

SETTING UP AND USING MBEMS/FLDIGI FOR MARS

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This tutorial was developed by Don, NNN0VJM OH. It is posted on the Navy-marine Corps MARS web site with his permission. It is free to use and share among MARS Members of all Three MARS Services. The following is his introduction.

“I have been traffic rep in Ohio for many years, and fldigi is the best software I have ever used for ease of message handling. The drag and drop feature is what makes it special. No other software does this and when set up per the instructions makes it very fast and easy to use.

“The second most important part of the fldigi team is the text editor. NoteTab Light allows multiple text files open at one time and when I copy and past from Winlink it goes directly into NoteTab Light.

“Don, NNN0VJM OH”

Don also advised me that some changes have been made to fldigi since he developed this tutorial. He may develop an update if there are significant changes of particular benefit to MARS.

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1. NBEMS/FLDIGI DESCRIPTION.

Sending; receiving or relaying messages within MARS is very easy to do with NBEMS/fldigi. NBEMS/fldigi is a multi-mode software that is designed to handle messages. NBEMS stands for Narrow Band Emergency Message System. NBEMS/fldigi was first featured in the April 2008 issue of QST magazine. Since that time it has become a very popular program for ARES/RACES groups.

It is not meant to be an all-encompassing software as MixW or Ham Radio Deluxe/DM-780 is. Although it does have some logging features for ham use; it is designed to be an efficient traffic handling program. NBEMS/fldigi also has several features not available in the other programs.

A. The first and most important feature is the ability of fldigi to use “drag and drop” to move messages into the transmit buffer area. This ability makes message handling seamless and very easy to do. It only takes a little bit of manipulation of

windows to accomplish this and will be addressed a little later. No other software allows drag and drop.

B. The second feature is called “flmsg”. Flmsg will send and receive a NIMS IS-203, IS-205, IS 206, IS-213, IS-214, IS-216 an ARRL message form and a Generic message form. The software is a separate download available on the same download screen as fldigi. It is also possible to set up flmsg to make a template for all your ECOM messages (EEI’s, Sitreps and etc.) for later use.

C. The third feature is called “flwrap”. Flwrap is also a separate download available on the same download screen. Flwrap attaches a checksum to a message to guarantee the message received is correct. If the checksum does not match, the message has been corrupted and should be re-sent.

D. The fourth unique feature is included with the fldigi download and that is “Flarq”. Flarq allows an ARQ exchange between two stations very similar to Amtor or packet. I may be possible to use flarq as a store and forward mode. More testing needs to be done using this feature. It is not normally used in MARS but could be.

E. As with all the other programs there are macro’s to use that will greatly enhance the ability to handle messages. These Macro’s can be customized to suit any application. I will talk about the Macro’s I use for traffic handling a little later. More than one set of Macro’s can be used and each set can be called up from a Macro. It’s all in the help files.

F. Reed-Solomon Identifier (RSID) is also available. It is important in that using it will allow the receiving station to automatically change to the correct mode and frequency when the transmitting station sends a “TXID”.

2. SETTING UP NBEMS/FLDIGI.

A. First, download the software from <http://www.w1hkj.com/download.html> On this screen you will see all the files mentioned above plus a stand alone rig control program called “flrig” and a CW keying program using Winkey called “flkey”.

I recommend downloading Fldigi/Flarq, Flmsg, and Flwrap to start.

If you notice, at the top of the download page there are different operating systems shown. Fldigi is written to run on Linux, Windows, OS-X and Puppy Pet and there is also the source files if you want to (and are capable of) writing your own version of fldigi.

Make sure you download the help file in the “Help” column. This will be an HTML link to an online help file; so you must be online to use it. There is also a .pdf version

available for fldigi/flare and I recommend you download it as well as the “Beginners Guide” file in .pdf.

B. Make new folders in Program Files for the above downloads. I made the following folders: “FLDIGI 3.20”; “FLMSG”; and “FLWRAP”. If you want to use the Alpha FLRIG make a folder for it and the same for FLKEY if you want to use the Winkeyer. Download the above files into “Program Files” and the new folders you just made for them.

In program files/fldigi 3.20 you should now have “fldigi-3.20.xx setup.exe”. Double click on that file to run it and an “Open File Security Warning” will probably appear. Pick “Run” and the installation will start. A license information screen will come up; just pick “Continue” then an “Installation Options” screen appears. Pick which options you want. I picked “Flarq”, “Start Menu Shortcuts”, and “Quick Launch Shortcuts”. You may want to put the shortcuts on your desktop; it is up to you. I find the Quick launch bar at the bottom of the screen to be much faster and easier to find. Make your selections and pick “Next”.

C. Next screen will be the “Installation Folder” selection. Choose the default on “Program Files”. Pick “Install” and fldigi will be installed in the default location. Next on the “Completed” screen pick “Close”.

D. Now pick on the shortcut for fldigi to start the program. Page 11 of the help file shows you what you will see when it is started for the first time.

E. First, there is a note below the screen shot of fldigi explaining where the “working files” for fldigi will be located. It is important that you locate these files as we will be using them later in the setup for message handling. The description goes on to show what files you will expect to see and what they contain. My “fldigi.files” folder contains the following folders: “help”, “images”, “logs”, “macros”, “pallets”, “rigs”, “scripts”, “talk”, “temp”, and “wrap”. There will be another folder called “NBEMS.files” with another “WRAP” folder in it. We will use this one later.

F. We will now configure fldigi for your station. At the top of fldigi pick “Configure” then “Operator”. On this screen put your call sign and fill in the rest of the information if you wish. For MARS use only the call sign is needed. Pick “Save” then close. Picking “Save” is always necessary before you close the window. If you do not the settings will NOT be saved.

G. Next pick “Configure” then “Colors and Fonts”. Pick on the “Rx/Tx Txt” tab and we will set the font and style. Pick the “Rx Font” button and set the font to a non-proportional font. I use “Consolas Bold” with a text size of 14. This gave me a dark easier to read font with slashed zeros and non-proportional text. Non-

proportional text is necessary for MARS messages. When a MARS message has columnar data the columns will line up correctly IF the originator used a non-proportional font to create the message. If they did not then the columns will not align and be skewed requiring you to re-type the message to be correct. Pick “OK” then pick “Tx Font” and make the same settings of font and size; then pick “OK” and then pick “close”.

The remaining settings there can be done later when you become more familiar with fldigi; so for now just leave them at default values.

H. Next pick “configure” and then “User Interface” (UI). We will leave most of these at default values, but the ones for MARS will be noted. Pick the “UI” tab at the top and then pick the “Enable All” button at the bottom.

I. Next pick the “Waterfall” tab, then “Display” tab. Leave “Colors and Cursors” at default. In “Frequency scale” either check or uncheck the “Always use audio frequencies” box depending on whether you have rig control using fldigi. If you do not use rig control then check the box. If you do use rig control and the frequency is displayed in the frequency readout on fldigi then uncheck the box. In the “Transmit signal” section it’s up to you if you want to monitor your transmitted signal in the waterfall. I chose to monitor it and the box is checked. Pick “Save”.

J. Next in the Waterfall tab, pick the “FFT Processing” tab. Here we will set the lower and upper limits of the waterfall. Mine is set to 200 Lower limit and 2800 Upper limit and all works fine for MARS. It is important to NOT get the settings too narrow because the offset frequency on MT-63 will be off by 100 Hz. For MT-63 2000 Hz the cursor frequency at the bottom of the fldigi screen should be 1500. If your shows 1400 then your waterfall limits are too narrow and you need to decrease the lower limit and/or increase the upper limit. As you increase or decrease the limits you will see the effects on the waterfall as it cuts off the high and low frequencies.

My “FFT latency” is set to 4. “FFT averaging” is unchecked. “FFT prefilter window function” is set to “Blackman”.

My “Waterfall height in pixels” is set to 125. You can adjust this to suit. Pick “Save”.

K. Next is the “Mouse” tab and nothing is checked.

L. Next pick the “Modems” tab. The only changes for MARS is in the “MT-63” and “Olivia” tabs. Pick the “MT-63” tab and check the first two boxes and uncheck the next two boxes. Next pick the “Olivia” tab and check the “8 bit extended characters” box. Pick “Save”.

M. Next pick the “Rig” tab. This will probably be the most difficult to understand setup we do. Everything depends on how you do rig control. If all you do is key your rig through an interface like a Rig Blaster or a Signalink USB and do not use any feedback for setting frequencies and modes (SSB, CW and etc) then your set up will be fairly easy to do.

If you use rig control and a keying interface as above there will be other settings. It all depends on your setup; there are many, many different combinations. You will need to know your com port numbers and speeds for any keying device and rig configuration. If you are already using rig control you should have these written down someplace. If you’re starting from scratch; follow all the vendors’ instructions for setting them up before you do fldigi. Make sure everything works first. This part is more easily done one on one if you need help. Read the fldigi help file also for more information.

N. Next we are going to set up your sound card. Pick the “Audio” tab and then the “Devices” tab. If you have only one sound card this will be easy. Read the help file page 19 for descriptions of the various choices. I checked the “Port Audio” box as this is for Windows. Make both the Capture and Playback sound cards the same name. Pick on the small black arrows at the right end of the Capture and Playback boxes and see if there is a sound card listed. If there is only one then select that one for each box; if there is more than one then you must select which one you are going to use for fldigi.

O. Now pick the “Settings” tab. Here you will enter the sound card calibration settings. You can use the WWV calibration method in fldigi, but you will only calibrate the receive part and not the transmit part. The best method is to use “CheckSR”; a piece of software available in MixW that is also in the MARS Yahoo group files section. Run CheckSR for a while till the frequency readout is steady down to the last digit before the decimal point. The correction offset numbers should be fairly steady or with only the last digit flopping around. Put the offset numbers in the fldigi Rx and Tx corrections boxes respectively. Use minus (-) if the number is minus. The help file explains these settings. Leave the “Offset” setting at “0”.

P. Next pick the “ID” tab and leave the “Video preamble ID” and the “CW Postamble ID” in default off. You do not want to use either in MARS. In the “Reed-Solomon ID (RX)” we will check the first box and uncheck the next three boxes. Pick the “Receive Modes” button and then pick “Select All” then “Close” and do the same with the “Transmit Modes” button.

Q. The next tab is “Misc”; pick on it and leave the “Sweet Spot” and “Spotting” tabs at default; then go to the “Macros” tab. In Macros, check the first box, the second box is your choice.

R. Next in the “CPU” tab, check the box if you have a slow processor.

S. Next in the “Text Capture” box, is where we set fldigi to capture the “WRAP” files and capture all the received text. Check the box for “Enable detection & extraction”. This will allow the capture of all WRAP files you receive and put them in a “working files” folder we talked about earlier. The path for the file is above the box you just checked. We will use this file folder later in our setup for handling traffic. The next box is the “auto open wrap folder”. It is checked by default and will be one of the folders we will set up later. Leave it checked for now.

Now go down to the next box and check it. This will be “Enable rx text stream” and this will cause the capture of all text seen in the receive buffer. It will capture everything; even noise garbage. The path for this text capture folder is just above the box you just checked. This is also in the “working files” area. The remaining tab is left as default. Pick “Save”.

T. The “Callsign DB” tab is left as default.

U. In the waterfall display there are some settings that will affect the display. Just below the waterfall are some buttons. The first should have “WF” in it. This button selects the waterfall (WF), “FFT” or signal “SIG” display. It’s up to you which one you want to watch; I prefer the waterfall (WF). The next 2 boxes show some numbers that will affect how you see the waterfall. These are the “Upper signal range” and “Signal level” settings. Mine is set at -30 and 70 respectively. The next button is the waterfall scale; leave this at the “X1” position. The remaining buttons can be read about in the help file.

V. At the top right of fldigi are two buttons labeled “RxID” and “TxID”; pick on them so they are on all the time. A small green light should turn on when they are active. This turns on your RSID capability.

That should do it for setting up NBEMS/fldigi for MARS; if I missed anything please let me know.

3. SETTING UP FLDIGI FOR MESSAGES AND FOR USING WRAP

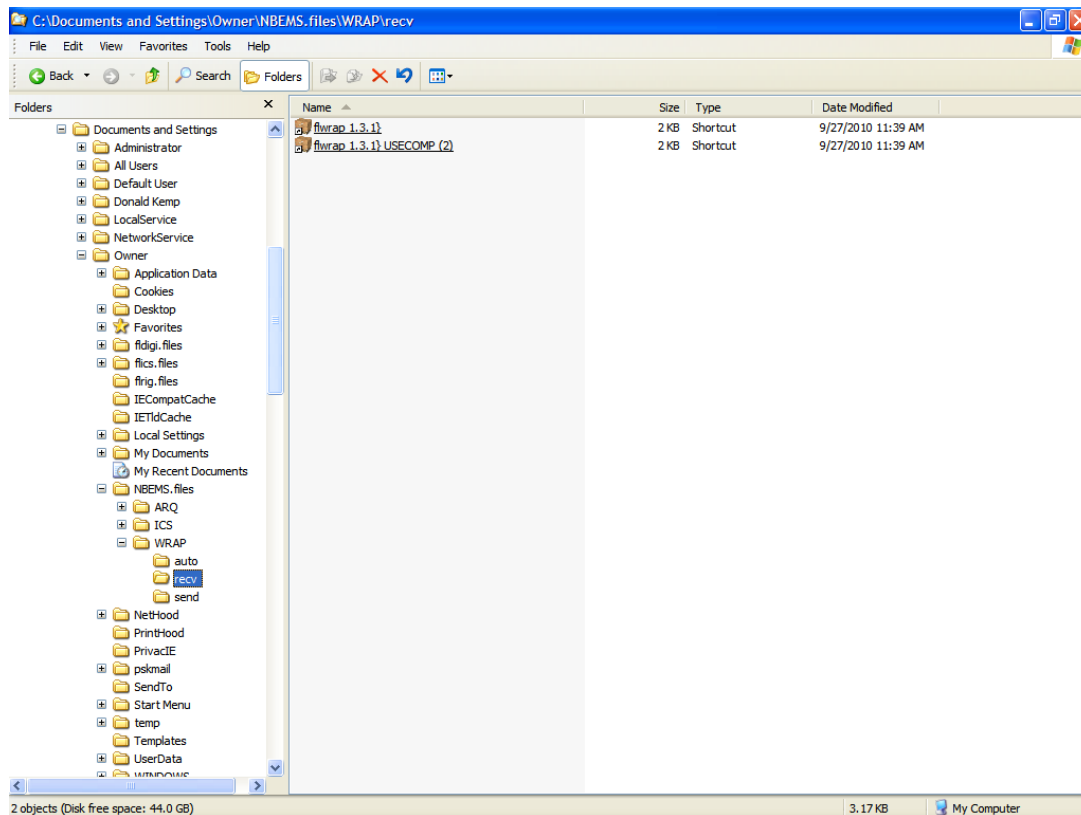
A. To use WRAP several folders must be used. The first folder is for holding messages you want to transmit on a net. You will have to make this folder and put it where you will remember where it is.

I use the Quick Launch bar at the bottom of the Windows screen for all my shortcuts that launch software I want to use. I can also put shortcuts to folders there.

B. I made a folder called “AAA TRAFFIC TO SEND”, and put it into another folder called “Navy MARS”. Maybe you have such a folder for your Navy MARS

stuff. By putting the “AAA” in the name, Windows will place the folder near the top of the list of folders making it easier to find. All I had to do was to drag the “AAA TRAFFIC TO SEND” folder into the quick launch bar and it made a shortcut for it there.

C. The next folder you should make a short cut for is the “WRAP\recv” folder that is part of the “Working folders” we talked about earlier. Find the “WRAP\recv” and drag it to the quick launch bar also. My path is C:\Documents and Settings\Owner\NBEMS.files\WRAP\recv. This is the same path we saw when setting up fldigi to capture any wrap file it receives. The screen shot below shows where my files are located. Your path may be a little different.



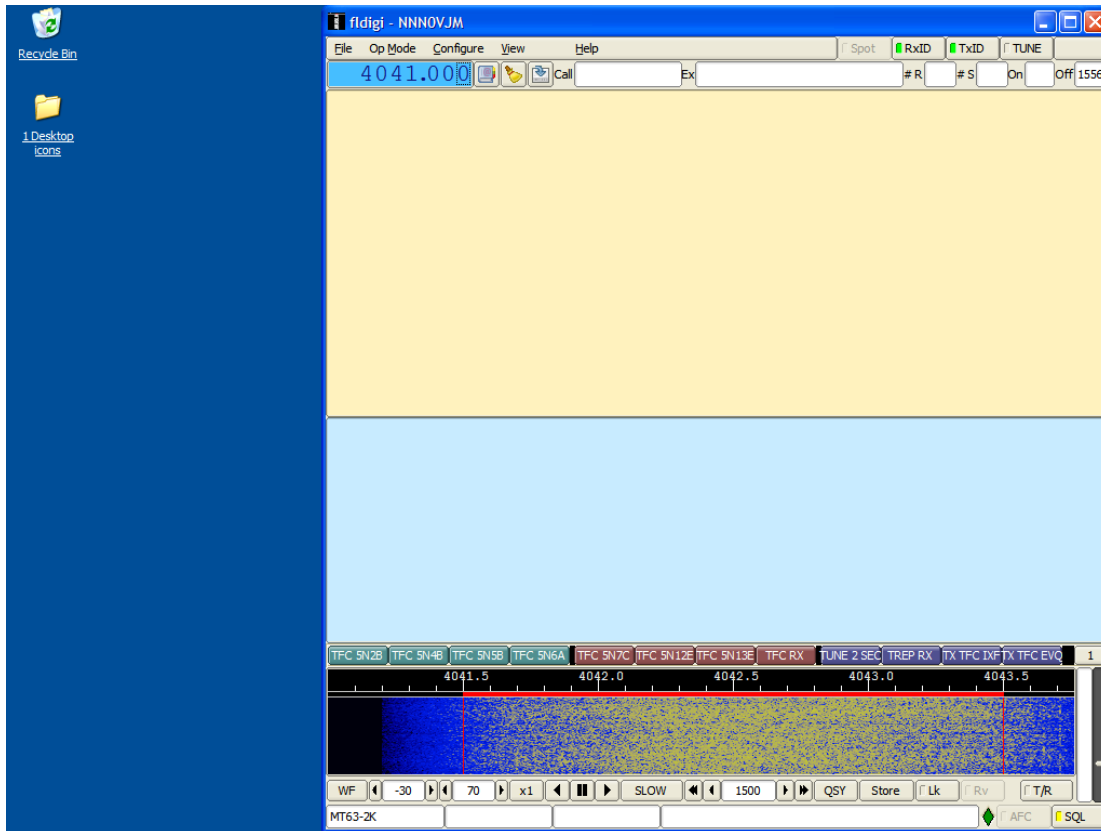
D. You should also have shortcuts for fldigi, flwrap, flmsg and any other fldigi related program you want, in the quick launch bar.

When you get all the shortcuts arranged in the quick launch bar, you can rename them to something you can remember. Just right click on the shortcut and pick “Rename”.

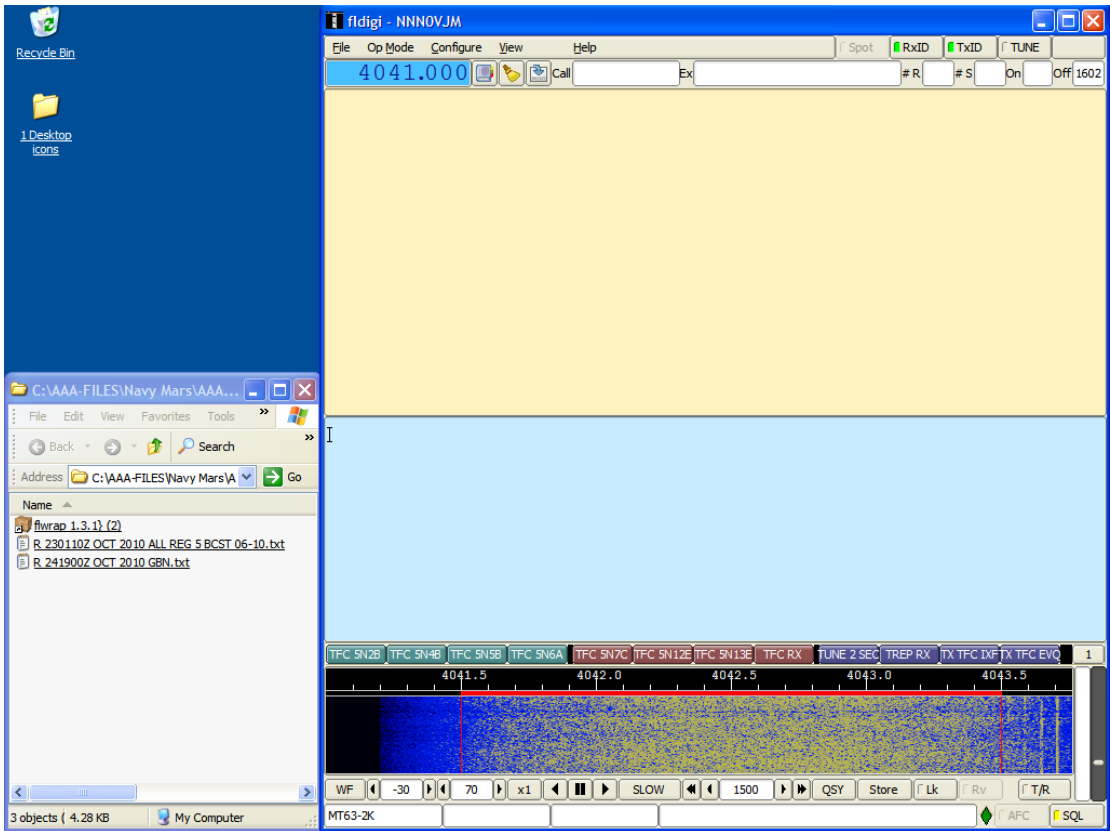
E. Now we want to put shortcuts for WRAP in the “AAA TRAFFIC TO SEND” and the “WRAP\recv” folders. Just right click on the WRAP shortcut and pick “Create Shortcut”. A new shortcut will appear. Just drag the new shortcut to each folder.

The new shortcut you just made will probably still be there, so just right click on it and pick “Delete”.

F. We are now ready to set up fldigi and the two folders. Start fldigi. Size fldigi as the screen shot below shows.

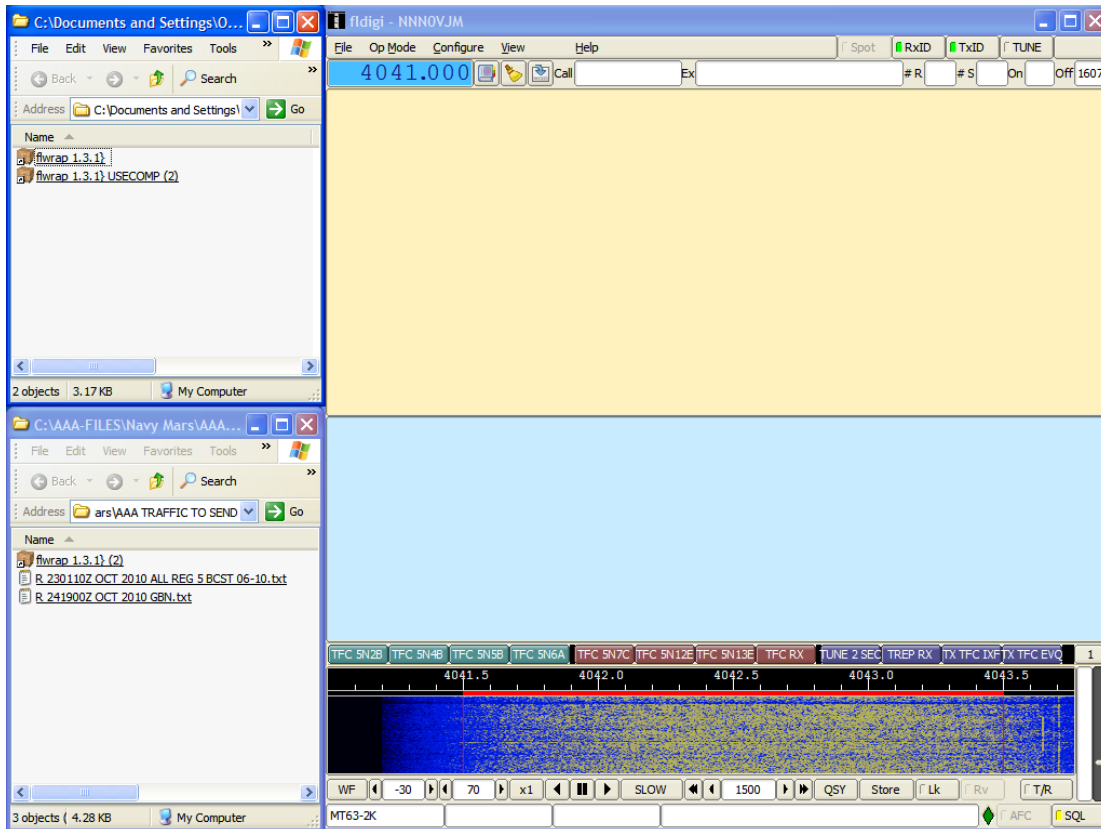


G. Next pick on the shortcut for the “AAA TRAFFIC TO SEND” folder and resize it to fit in the lower left of the screen as the screen shot below shows.



You will notice flwrap and several messages are in this folder.

H. Next, open the “Wrap/recv” folder and resize it as the screen shot below shows.



I. To get messages into the TRAFFIC TO SEND folder you must use a text editor. Any ASCII text editor will work. Windows Notepad is probably the most common text editor. There are also some very good free text editors available online. I use “NoteTab Light” because it can have many messages available in tabs for quick opening. It is a very powerful text editor. Don’t forget to use a non-proportional font, such as Consolas or Consolas bold and set your type size for easy reading. Consolas gives a slashed zero. A non-proportional font is necessary for proper columnar alignment.

J. To get the message into the text editor, just copy and past it into a new document then name it and save it to your message cache or to the TRAFFIC TO SEND FOLDER if you are going to re-transmit it. If you are going to resend it, it will show up in the folder in the lower left of the screen. Any message in there can be dragged and dropped into the fldigi send buffer (blue buffer) for transmission. Any message in the receive buffer (yellow buffer) can be copied and pasted into a text editor to be saved.

K. If a WRAP message is received there will be a notification at the bottom of fldigi saying it is decoding a wrap message. Fldigi will automatically save the wrap message into the folder you have open at the top right of the screen. Each message will be separately saved if there are more than one received. Each one will have a unique date time group name on it. The “Wrap/recv” file will automatically open upon receipt unless you have selected it not to open.

To see if you have received the message without error, all you need to do is drag the wrap message into the flwrap shortcut and drop it. A small window will open telling you whether it was received successfully or was unsuccessful. It will then unwrap the successful messages into the folder with the original file name. You can now do whatever you want with the message. It can be dragged into the TRAFFIC TO SEND folder if you need to resend it or just pick on it to open it into your text editor so you can save it to another archive folder.

To send a WRAP message from the TRAFFIC TO SEND folder, just drag and drop a message into the flwrap shortcut. Flwrap will open a small window telling you the message was successfully wrapped and a new file will appear with a .wrap file extension on it. To transmit the wrapped file just drag the wrapped message into the transmit buffer.

3. SETTING UP MACROS

A. Macros make it much easier to handle traffic and do repetitive functions. I made a set of MARS macros that anyone can use for traffic handling on a net. NCS may want the traffic sent to the net or to an individual station. These macros will let you do that. Fldigi permits many sets of macros to be used. The macro itself can be written to call up another set of macros. Read the help files for information for how to set up your macros.

My macro set also has buttons for an RTTY net and a digital net. I put this macro set into the files section of the Ohio NMC MARS Yahoo group. All you need to do is change the callsign and net designator in each macro. If you're not a member of the Yahoo group, send me an email (nnn0vjm@gmail.com) and I'll send you the macro file. The macros for sending digital traffic on an SSB net are per NTP(8) D and were approved by NNN0ASA. A separate file explaining how to use the macros will accompany the macro file.

4. SETUP COMPLETE

A. This completes the setup and operating description of the NBEMS/fldigi suite of software for handling messages. All that is needed is for you to use it and become accustomed to it and all its functions. As with all training we do in MARS, practice, practice, practice; make it second nature and you will not have to stop to read the help file.

B. NBEMS/FLDIGI is a relatively new program and as such will change as new things are added or updated. I advise you to join the NBEMSham Yahoo group at; <http://groups.yahoo.com/group/NBEMSham/> , so you can keep up to date on all new developments.

C. Another very good group is; <http://groups.yahoo.com/group/paNBEMS/> . This group in Western PA has several nets each weekend to practice using fldigi and all its parts. KB3FXI has put together many videos of how to do things with fldigi and are available in Youtube. Just go to Youtube and search for “NBEMS”.

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