



**WINLINK AIRMAIL
PEER TO PEER
MESSAGING
PROCEDURES**

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Introduction

Winlink Airmail has two means of message forwarding. The most familiar and most used mode of operation is the transmission of e-mail messaging to the Internet via either a RMS HF station (HF Pactor) or directly to a CMS (TELNET). In the future MARS may also implement RMS Packet stations that will use VHF Packet protocol to forward Airmail traffic to the Internet. A lesser known capability of Airmail is its ability to transfer e-mail traffic directly between two connected stations. The message transfer, both directions, is automatic once a connection is achieved. This method would permit error free messaging with attachments (ICS-213, for example) even if the Internet failed or long-range RMS HF stations were unavailable due to propagation conditions (solar storms). Further, the receiving station need not be manned as long as it is listening for a connection on a known frequency. All connected modes, used ARQ, Automatic Repeat Request, to achieve error-free transfer of all messages and attachments.

AIRMAIL MESSAGE PROCEDURES

Winlink Airmail Internet Message Procedure

Messages sent by a MARS station to either a RMS HF station or a CMS will have the form as shown in Figure 1.

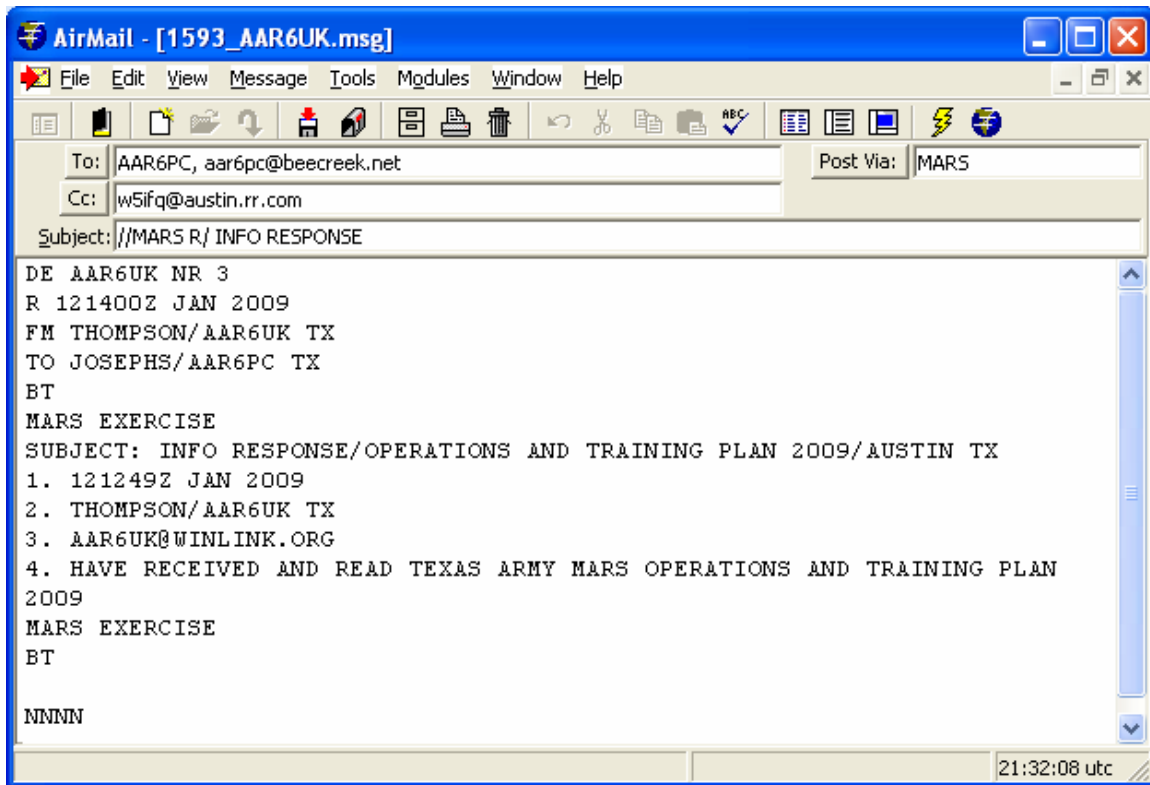


Figure 1: Winlink Airmail Message for Internet Transmission

Note that the *To:* box can contain both Winlink Airmail addresses (AAR6PC) and actual Internet addresses. Any number of additional e-mail addresses may be placed in either the *To:* or *Cc:* boxes. The *Post Via:* box must contain the word *MARS*. The *Subject:* line must start with *//MARS R/*, *//MARS P/* or *//MARS O/*. When the message is complete, it must be “posted” for transmission by clicking on the “mailbox” icon. The next step is to send this message to either a RMS HF station (HF Pactor) or a CMS (TELNET). The CMS connection is achieved by selection *Modules/Internet Access* or the lightning bolt from the tool bar. This will bring up the *Internet Access (Telnet)* control display shown in Figure 2.

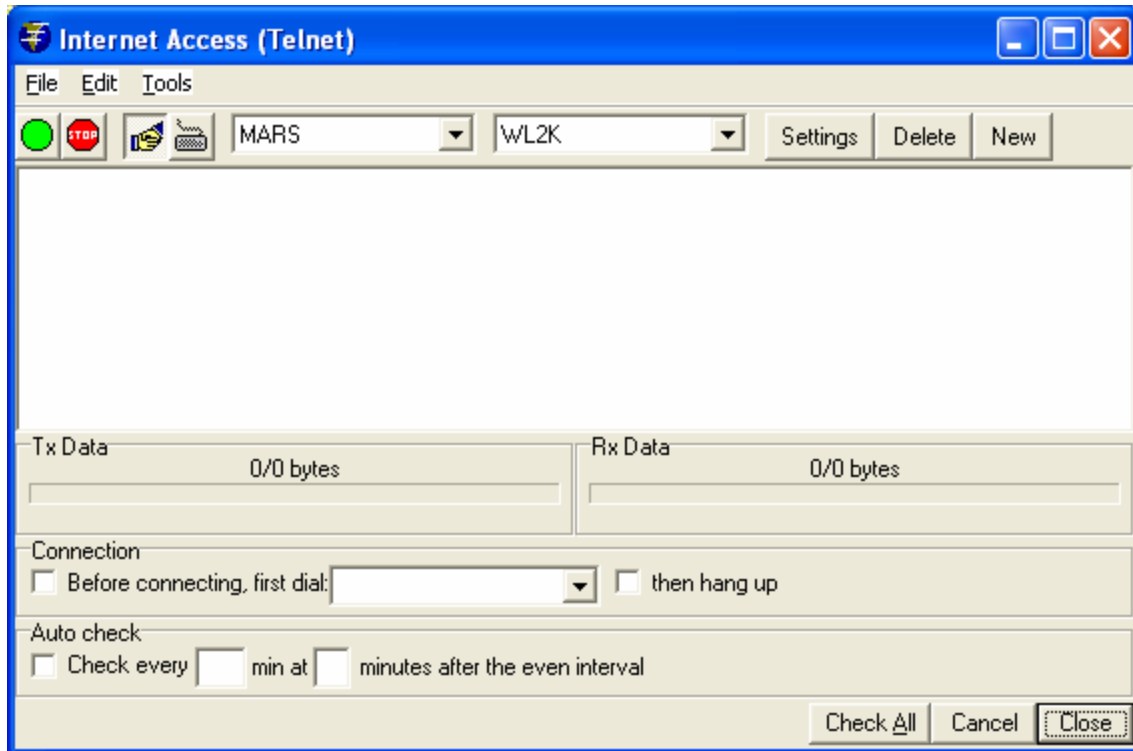


Figure 2: Internet Access Control Panel

The next step is to make sure that MARS is shown in the first box and either WL2K or one of the other CMS's (WL2KS, etc.) is shown in the second box and then click the green button. More details for setting up the Telnet mode can be found in the MARS Basic Winlink 2000 Training Guide found on the Winlink 2000 website.

(<http://www.winlink.org/>)

To connect to a RMS HF station, select *Modules/HF Terminal* or click on the blue disk on the tool bar. This will bring up the Terminal Window as shown in Figure 3:

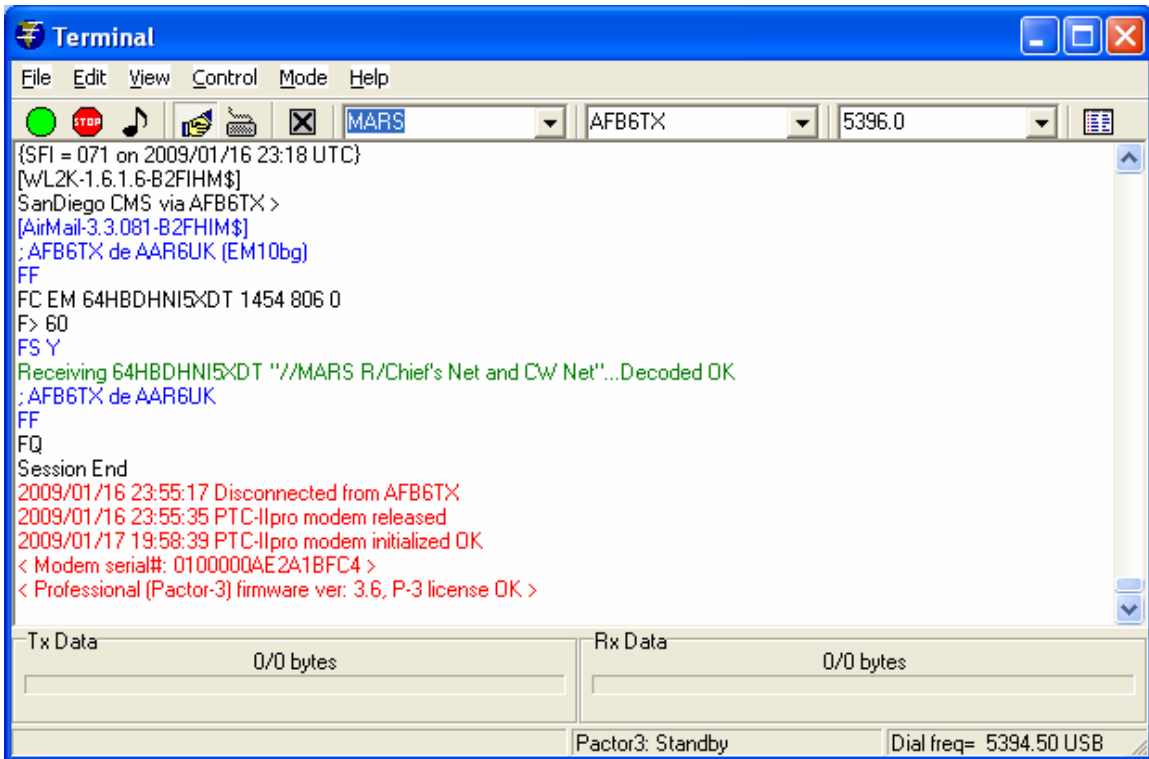


Figure 3: Airmail Terminal Window

The left box on the tool bar should be set for MARS, the middle box set to the RMS HF station (AFB6TX) you wish to call and the right box is the center-of-intelligence frequency (5396.0 KHz) of that station. In the lower right hand corner of the screen is the dial frequency (5394.5 KHz) you must set on your transceiver. Pushing the green button will initiate a Pactor 1 connect request call to AFB6TX. The connection and all data transfer both ways will be automatic and AFB6TX will disconnect from you when finished. More details on the setup and operation of this screen can be found in the MARS Basic Winlink 2000 Training Guide.

Winlink Airmail Peer-To-Peer Message Procedure

Winlink Airmail software also allows the exchange of message traffic between two stations directly without the use of RMS HF stations and the Internet. Slight changes are required in the addressing of both the Airmail e-mail message and the Terminal screen. Figure 4 shows the same e-mail of Figure 1 modified for Peer-To-Peer (PTP) delivery.

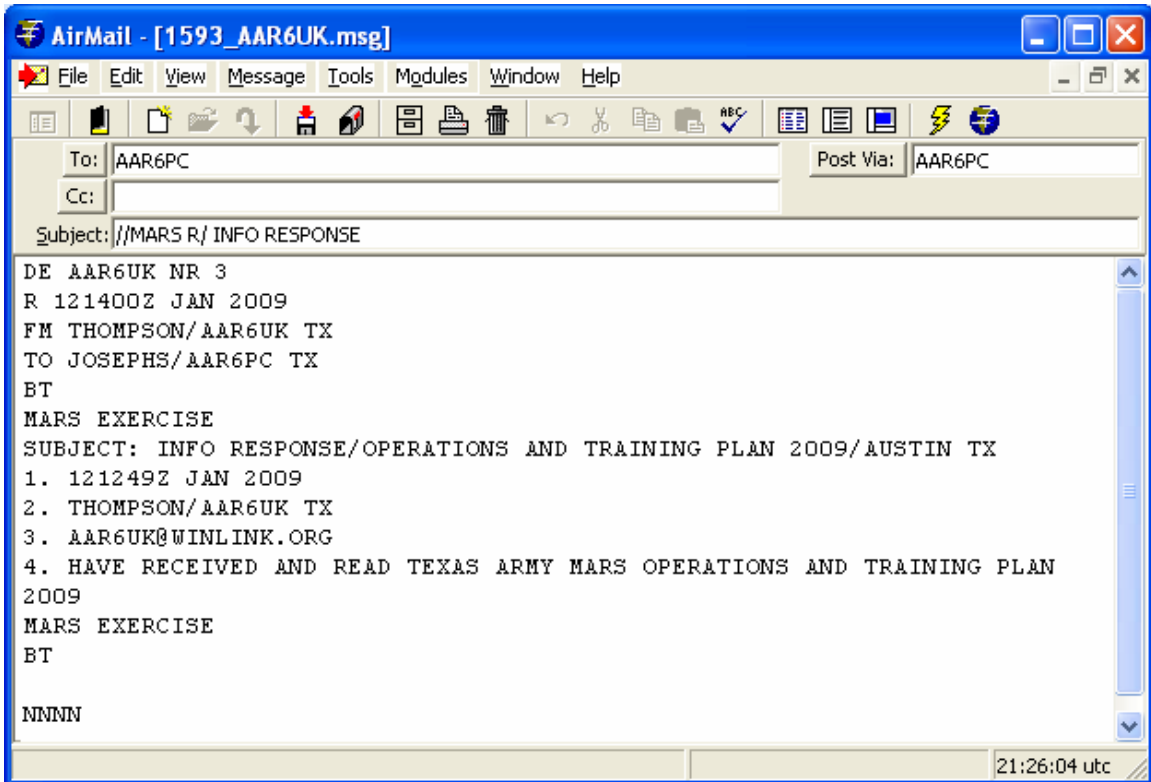


Figure 4: Peer-To-Peer Message Addressing

The only required change is to modify the *Post Via:* box from MARS to the addressee seen in the *To:* box. No other addressee should appear in the *To:* or *CC:* boxes. The preamble of //MARS R/ in the *Subject:* box is not necessary, but can remain. The message is posted as before by clicking on the mailbox in the tool bar. You must connect directly by Pactor HF to the station shown in the *To:* and *Post Via:* boxes. This connection is accomplished by making address changes in the Terminal screen shown in Figure 5.

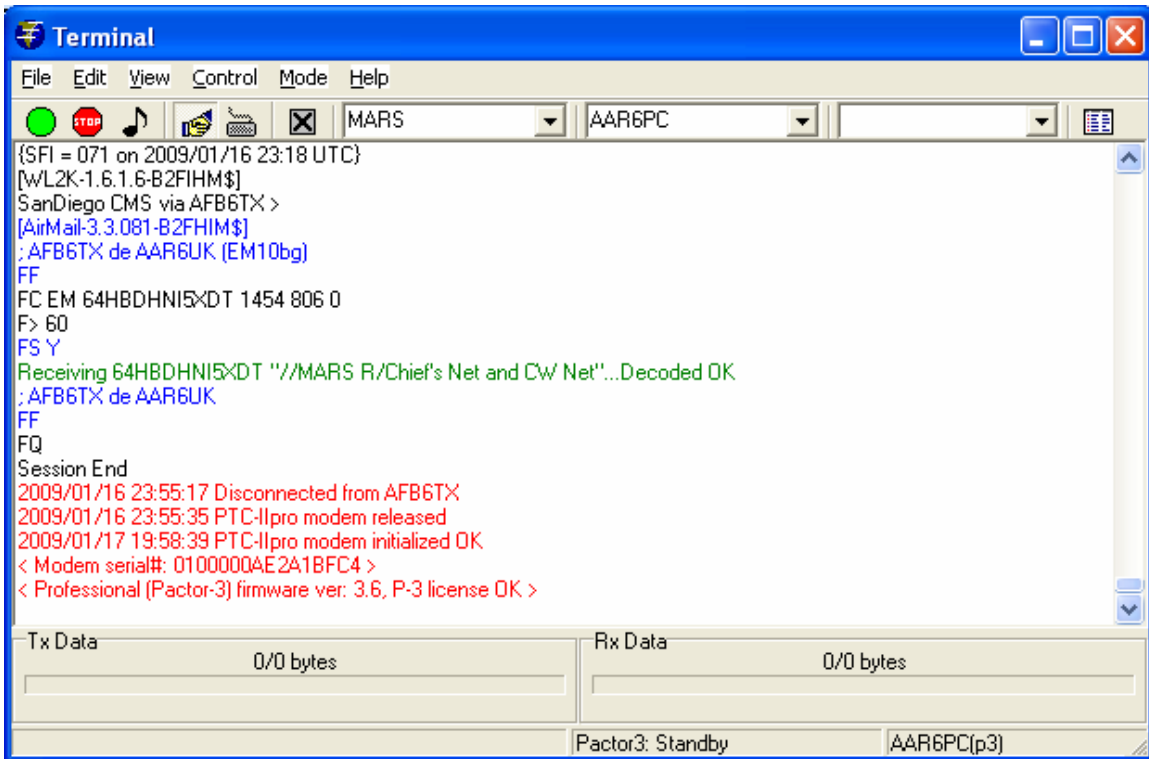


Figure 5: Terminal Screen For Peer-to-Peer Connection

The addressee station is placed in the center, station box, and frequency box will be blank unless a new PTP station list is generated (see Appendix). Any Texas Army MARS HF frequency maybe used for message transfer, but care must be taken to calculate the correct Center-of-Intelligence just as is done for SSB voice operation. The frequency offset can be set to 1500 Hz (same as for SSB) for Kantronics (KAM series) and the SCS (PTCII series) as shown in Figure 6. This screen can be found by clicking on the *Tools* menu item then selecting *Options*. If necessary click on *Connection* in the AirMail Options window.

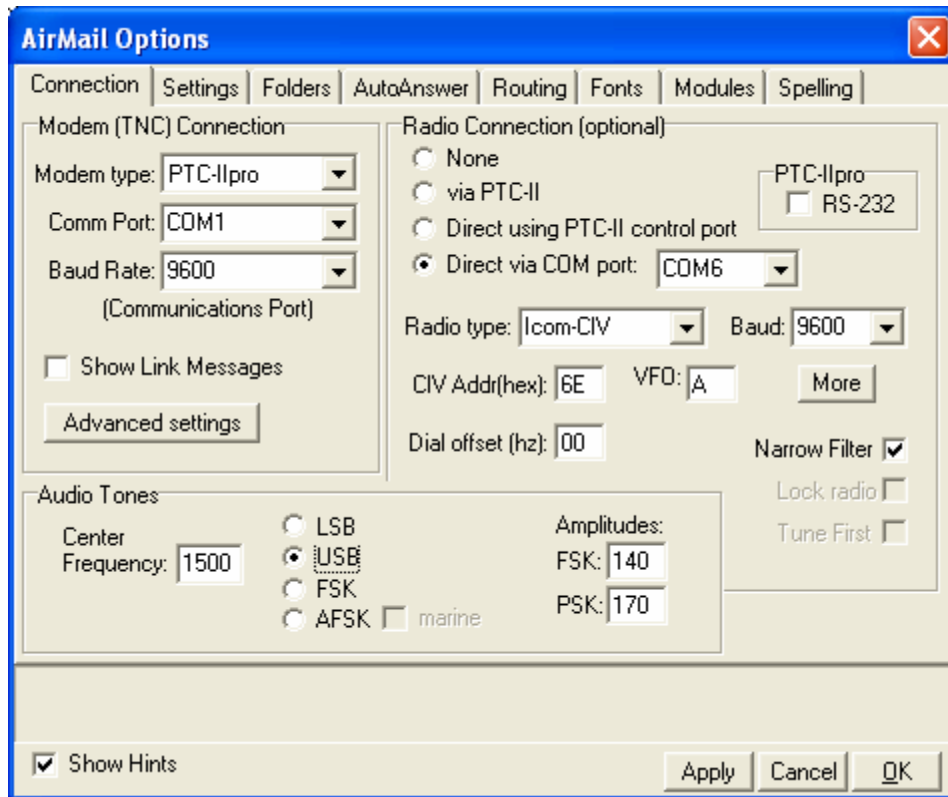


Figure 6: Center Frequency Offset Adjustment for SCS Modems

The offset is shown in the Audio Tones box as Center Frequency (1500 Hz). The sideband should be set for USB. Pactor 1 has no sideband sensitivity and the SCS PTC series modems will automatically select USB for Pactor 2 and 3. For modems like the Hal DXP38 and the Timewave PK-232, the Center or Offset frequency is not adjustable, so the Center Frequency is shaded and cannot be modified as shown in Figure 7.

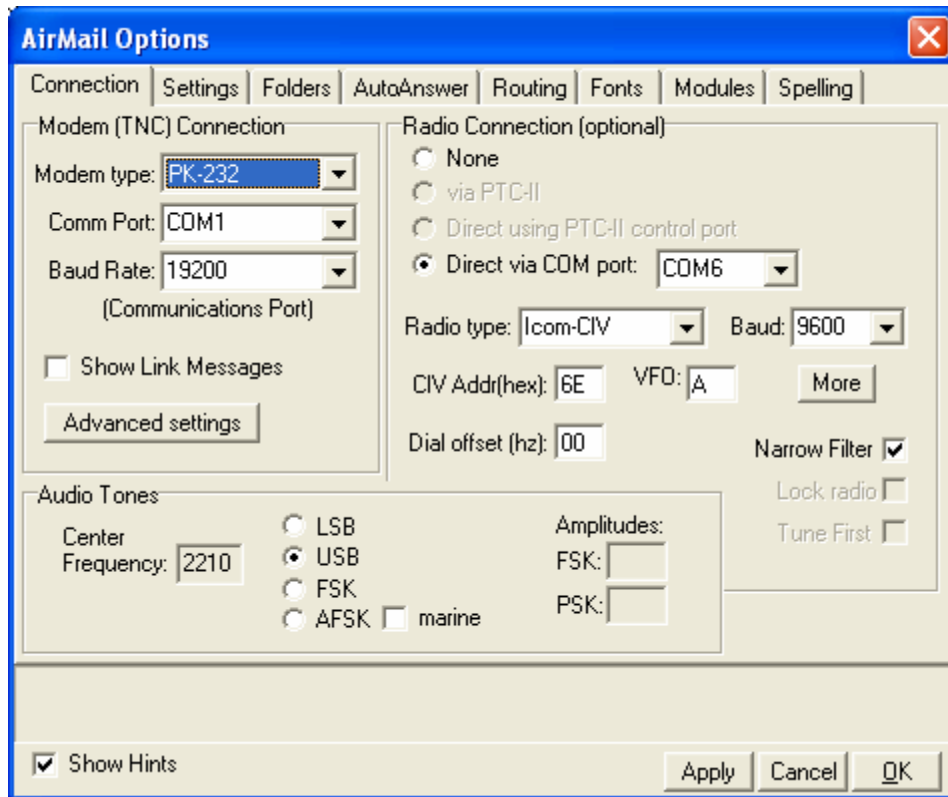


Figure 7: Center Frequency Offset for PK-232 Modem

The transceiver dial frequency must be set 2210 Hz below the Center-of-Intelligence to place the USB Pactor signal on the correct frequency. Note that two MARS stations running different types of modems may not have the same dial frequency. For example a station running a PTCIIex and the other running a PK-232 will have dial frequencies differing by 710 Hz, but will appear to be on the same frequency to a third observer. A simple way to handle this for the PK-232 and DXP38 is to set up a series of transceiver memories with the displayed offset, so that rapid frequency shifts between SSB and Pactor can be accomplished for net operations that include Pactor data transfers. Rig frequency control by the AirMail software can also be used (ICOM CI-V for example) if a separate PTP station list is available (See Appendix). In this case, opening the AirMail Terminal window, selecting the PTP list (MARSTX) and selecting a station and frequency will cause the rig control system to set the transceiver to the correct offset frequency. Closing the Terminal window will force AirMail to return the transceiver to the original net frequency. For SCS (PTCII series) and Kam modems, set to a 1500 Hz offset, no frequency adjustment is required for net SSB and Pactor operation. Again see the MARS Basic Winlink 2000 Training Guide for details on implementing rig control.

Message Transmission/Reception Verification

A pair of stations should verify that a message or messages were properly transferred. The station transmitting a message should verify that after posting that the message appears in the AirMail Outbox as shown in Figure 8. Note that both messages to AAR6PC are shown, but that the first message is Via AAR6PC, corresponding to a PTP

message as shown in Figure 4. The second posted message to AAR6PC is Via MARS, corresponding to the MARS Winlink Internet message of Figure 1. A connection to a RMS HF Winlink station would result in the transfer of the second message with AirMail replacing the mailbox with a green check mark. Just the opposite would occur if a Peer-to-Peer connection to AAR6PC was done.

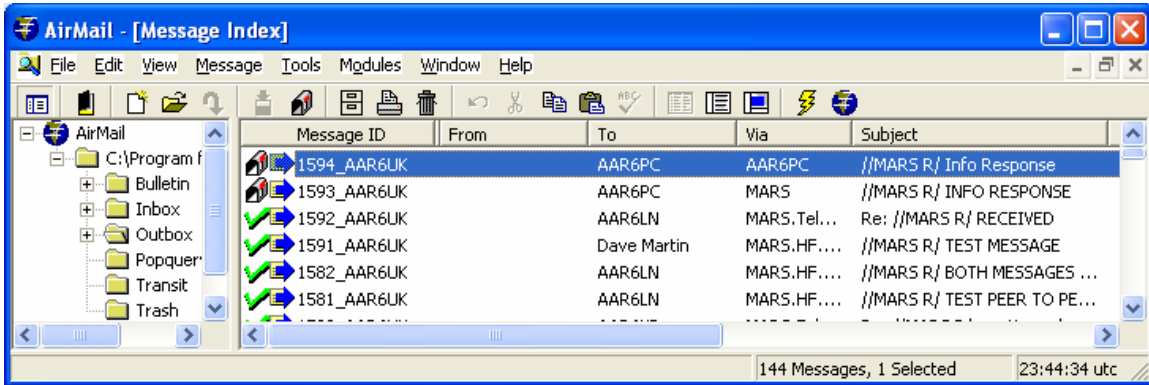


Figure 8: Posted Messages Ready for Transmission

The successful reception of a message can be verified by looking in the AirMail Inbox. A new, unread message can be seen in Figure 9, labeled “NEW”. Double clicking on this message will open it for reading. Note that there maybe an attachment whose icon will be found in the lower left corner of the message.

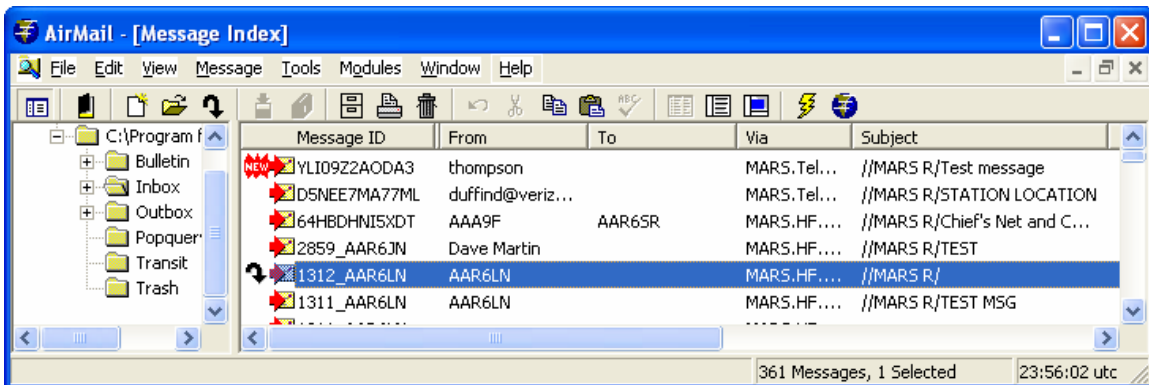


Figure 9: Successful Message Reception

Factor Message Transfer During Net Operation

The transfer of a PTP AirMail message can be handled exactly the same way as a MT-63 message. The term "PACTOR" should be used instead of MT-63 after the message destination. The transmitting and receiving stations will have to shift frequency if either or both stations have a PK-232 or DXP38 modem. If both stations are using either a KAM or PTC series modem, no frequency shift is necessary. The transmitting station must place the receiving station's call in both the message (figure 4) and the terminal window (figure 5). This can be done before the message is listed, so minimum net time is used for the actual message transfer. After the NCS directs the traffic, and the transmitting and receiving stations have used the necessary voice procedures, the transmitting station simply hits the green transmit button on the Airmail Terminal window and the message transfer is automatic including connecting and disconnecting from the receiving station. The receiving station should go to his AirMail Inbox and double click on the new message. Once the new message has opened, he can obtain the message number and roger for it. Note that this PACTOR procedure is a little more complex, but this is the only method presently available to transfer a message with an attachment without error (ARQ). This type of message will most likely be used for ICS-213 forms between government operations centers and deployed teams. If Factor III is available and the radio link is good, pictures and maps can be transferred as attachments.

Message reception At An Unmanned Station

Some customer stations, like the SOC, JOC and others may not be able to maintain a continuous watch. Winlink PTP will allow MARS stations to "drop" message traffic to these locations without requiring the station to periodically check into a HF RMS Winlink station or be continuously manned. The sending station has verification that the message was delivered by the Icon change from the mailbox to the green check mark in the Outbox of his Message Index, as discussed on page 11. The receiving station simply needs to check his Inbox to determine if new message traffic has been sent. All that is necessary is for the receiving station to keep the Terminal Screen of AirMail open and monitor on a known frequency. For example, the SOC monitors KDD continuously.

PTP Station at AAA9USA

Note that AAA9USA has a separate PTP station listening on KEB USB for PTP connections 24 hours a day. This is an excellent way to send in Net Activation and Activation reports. Typically, I have received a roger via Winlink Internet within minutes of sending in a PTP Net Deactivation report.

APPENDIX PTP Address Book Generation

A separate folder can be generated that will contain the calls and frequencies for all stations that might be used for AirMail PTP message transfers. This list should include our Texas customers and Texas MARS staff. This address book will allow AirMail frequency control, simplifying the frequency shifts for modems with fixed offsets (PK-232 and DXP38).

To generate a new station folder, go to *View/Station List* as shown in Figure A-1.

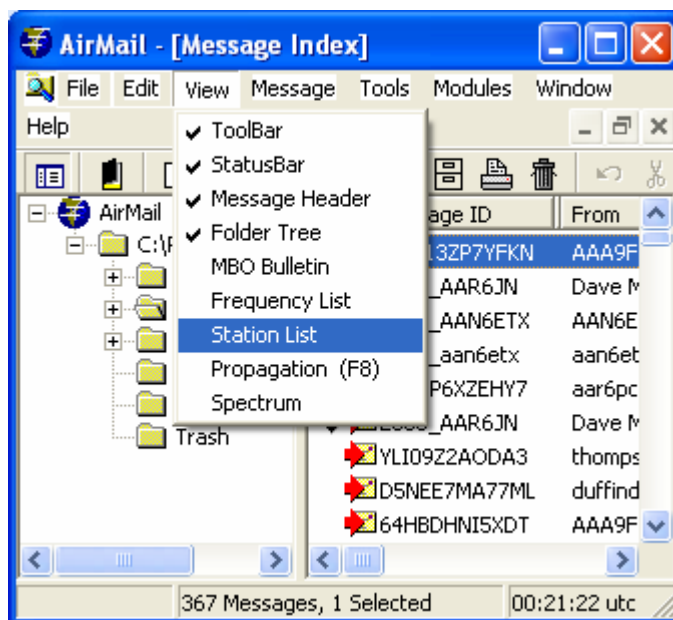


Figure A-1: Selecting Station List

This will bring up the Station List as shown in Figure A-2. Click on *New* to generate a new station list. Figure A-3 shows the entry screen for a new station list name. Name this list "MARSTX" as shown.

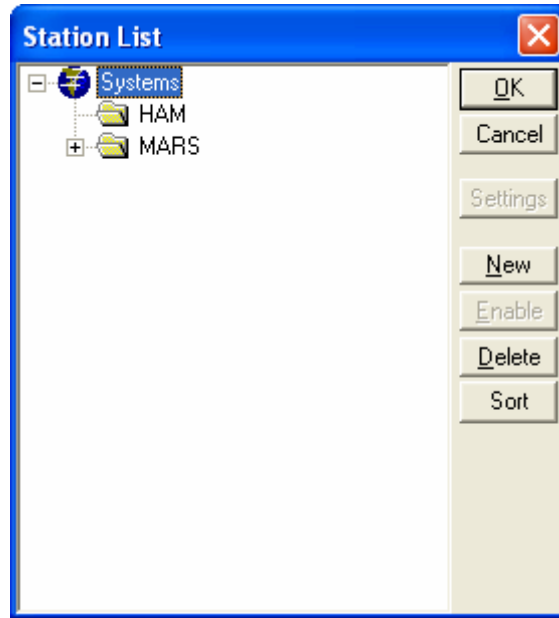


Figure A-2: Station List

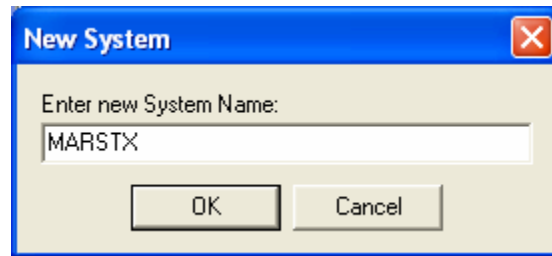


Figure A-3: Entering New Station List Name

Clicking OK will result in MARSTX appearing in the Station List screen as shown in Figure A-3.

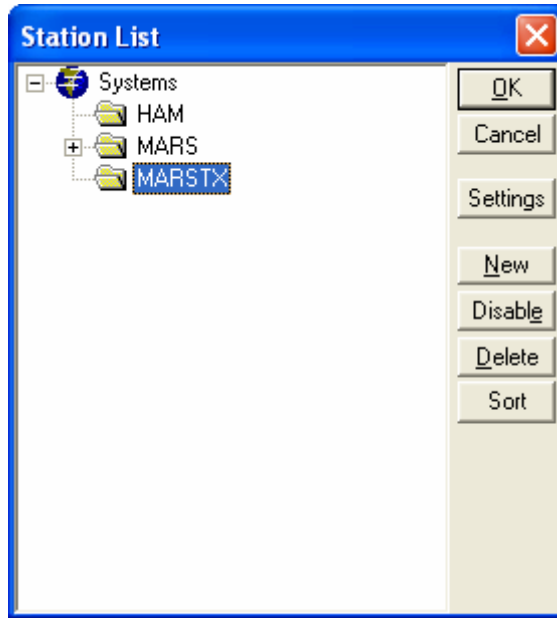


Figure A-3: New Station List Name Shown

Next step is to highlight MARSTX as shown in Figure A-3 and then click on New. This will allow entry of stations into the MARSTX station list as shown in Figure A-4 where AAN6ETX is being entered.

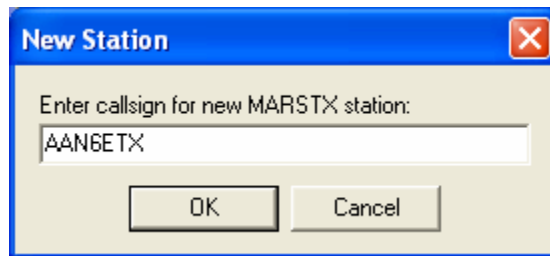


Figure A-4: Individual Station Entries

All applicable stations can be entered using this procedure. Note that you must highlight MARSTX each time before clicking on New. A partial list of stations can be seen in Figure A-5.

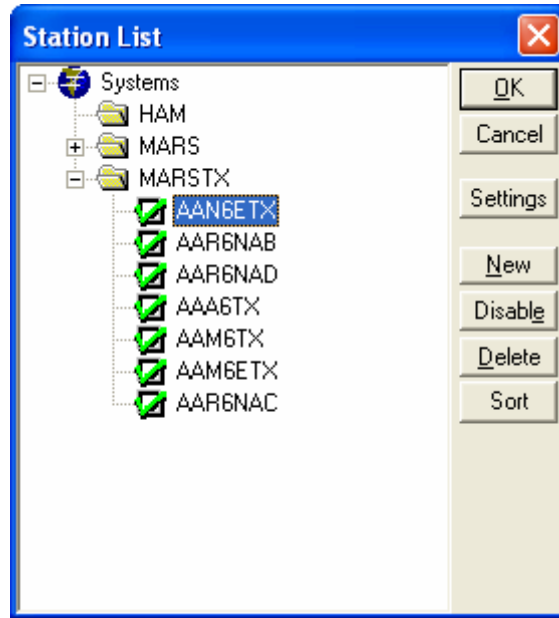


Figure A-5: Partial List of MARSTX stations

Next step is to highlight the first station, AAN6ETX, and click on *Settings*. This brings up the individual station setting for AAN6ETX as shown in Figure A-6.

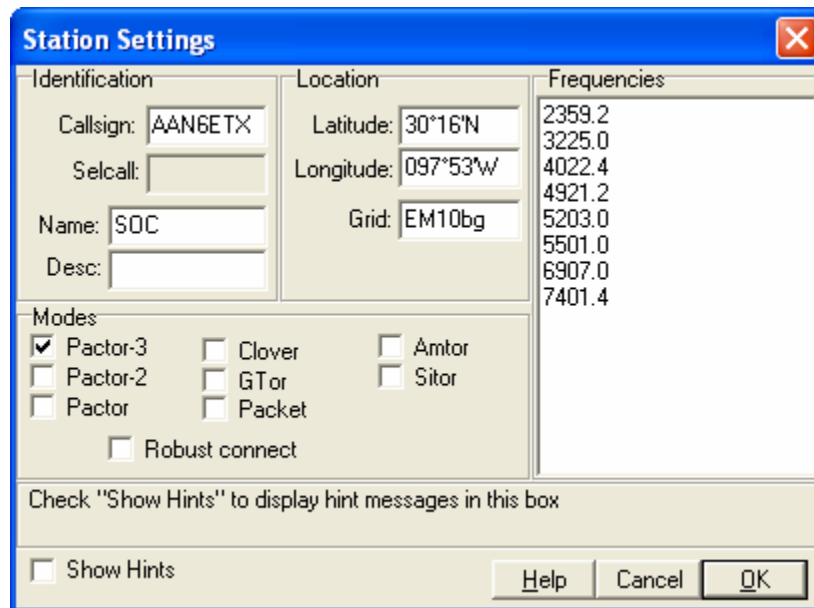


Figure A-6: Individual Station Settings

Enter the Call sign, location in either LAT/LONG or Grid Square, Name, the Factor mode of your station and the applicable center of intelligence frequencies for that station. **Fictitious frequencies have been entered as examples.** For actual use enter the center of intelligence for KAH, KBN, KCE, KCO, KDC, KDG, KEG, and KFF.

Click OK when finished. Highlight the next station and enter its settings. Note that all frequencies will be the same, but the call and location will be different. The location will allow the AirMail propagation program to assist you in selecting the best frequency, but on a net, you will know if you are in contact with the station. When all data has been entered for all stations Click OK on the Station List window.

Close AirMail completely then restart it to install the new MARSTX.ini file. After AirMail starts, a window, shown in Figure A-7, will appear. Enter your call and click OK. This tells AirMail what personal station call to use when you are using the MARSTX station list.

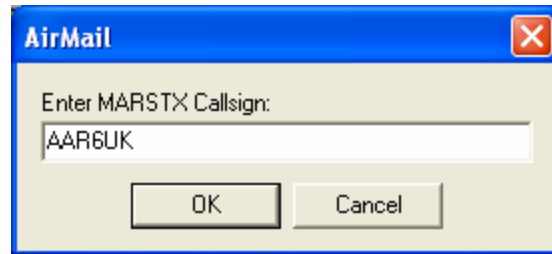


Figure A-7: New Call Entry Window

The last step is to go to *Tools/Options/Settings* as shown in Figure A-8. Clicking on MARSTX should show your call sign in the Callsign box.

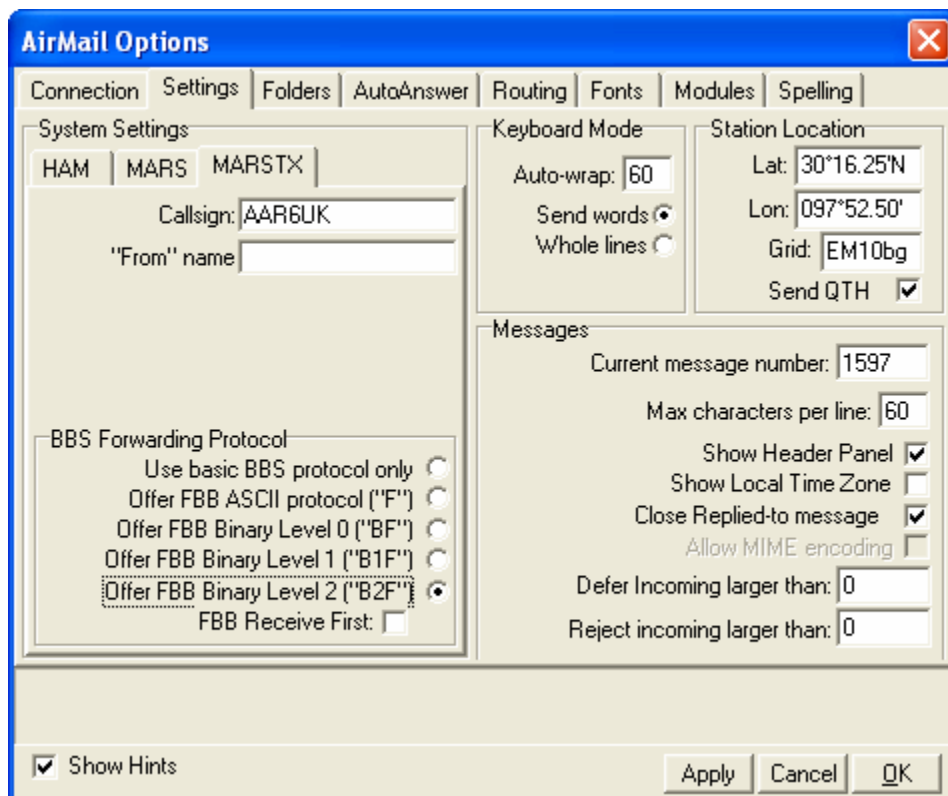


Figure A-8: Options/Settings for MARSTX

Very Important – click on *Offer FBB Binary level 2 (B2F”)* as shown in Figure A-8. Click OK to apply and close this window.

You are now ready to use MARSTX the same as you would use MARS RMS Packet stations in the Terminal window as shown in Figure A-9.

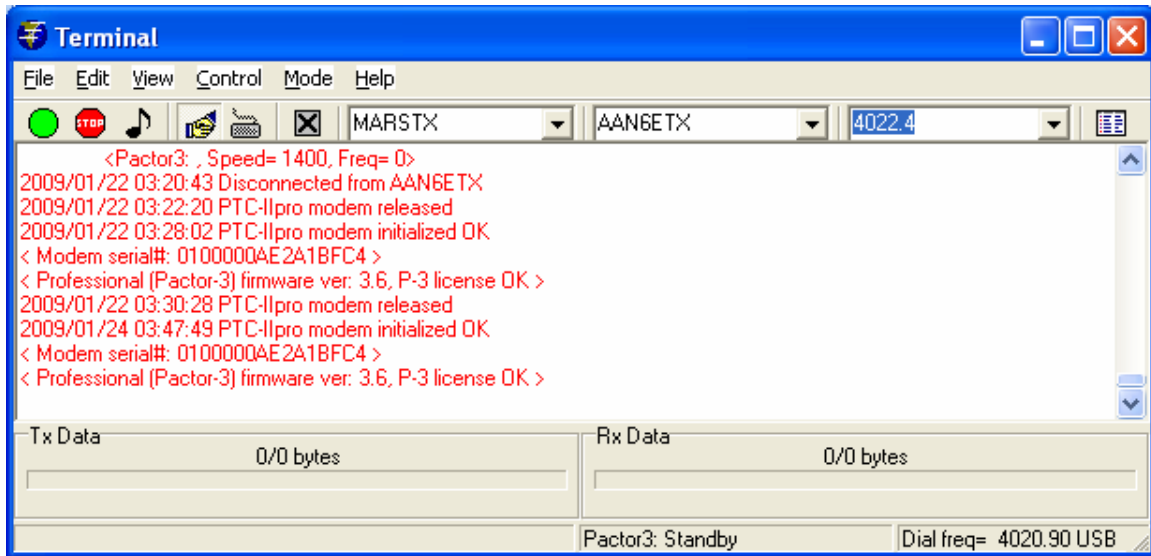


Figure A-9: MARSTX Terminal Screen

Select MARSTX, one of the listed stations like AAN6ETX, and finally select one of its frequencies (4022.4 KHz). The correct dial frequency is shown in the lower right hand corner of this screen for the PTCIIPro (Pactor 3). If rig control is implemented, AirMail will change your transceiver to the dial frequency shown. Clicking on the green button will initiate a Pactor 1 connect call to AAN6ETX on a center frequency of 4022.4 KHz. After automatic disconnect, closing this screen will force AirMail to return the transceiver to its previous dial frequency.