Slow Scan TV pictures. And lots more! Imagine monitoring several (as many as 10 or so) PSK31 QSO's simultaneously without touching your dial, copying traffic in heavy QRM, rag-chewing with stations too weak to hear on SSB, or competing in a world wide RTTY contest without a TNC.

It's Cheap. You already have a transceiver, and you probably have a computer with a sound card. If you don't have a junk box with everything else needed, you can get it for around \$10, even at Radio Shack prices. The article will show you just how to set it up.

I'd say 95% of my Ham-band operation is via the sound card. Even mobile. Hope you come to enjoy it as much as I have.

This may just be the exception to the rule; 'If it sounds too good to be true, it probably.....'

Enjoy!

SOUND CARD BASICS

For MARS Stations

"THE
USE OF
SOUND
CARD
MODES
IS

One thing before we get into it.... Sound cards have not yet replaced TNC's. It may be some time before we will no longer need a TNC for MARS MDS purposes. Don't sell your TNC! If you've been contemplating getting a TNC for MARS MDS operation, DO NOT let what we offer here deter you from becoming a fully digital capable MARS station.

That said, let's get back to sound cards.

EXPANDING RAPIDLY THROUGHOUT NAVMARCORMARS. THESE MODES ARE PROVING TO BE EFFICIENT IN MESSAGE HANDLING AND INEXPENSIVE TO OPERATE, ELIMINATING THE NEED FOR AN EXPENSIVE MULTI-MODE TERMINAL NODE CONTROLLER. SOME REGIONS AND STATES HAVE ESTABLISHED NETS FOR EXPERIMENTATION WITH THESE MODES." *CHNAVMARCORMARS BCST 08-03 - SOUND CARD FREQUENCIES*

This article is about how to get started quickly and easily. Trust me; it's not nearly as complex as it sounds. If you have a computer with a sound card and an extra ten bucks or so, you're almost on the air already.

RECEIVING AMTOR FEC

Let's cover a really easy one first. If all you want is the ability to copy AMTOR FEC, '...have I got a deal for you!'

While not a requirement, AMTOR receive capability is encouraged for our members. Most Regional and Area (State) net traffic is transmitted via AMTOR FEC. It is our practice, for example in the Alabama area, to broadcast all general messages via AMTOR FEC and then by voice at reading speed. The nature of many general messages makes voice transmission very difficult to copy and to understand. Yes, I know, General Messages generally are later sent via email¹ to a mailing list, but MARS is about RF, so ...well you get the picture.

For training purposes, EEL messages are often sent by voice during ECOM exercises, but as you know, in an actual event, AMTOR is much more efficient and accurate.

Prior to sound card technology, an expensive² modem was required to decode received AMTOR. Now your computer's sound card can do the job. If your computer does not have a sound card, you can add one at little

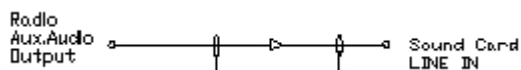
¹ NTP-8 (c), Annex M, p. M200, D.

² Used TNC's are often available at reasonable prices, and also check with your area 'TWELVE' for the possible availability of MARS equipment.

cost. Ask around, and someone will likely have an extra one that you can have, and even a new card is very cheap. Virtually any sound card will work. You don't need the 'latest/greatest/super-duper' game card. To be safe though, if you're buying one, check to see that it is "Sound Blaster 16 compatible".

Hook-up:

NO ELABORATE INTERFACE IS NEEDED to receive AMTOR, (or to send it, for that matter). To receive you'll need a shielded audio cable with the appropriate ends, to take the received audio from your transceiver to the



sound card 'line-in' or 'mic' jack.

Many recommend (so we will too) a 1:1 audio transformer (such as Radio Shack #273-1374) in the line to avoid any ground loops or DC current. I've done it with and without and never had a problem either way.

Set things up in a manner that suits your particular situation. For example;

- If you use an external speaker, you might just add a "Y" connector (splitter) at your speaker jack and go from one side to your speaker and from the other side to the sound card 'Line In' (or 'mic' if there is no 'line in' jack).
- Alternately, you can go from your radio's external speaker jack to the sound card 'line in' or 'mic' jack and listen to your radio through your computer speakers.
- You can use, depending on your rig, the accessory connector in the rear of the transceiver as the audio source. Audio from this jack is often at a constant level and is unaffected by the gain setting. This works well for sound card work and eliminates the need to constantly adjust your sound card levels.

So, just do what works for you. I've had QSO's with stations that had no interface at all! They just put their computer microphone in the vicinity of the radio speaker and feed the audio to the sound card acoustically. (To transmit they put the radio microphone near the computer speaker.) It is not the best set-up, but I've tried it myself and it really does work!

More on interfaces later, but really, this is all you need to receive AMTOR (and every other past, present and future soundcard mode)...and you thought there was no such thing as a free lunch!

Software for AMTOR FEC

You'll need some software. Currently I know of only three Windows based programs that decode AMTOR FEC. Two, TruTTY and MixW, are shareware and one, MultiPSK, is freeware.

MultiPSK is the only freeware AMTOR program I've found. The author is French, and has approached things somewhat differently from what you may be used to. CPU usage seems to be less efficient than some others are and this program requires a Pentium 166 or better computer. If your computer is slower, this program probably will not work for you. But it is free, and it does copy AMTOR quite well. MultiPSK also does CW, CCW, PSK and Baudot RTTY. The program may be downloaded from <http://members.aol.com/f6cte/>.

Step by step instructions to get started with MultiPSK are presented below.

TrueTTY "A program for amateur radio digital communications via a sound card. Supported modes are RTTY (Baudot code), ASCII (7 or 8 bits), PSK31 (BPSK and QPSK), AMTOR-FEC (SITOR-B, NAVTEX), MultiFSK-16. HF-PACKET and UHF-PACKET (AX25) are supported in

KISS-TNC emulation mode. SELFEC SITOR and DTMF-code decoding is also possible.³ A trial version is available for download from; <http://www.dxsoft.com/en/products/truetty/>

MixW is a multimode program for HAMs. It will help you in regular and contest QSOs. This program has many features which give you almost automatic processing of a QSO⁴. MixW supports: CW, BPSK31, QPSK31, FSK31, RTTY, Packet (HF/VHF), Pactor (RX only), AMTOR (FEC), MFSK, Hellschreiber, Throb, Fax (RX only), SSTV, MT63 and Q15X25.

An evaluation version of this software can be obtained from <http://www.mixw.net/> and the help file from http://radioministries.org/k4set/MixW2_help.html

That's it!

You can now receive AMTOR FEC! (and RTTY, PACTOR FEC, Packet, PSK31, MFSK, MT63, Throb, Hellschreiber, fax, SSTV and anything else they write for the sound card).

And you know what else? Transmitting AMTOR FEC (and all those other modes) is almost as easy. All you need now is a connection from your sound card 'Line Out' to your transmitter. This can be accomplished in several ways with little effort and expense. See the INTERFACE section for below for details.....just remember, KEEP IT SIMPLE!

Digital Modes:
(modes of possible interest to MARS Members)

MODE	DISCRIPTION	ADD'NL INFO LINKS
AMTOR FEC	<p>In NAVMARCORPMARS, AMTOR FEC is used to transmit all general messages, such as Chief MARS Broadcasts and Info Broadcasts, to our area nets. In addition FEC is also used to send traffic between stations equipped to operate in this mode.</p> <p>Currently there is not, to my knowledge, any sound card software supporting AMTOR ARQ</p>	<p>http://home.teleport.com/~nb6z/amtorg.htm</p> <p>www.arrl.org/tis/info/digital.html</p> <p>NTP-8(c), p 930, 940</p>
PSK31 (BPSK and QPSK)	<p>PSK31 is the mode that really sparked a general interest in sound card communication modes.</p> <p>PSK31 is based on an idea by SP9VRC and developed by Peter, G3PLX, who also developed AMTOR. Based on RTTY, PSK is used for live keyboard-to-keyboard QSOs at 50 WPM (31 Baud) and uses "Phase Shift Keying" to signal mark and space values, instead of changing the frequency like RTTY (FSK).</p> <p>PSK31 operates in a very narrow bandwidth</p>	<p>http://home.teleport.com/~nb6z/frame.htm</p> <p>www.aintel.bi.ehu.es/psk31.html</p> <p>www.qsl.net/wm2u/psk31.html</p>

³ From the author's web page; <http://www.dxsoft.com/en/products/truetty/>

⁴ From the author's web page; <http://www.mixw.net/>

	<p>allowing several individual, non-interfering, QSOs to simultaneously occupy one 3000Hz-bandwidth allocation. PSK31 is very effective with low power and QPSK improves communication under some adverse band conditions.</p> <p>For MARS purposes, these features are offset by PSK31 being relatively slow, and having no real forward error correction (FEC) features.</p> <p>In addition to BPSK and QPSK there are several variations to PSK31, but are beyond the scope of this article.</p>	
<p>MFSK</p>	<p>MFSK is a technique for transmitting digital data using multiple tones, extending the RTTY two-tone technique to many tones, usually, but not always, one tone at a time.</p> <p>MFSK has several performance advantages:</p> <ul style="list-style-type: none"> • High rejection of pulse and broadband noise due to narrow receiver bandwidth per tone • Low baud rate for sensitivity and multi-path rejection - data bit rate higher than symbol baud rate • Constant transmitter power • Tolerance of ionosphere effects such as Doppler, fading and multi-path <p>Most important of all, with an MFSK system, the error rate improves as the number of tones is increased, so with as many as 32 tones the performance is unrivalled. With PSK systems the opposite is true. <i>Murry ZLIBPU</i></p>	<p>www.qsl.net/z11bpu/MFSK/INDEX.html</p> <p>www.qsl.net/wm2u/mfsk.html</p>
<p>MT63</p>	<p>MT63 is a DSP based advanced HF mode for Amateur Radio, intended to provide high performance keyboard - to - keyboard operation on HF bands under poor conditions. MT63 utilizes a number of revolutionary ideas, and is technically very complex. MT63 is no more difficult to operate than RTTY, and is easy to tune. It also provides much better performance on HF than most other modes.</p> <p>The specialty of MT63 is its performance when conditions are both weak and unstable.</p>	<p>www.qsl.net/z11bpu/MT63/MT63.html</p> <p>www.qsl.net/wm2u/mt63.html</p> <p>www.navyamars.org/national/sound%20cards/default.htm</p>

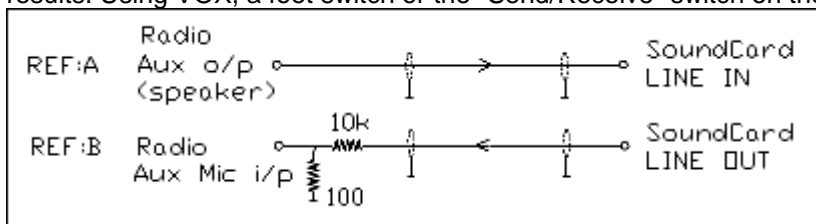
	<p>It also copes with incredible QRM.</p> <p><i>Murry ZLIBPU</i></p>	
Packet	<p>Packet radio is a digital method of communications adapted from a standard computer protocol (X.25) by which computers communicate with each other. The version adopted for NAVMARCORPMARS use is AX.25. Packet radio was originally developed for VHF use, but has since been modified for HF .</p> <p><i>NTP-8 (c) para. 951</i></p>	<p>www.tapr.org/tapr/html/pktf.html</p> <p>www.tapr.org/tapr/html/pktf.html</p> <p>NTP-8(c), p 950</p>
Q15X25	<p>Q15X25 is a 15 tone packet mode with a Kiss/AX25 interface, and from its performance, should long ago have replaced conventional packet for HF use! Q15X25 is now available for Motorola EVM, LINUX PC and Windows PC sound card operation.</p> <p><i>Murry ZLIBPU</i></p> <p>'BEACONS USING Q15X25 ARE ENCOURAGED. THIS MODE MIGHT BE ADAPTABLE FOR THE MDS BUT WE NEED MORE EXPERIMENTATION UNDER DIFFERING PROPAGATION CONDITIONS.'</p> <p><i>NNN0ASA Chief MARS BCST 08-03</i></p>	<p>www.qsl.net/zlibpu/Q15X25/Q15X25.html</p> <p>http://home.att.net/~ronchap/q15x25modes/q15x25.htm</p>
PACTOR FEC	<p>Pactor ARQ is used in the MARS MDS/BBS system. Pactor FEC is suitable for broadcast mode traffic transmission, but generally on MARS nets AMTOR FEC is used instead.</p> <p>Currently I know of no software supporting Pactor ARQ. At one time Brian Beezley, K6STI, offered a DOS based sound card program called 'RITTY', which reportedly would do Pactor ARQ. RITTY required a TRUE SoundBlaster sound card and, I am told, would NOT run on the vast majority of sound card clones. I am not sure that it is still supported, and the last license fee I heard was around the cost of a good used TNC.</p>	<p>http://home.teleport.com/~nb6z/pactor.htm</p> <p>www.airmail2000.com/pprimer.htm</p>
SSTV	<p>Slow Scan TV is the transmission of still images via RF</p>	<p>www.qsl.net/mmhamsoft/mmsstv/primer.htm</p> <p>NTP8(c), Annex G, G340</p>
ALE	<p><u>A</u>utomatic <u>L</u>ink <u>E</u>stablishment</p> <p>The primary purpose of ALE is to provide a much more reliable means for one station to call another station via HF radio. SHARES</p>	<p>http://www.tactical-link.com/ale_area.htm</p>

and other organizations use this system.

Interface Basics:

I don't know,maybe it's the ads for some commercial sound card interfaces that lead people to believe that this is a complicated process. It isn't. You just need to take audio from the transceiver to the sound card (to receive) and from the sound card to the transceiver's microphone circuits (to transmit), and you'll need some method to key the transceiver.

I have used this basic circuit with various rigs with all the programs and all modes mentioned here with good results. Using VOX, a foot switch or the "Send/Receive" switch on the rig, it is all I've ever needed. For added convenience I now use a manual switch to select either microphone or sound card for transmit.



A 1:1 audio transformer (such as Radio Shack #273-1374) in each line is recommended to avoid ground loops and any possible DC current in the lines.

If you want to build your own interface, or seek a better understanding of the matter, here are a couple of excellent web sites that cover the interface subject much better than I can.

<http://www.qsl.net/wm2u/interface.html>
<http://www.packetradio.com/bbbb.htm>

If you'd prefer, kits with full PTT circuitry are available for around \$25 and assembled units are available for around \$50 from this and other sources.

<http://www.packetradio.com/>

Software and Where to Find it:

Name	(a)	Modes / Download Source
MixW	S	AMTOR FEC, Pactor FEC, PSK31, MFSK, MT-63, Hellschreiber, Packet, Q14X25, RTTY, SSTV, Throb, Fax, CW http://www.mixw.net/
TruTTY	S	AMTOR FEC, PSK31, MFSK, RTTY, Packet (AX25), plus. http://www.dxsoft.com/
MultiPSK	F	AMTOR FEC, PSK31, RTTY, CW, Fax, plus http://members.aol.com/f6cte/
Hamscope	F	PSK31, MFSK, RTTY, CW http://www.qsl.net/hamscope/
Stream	F	PSK31, MFSK http://iz8bly.sysonline.it/Stream/index.htm
MT-63	F	Mt-63

		http://iz8bly.sysonline.it/MT63/index.htm#Download
Hellschreiber	F	Hellschreiber http://iz8bly.sysonline.it/Hell/index.htm#Download
MMTTY	F	RTTY http://www.qsl.net/mmhamsoft/mmtty/index.html
MMSSTV	F	SSTV http://www.qsl.net/mmhamsoft/mmsstv/
Digipan	F	PSK31 http://www.digipan.net/
PC-Ale	F	ALE http://www.chbrain.dircon.co.uk/pcale.html
Win-Warbler	F	PSK31, RTTY http://www.qsl.net/dxlab/download.htm
Logger 32		PSK31, RTTY http://kc4elo.tripod.com/

(a) F-Freeware, S-Shareware, C-Commercial

From time to time you may not be able to link to these sites as they are sometimes moved, removed or whatever. If you have any trouble just email nnn0gaa10@navymars.org for a copy via email or CD.

Other Sound Card Software Sources:

- **Amateur Radio Radio SoundBlaster Software Collection -**
<http://www.muenster.de/~welp/sb.htm>
- **Digisoft -** <http://home.wanadoo.nl/nl9222/digisoft.htm>
- **XE1BEF -** <http://members.fortunecity.com/xe1bef/soundcard.htm>

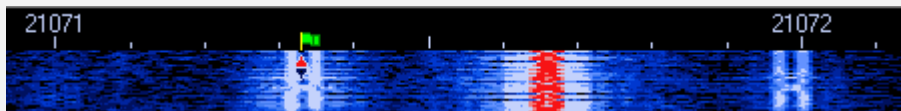
(Check these lists often for the latest software availability.)

Here is a little utility program that is a 'must have'. QuickMix is freeware and can be downloaded from: <http://www.msaxon.com/quickmix/> It allows saving and retrieving all your soundcard settings. A big time and frustration saver.

Tuning your sound Card

Setting Audio Levels:

Adjust the sound card audio INPUT level such that a nominal signal tuned in on the transceiver will be seen prominently in the program signal display window without overdriving the sound card input. (See PSK31 Screen Shot for an example of how this might look on the several ham programs.)



Use the MASTER control to adjust the sound to the PC speakers (if you use them) and then re-adjust the other levels as needed. Note that other Windows applications you run on your PC that provide sound card adjustment controls may change your PSK31 settings! You may have to re-adjust these levels. Generally, once these levels have been set, you will not need to change them.

Adjust the sound card audio OUTPUT level to the transceiver such that a small amount of ALC

voltage is detected at the transceiver while transmitting into a proper antenna load (50 ohms) with the MIC Gain control at a nominal setting. After this adjustment, you can reduce the MIC gain control slightly to achieve full output power with no ALC deflection. Note that full output on a 100 watt transceiver would be about 100 watts if using a single tone (CW) from the sound card, but would be about 50 watts if using the double tones of a PSK31 carrier.

When you get your first PSK31 contact, ask the other station for an "IMD report" on your signal. (You must allow several seconds of "no text" for the reading to be made.) A properly adjusted audio input level to your transceiver will have an IMD at least -20 dB below the carrier and a very clean signal will be around -28 dB. It should be noted that a strongly received PSK31 signal (S9 or greater) can appear to have a high IMD level when viewed on the digi program display. This is often the fault of the receiver's front-end being over driven by the strong signal. Before issuing a bad IMD report to another station, you should add attenuation to the receiver and observe the reading under nominal signal strength.

by Richard, N6BZ <http://home.teleport.com/~nb6z/frame.htm>

Other Sound Card Uses:

In addition to the digital modes, as if this weren't enough, with the same set up you can use spectrograms, VOX recorders, audio DSP filters, etc. A good place to find what's available is: SoundBlaster Software Collection .at; - - <http://www.muenster.de/~welp/sb.htm>

MultiPSK Step by Step AMTOR Receive.

Steps to receive AMTOR using MultiPSK

1. Open program.
2. In the box above the light blue bar "Short cuts" verify that "XIT as an offset (Hz) is checked.
3. In the same box, set XIT: to 0, RX Fr.: to 1600 and TX Fr.: to 1600.
4. Under "SHORTCUTS" click on "RX/TX window"
5. Click on "MODE". (a drop down box will appear)
6. Click on "Reception Mode RX". (Another drop down box will appear)
7. Click "AMTOR REC"
8. Click "RETURN" bar.
- 9 Under "Reception", click "reverse".
10. Select "Spectrum" or "Waterfall" It's a matter of personal preference, but I'd recommend starting with "Spectrum" for AMTOR

Note: steps 2 - 10 need only to be done once. The program will open next time in the mode it was in when last shut down.

11. You will see the received signal in the spectrogram as twin

peaks. With the above settings, the right peak should already be at the light blue vertical bar at 1600 Hz. If not, click on the right peak and the traffic will print out in the box below.

Have MultiPsk open and operating on the desktop or in the background at the beginning of the net. There is no need to offset your receiver frequency (that's just needed for TNC's). When another station starts sending you are all set up to receive

I hope this will give you the information you need and inspire you to use your sound card. If you have any specific questions, email me at nnn0tjc@navymars.org and I'll attempt to find an answer for you. This information is presented in web page form at <http://www.navymars.org/central/reg4/al/soundcard.html>. Please check here from time to time for any updates.

--- Bill, NNN0TJC/GAA-Ten