

Sysop Manual for  
AMTOR/PACKET Link (APLINK) Version 7.01, October 15, 1992

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## CHAPTER 1

### Introduction

#### WHAT THE SYSTEM DOES...

The AMTOR/PACKET Link (APLINK) is a software system that runs under MS-DOS 3.x or higher on an IBM-XT or compatible computer. It runs an AMTOR MBO and a PACKET BBS concurrently using a common set of message files. (For whatever reason, the AMTOR community refers to these things as mailboxes [MBO] and the PACKET community as bulletin board systems [BBS]. In this document MBO will refer to the AMTOR side and BBS to the PACKET side of the system.)

Both sides of the system conform as closely as possible to the conventions that have evolved for the use of PACKET BBSs. There are differences necessitated by the nature and constraints of the AMTOR mode. Although improvements in AMTOR controllers have greatly reduced the incidence of errors AMTOR is still subject to occasional transmission errors. For this reason, as well as the fact that AMTOR does not automatically identify a sending station, the MBO requires positive identification during login. The MBO will also request confirmation of the addressee when entering messages into the system (unless the user has selected 'EXPERT' mode).

In the past AMTOR has had the restriction of a limited character set. This has been eliminated for stations using the latest APLINK or PAMS software with up-to-date AMTOR controllers. The full ASCII printing character set is now available.

Why use AMTOR at all, given its limitations? AMTOR will work under difficult radio conditions that would pack in a PACKET link (pardon the pun). The author of this system has lived on a sailboat and maintained communications with friends and family via ham radio. AMTOR worked reliably for that purpose, day in and day out, while running with low power, long hauls, and abominable radio conditions. Only CW could improve on its record for reliability.

The MBO provides all of the features that any MBO in use today would normally supply. The BBS is a subset of what packet operators who use typical v.h.f. packet systems are used to. It is not intended that this system be used as your local packet BBS although it could be in a pinch.

No provision is made for handling anything but ASCII text files in regular message format. There are no W, D, or U commands in the system.

## CHAPTER 2

### Hardware Installation

The equipment required to run this system includes:

1. IBM-XT or close clone running MS-DOS 3.x or higher and a hard disk. At least two COM ports must be installed and available. (Only one COM port is required if you are using a HAL PCI-3000.) The minimum acceptable free memory is 300k.

2. An AEA AMT-1, ICS AMT-3, AEA PK-232, or a HAL PCI-3000 AMTOR Controller.

WARNING - THIS VERSION OF APLINK WAS DEVELOPED AND TESTED WITH THE FOLLOWING VERSION OF ROMS: IN THE AMT-1, VERSION 07A; AMT-3, VERSION 8.0; IN THE PK-232, JULY 1991; AND IN THE PCI-3000, VERSION 1.7C. YOU SHOULD USE ONE OF THESE, OR LATER, ROMS IN YOUR AMTOR CONTROLLER. IT IS STRONGLY RECCOMENDED THAT YOU NOT RUN THIS VERSION OF APLINK WITH EARLIER VERSION ROMS.

Contact Jim, KE5HE @ KE5HE.TX.USA if you need new ROMs for the AMT-1 or the PCI-3000. Contact manufacturers for the latest ROMs in the other controllers.

If the AMT-1 is used it should be configured for 110 baud. All soft configuring is done by APLINK at startup. Only Rx and Tx signals are used between the AMT-1 and the computer. Flow control is performed through use of the status byte from the AMT-1. The COM port of choice must be set in the APLINK.CNF configuration file (see below).

If the AMT-3 is used it should be configured for 1200 baud. All other parameters are set by APLINK at startup.

If a PK-232 AEA Terminal Unit is used on the AMTOR channel the interconnecting cable between the PK-232 and the serial port should include wires 1 through 8 and 20 and no others.

If a HAL PCI-3000 is used, simply install the unit as received from the factory. Do not use a serial port or connect to the "host" port on the PCI-3000. The interface between the PCI-3000 and PAMS is on the internal PC bus. Do not include an AMTPORT parameter in the APLINK.CNF file unless you wish to disable the AMTOR port.

3. A Packet TNC. Any TNC that recognizes Control-C to enter command mode,

responds to CONOK ON and OFF should work. The program looks for the "\*\*\*\* Connected to..." sequence as well as the DCD control line (pin 8) to control the state of the BBS.

The critical TNC parameters are:

```
ECHO OFF
FLOW OFF
NEWMODE ON
NOMODE OFF
BBSMSG ON
XFLOW OFF
XON $00
XOFF $00
START $00
STOP $00
MONITOR OFF
MYCALL <your call>
```

Parity: None

Characters: 8-bits

Baud rate to the computer: The same as set in the  
APLINK.CNF file.

These parameters are NOT set by APLINK. Since it is intended that APLINK work with any TNC, no effort has been made to automatically configure the TNC. Be sure your TNC is properly configured before trying to run the system on the air. You may bring up the system and use the keyboard to set up the TNC. The TNC must be connected to the COM port specified in APLINK.CNF. As a general rule pins 1 through 8 and pin 20 must be connected between the TNC and the serial port. Hardware flow control is used (both ways); the only other RS-232 status signal used is pin 8, carrier detect (CD). Your TNC must be capable of asserting this signal on connect. For the PK-232, parameter DCD ON must be set, for the PK-87, Jumper JP6 must be set to the B position. Other TNC's will have similar settings that must be changed. Consult your TNC's manual.

4. The r.f. hardware I will leave to your imagination. Since this system is fully concurrent, both channels must be able to work without mutual interference. AMTOR would be set up on your h.f. frequency of choice and the TNC on a suitable v.h.f. channel.

## CHAPTER 3

### Software Installation

The delivery disk normally contains a self-extracting archive file. Create a temporary directory on your hard disk and copy the archive file into that directory and then run it. The following files should appear in the temporary directory:

APAM1.EXE - The main program when using the AMT-1 on the AMTOR channel,  
APAM3.EXE - The main program when using the AMT-3 on the AMTOR channel,  
AP232.EXE - The main program when using the PK-232 on the AMTOR channel,  
APPCI.EXE - The main program when using the PCI-3000 on the AMTOR channel,  
UPDATE.EXE - A message file update program automatically called by APLINK for the daily update,

README.NEW - Read it!,  
COPYRITE - Author's copyright statement,  
APLINK.DOC - The Sysop manual (Microsoft WORD format),  
APLINK.ASC - The Sysop manual (ASCII format),  
USERS.EXE - The users' file editor,  
APLINK.CNF - A sample system configuration file,  
ROUTE.APS - A sample packet routing file,  
SIGNON.PKT - The PACKET signon file,  
HELP.AMT - The AMTOR help file,  
HELP.PKT - The PACKET help file,  
INFO.AMT - The AMTOR info file (should be Sysop edited),  
INFO.PKT - The PACKET info file (should be Sysop edited),  
USERS.APS - The file of registered AMTOR users,  
HELP1. thru HELP9. - Help files the Sysop will install using the SH command.  
INTRCPT.APS - A sample intercept file,  
MBBIOS.COM - A TSR communications port driver,  
MBBCONFIG.EXE - The MBBIOS.COM configuration program,  
MBBIOS.ASC - Documentation for MBBIOS.COM,

In addition the Sysop must obtain a copy of the Norton Editor.

To install the system for the first time, simply copy all of the above files and the Norton Editor (renamed E.COM) into a hard disk subdirectory named \APLINK. Make a sub-subdirectory named \APLINK\ARCHIVE. Rename either APAMT.EXE, AP232.EXE, or APPCI.EXE to AP.EXE, depending upon which AMTOR terminal you are using. Add \APLINK\MBBIOS.COM to your AUTOEXEC.BAT file.

If you are using a PK-232 for the AMTOR channel you may have to use MBBCONFG.EXE to change the configuration of slot number 1 to hardware handshaking equal to 'Y'.

Using the Norton Editor, edit APLINK.CNF, ROUTE.APS, INTRCPT.APS, INFO.AMT, and INFO.PKT to fit your station. Edit USERS.APS with USERS.EXE to add or delete whatever stations you wish or just let each station be entered into the USERS.APS file as they log on for the first time.

Several other files will be created by the system in the APLINK directory when it is first run.

Your computer's system clock (TIME and DATE command in MS-DOS) should be set to your local time and time zone. You should add the following line to your AUTOEXEC.BAT file: 'SET TZ=aaann' where aaa is a three letter code for your local time zone and nn is the number of hours difference between your local time zone and GMT (UTC). Use a positive number if your are west of Greenwich and a negative number if you are east. For example:

```
SET TZ=EST5
```

should be used for Eastern Standard Time (USA).

The file CONFIG.SYS in your root directory should have BUFFERS=20 and FILES=20, at least.

Look at the sample INFO.AMT and INFO.PKT files using the Norton Editor. You will see what needs to be done there.

Read the ROUTE.APS file with the Norton Editor. Change the entries as required for packet forwarding at your station.

The intercept file, INTRCPT.APS, provides a very special service. Each line of the file should contain station's call letters, white space, and an h-route - AND NOTHING ELSE. Each time a message is received by APLINK the file is searched for a match to the TO field of the incoming message, if nothing is found then an search is made on the first token of the AT field. If the first call on any line matches, then the h-route is placed in the AT field of the message. Note in the sample provided that the first line of the file reads:

```
W5SMM WA8DRZ.#NOCAL.CA.USA.NA
```

This means that any message for W5SMM arriving in the system will be forwarded to him at WA8DRZ. (In fact, W5SMM requests that all sysops leave his call in the intercept file as shown.)

## INSTALLATION NOTE

If you are using Desqview be sure to allow APLINK enough time to run. There is no hard and fast rule since it depends strongly on the speed of your computer. If the time allotment gets too short the system is painfully slow for your users and in some cases will fall far enough behind (typically when both PACKET and AMTOR ports are active at the same time) to cause timeouts. This is especially true if you are using the PK-232 on the AMTOR port. The software overhead to run a PK-232 on AMTOR is very much higher than for the other controllers.

Now set up the configuration file as described in the next chapter.

## CHAPTER 4

### The Configuration File

For APLINK to run you must first edit the APLINK.CNF file to suit your particular station. The following parameters must be included in the file for the system to function.

MYCALL=W5XYZ     The call letters for your station.  
MYSELCAL=WXYZ    The selcal for your station.

The remaining parameters are optional and the system will assume a default value if nothing is given.

AAB                Default: AAB=1 - Enables the automatic answerback for this station.

ADELAY            PK-232 Only. Default: The parameter set in the PK-232 at startup. Sets the value of the transmit delay for the PK-232. Multiply the parameter by 10 milliseconds. Example: ADELAY=5 sets the transmit delay to 50 ms.

ALMOFF            Default: ALMOFF=<null> - Sets the hour of the day (local time) to disable the sysop alarm. Example: ALMOFF=7 turns off the sysop alarm at 0700 local time.

ALMON             Default: ALMON=<null> - Sets the hour of the day (local time) to turn on the sysop alarm. Example: ALMON=15 enables the sysop alarm at 1500 local time.

ALOG              Default: ALOG=AMTLOG - The path/filename for the AMTOR log file.

AMT-F             AMT-1 only. Default: AMT-F=1 - If 1, enables FEC mode in the AMT-1 (when the version 07A or later ROM is installed), if 0, disables the FEC mode. Disabling the FEC mode is useful when scanning since it prevents the scanner from pausing on FEC signals.

AMTPORT           Default: AMTPORT=1 - Sets the choice of communications port used by the computer to connect to the AMTOR controller. If AMTPORT is set to 0 the AMTOR port is disabled and no communications port is used or required in the computer.

AMTRATE           Default: AMTRATE=2400 - Sets the baud rate between the AMTOR controller and the computer. Allowable rates are 1200, 2400, 4800 and 9600. This parameter has no effect when using the AMT-1 or AMT-3.

APPL	Default: APPL=<null> - Application code for use with G3BPQ node software. Typical setting when using the BPQ node is APPL=\$08.
ARCHIVE	Default: ARCHIVE=C:\APLINK\ARCHIVE\ - The path for archiving messages removed from the system. (Note: the trailing '\' must be included.
AUTOLOG	Default: AUTOLOG=1 - Enables the system's automatic AMTOR login feature.
AUTOREGISTER	Default: AUTOREGISTER=1 - Enables a new user to automatically be entered into the users file. If disabled only calls entered into the users file by the sysop may log into APLINK.
BULFWD	Default: BULFWD=<null> - Bulletins will only be forwarded on packet during the hour set in this parameter. Any number of entries of this parameter are allowed in the APLINK.CNF file (Local time).
CALL	Default: CALL=<null> - Presets a call for a distant station at system startup. Example: CALL=WA8DRZ
CALLFWD	Default: CALLFWD=0 - If set to 1 enables forwarding of traffic addressed to the station's own call.
ERRTHR	Error threshold setting. Default: ERRTHR = 4 for the AMT-1 and AMT-3, ERRTHR = 3 for the PCI-3000. Does not apply to the PK-232. Sets the error threshold for the AMT-1 (when the version 07A or later ROM is installed), the AMT-3, or the PCI-3000 (when the version 1.9 or later ROM is installed). 1 is the tightest and 5 is the loosest error threshold in the AMT-series. The AMT-series designer recommends a setting of 4. In the PCI-3000 controller 5 is the tightest and 0 is the loosest. The PCI-3000 designer recommends a setting of 3.
EXPORT	Default: EXPORT=0 - Enables the import/export routines in APLINK. Read chapter 7 before including this parameter in the APLINK.CNF file.
EXPORTPATH	Default: EXPORTPATH=<null> - Sets the path for importing and exporting message files. Read chapter 7 before including the parameter in the APLINK.CNF file.
HEAP	Default: HEAP=0 = If set to 1 enables a diagnostic feature that displays the status and amount of free memory available to APLINK.
HOLDFWD	Default: HOLDFWD=<null> - Packet forwarding hours may limited. This parameter, set to a given hour, will prevent forwarding during that

hour. Any number of entries of this parameter are allowed in the APLINK.CNF file. (Manual forwarding can be initiated at any time.)

Example:

HOLDFWD=19

HOLDFWD=20

HOLDFWD=21

will prevent forwarding on packet between 1900 and 2200 local time.

- LCMD Default: LCMD=1 - When set to 1 enables the 'L' command on the AMTOR port. When set to 0 disables the 'L' command on the AMTOR port.
- LOGFEC Default: LOGFEC=1 - Enables writing FEC mode signals into the AMTOR log.
- LOWERCASE Default: LOWERCASE=1 - Enables upper and lower case mode on the AMTOR channel. Please read the next chapter before including this parameter in the APLINK.CNF file.
- MAXLINES Default: MAXLINES=60 - Sets the number of printed lines on your printer between form feeds.
- MSGFF Default: MSGFF=0 - Enables automatic form feed at the end of a message printed on the system printer.
- MYROUTE Default: MYROUTE=<null> - If you set MYROUTE to the full h-route for your station it will appear in headers generated by APLINK. Default is your own call without any h-routing. You must still set the parameter MYCALL as well, without any extensions.
- MYSUFFIX Default: MYSUFFIX=<null> - An extension to your call such as a different call area. Do not include the / in entry.
- NLS Default: NLS=1 - Stands for No Leading Space. If set to 1 you cannot type a leading space on a new line from the keyboard while transmitting in keyboard mode on the air.
- OWNHEADER Default: OWNHEADER=1 - Enables the addition of your station's header to a message when it is originated at your station. If you are not running an MBO serving other users it should be set to 0.
- PCIAD Default: PCIAD=5 - Set the value in milliseconds of the audio delay in the PCI-3000.
- PCICD Default: PCICD=30 - Sets the value in milliseconds of the control delay in the

PCI-3000.

- PCIDLY            Default: PCIDLY=0 - Setting PCIDLY=1 enables a long timeout delay on a lost ARQ link, otherwise the timeout delay is normal.
- PCIPD            Default: PCIPD=5 - Set the value in milliseconds of the ptt delay in the PCI-3000.
- PCISCAN          Default: PCISCAN=0 - Setting PCISCAN=1 enables a level (low) scan stop signal output from the PCI-3000 upon receipt of a selcal otherwise the scan stop signal is a pulse.
- PCITD            Default: PCITD=20 - Sets the value in milliseconds of the transmit delay in the PCI-3000.
- PKTBBS           Default: PKTBBS=<null> - The call letters of the packet bbs that you automatically forward to. You must NOT include the call extension (i.e., W1ABC-1).
- PKTPORT          Default: PKTPORT=2 - Sets the choice of the communications port used by the computer for connecting to the packet TNC. If PKTPORT is set to 0 the packet channel is disabled and no communications port is used or required in the computer.
- PKTRATE          Default: PKTRATE=2400 - The baud rate used by the communications port connected to the packet TNC. Allowed values are 1200, 2400, 4800, 9600.
- PLOG             Default: PLOG=PKTLOG - The path/filename for the packet log file.
- PRINTER          Default: PRINTER=NONE - The path to your printer. A typical setting is PRINTER=LPT1.
- PRTLOG           Default: PRTLOG=1 - Specifies the channel that prints to your printer when the system starts.
- PRTLOG=1 for system printer (default),    PRTLOG=2 for  
AMTOR channel printer, or    PRTLOG=3 for PACKET  
channel printer.
- QTH              Default: QTH=<null> - Your QTH and postal code. This text will appear in your message headers. Example: QTH=MIAMI, FL Z:32132
- SELCAL           Default: SELCAL=<null> - Presets a selcal for a distant station at system startup. Example: SELCAL=WDRZ

SHORTHEADERS Default: SHORTHEADERS=0 - If set to 1 only the first and last header will be forwarded on AMTOR. Intermediate headers will be dropped. This acts only on messages forwarded on AMTOR. All the headers will still be forwarded on the packet channel.

SIGNON Default: SIGNON=NEED HELP? TYPE 'HELP+?' - The pre-login message.

SYSMMSG Default: SYSMMSG=<null> - The post-login message. This is not normally set but may be used to draw attention to an important bulletin. Example: SYSMMSG=URGENT: READ MSG 1234

TEXNET Default: TEXNET=0 - If the packet BBS that you autoforward to is reached via Texnet this parameter should be set to 1. In all other cases it should be set to 0.

TFCONLY Default: TFCONLY=0 - When set to 1 packet forwarding will only be initiated if there is traffic to forward. (Manual forwarding can be initiated at any time.)

TFWD Default: TFWD=999 - Sets the number of minutes past the hours that PACKET forwarding begins. Set to 999 to turn PACKET forwarding off.

TUPDATE Default: TUPDATE=999 - Set the hour of the day (local time) that the system update will occur automatically. Set to 999 to prevent automatic updating. Automatic updating is strongly recommended.

You may change the colors displayed on the screen. Use the following range of numeric values to set the color parameters.

0 BLACK  
1 BLUE  
2 GREEN  
3 CYAN  
4 RED  
5 MAGENTA  
6 BROWN  
7 LIGHT GREY  
8 DARK GREY  
9 LIGHT BLUE  
10 LIGHT GREEN  
11 LIGHT CYAN  
12 LIGHT RED  
13 LIGHT MAGENTA  
14 YELLOW

15 WHITE

Backgrounds may only use 0 thru 7.

STATFORE	Default: STATFORE=0 (BLACK) - Status line foreground.
STATBACK	Default: STATBACK=7 (LIGHT GREY) - Status line background.
WDOFORE	Default: WDOFORE=15 (WHITE) - Text windows foreground.
WDOBACK	Default: WDOBACK=1 (BLUE) - Text windows background. (Black on black and white screens)
POPFORE	Default: POPFORE=15 (WHITE) - Popup windows foreground.
POPBACK	Default: POPBACK=7 (LIGHT GREY) - Popup windows background.

Once you have set up the APLINK.CNF file you need to create a forwarding file as described in chapter 6.

## CHAPTER 5

### Character Sets

APLINK now supports a new feature which, at the sysop's option, may be disabled. As a default, APLINK now sends the full range of ASCII printing characters including all upper and lower case alpha characters and all ASCII punctuation.

To disable this feature set LOWERCASE=0 in the APLINK.CNF file.

This feature will work with any PK-232 controller, any AMT-1 controller with a version 07A ROM or later, any AMT-3 controller with a version 8.0 ROM or later, and any PCI-3000 with version 1.7C ROM or later.. If you need a new AMT-1 or PCI-3000 ROM contact Jim, KE5HE @ KE5HE.TX.USA.

The addition of lower case is achieved by transmitting a case 'toggle' or shift character, a Baudot blank, whenever the text changes between upper and lower case. (The Baudot blank is the Baudot character with all bits set to 0. Not to be confused with the Baudot space.) The beginning of any transmission is always assumed to be in upper case. Any Baudot figures character always shifts the alpha case back to upper.

Since the Baudot blank character is ignored by virtually all receiving devices this mode is 'backwards' compatible with your existing user's system. A user not equipped with a system that interprets the Baudot blank continues to see all upper case characters.

The technique used for transmitting the extended punctuation characters is to send an 'escape' code (again, a Baudot blank) ahead of a Baudot figures character to 'reassign' it to an alternate value. For example, to send a colon in the Baudot code the system transmits a 'Figs-C'. This may be one or two characters depending on whether the controller is already in 'Figs' case. To send a semicolon, which is an ASCII character but not a Baudot character, the system precedes the 'Figs-C' with the Baudot blank. This does not interfere with the upper/lower case alpha toggle since any figures character resets the system to upper case alpha.

Here is the 'escape' table used for the extended characters:

No Null Escape	With Null Escape
-----	-----
Figs-A: - Dash	_ Underscore
Figs-B: ? Query	
Figs-C: : Colon	; Semicolon
Figs-D: <Reserved for WRU>	
Figs-E: 3	

Figs-F: % Percent    ` Reverse Apostrophe  
 Figs-G: @ At Symbol    } Closing Brace  
 Figs-H: # Hash Mark    { Opening Brace  
 Figs-I: 8  
 Figs-J: \* Asterisk  
 Figs-K: ( Open Paren    [ Opening Square Bracket  
 Figs-L: ) Close Paren ] Closing Square Bracket  
 Figs-M: . Period    > Closing Angle Bracket  
 Figs-N: , Comma    < Opening Angle Bracket  
 Figs-O: 9    ~ Tilde  
 Figs-P: 0  
 Figs-Q: 1    ! Exclamation Point  
 Figs-R: 4    \$ Dollar Sign  
 Figs-S: ' Apostrophe " Quotation Marks  
 Figs-T: 5  
 Figs-U: 7    @ And Symbol  
 Figs-V: = Equal    | Vertical Bar  
 Figs-W: 2  
 Figs-X: / Slash Mark \ Reverse Slash Mark  
 Figs-Y: 6    ^ Caret  
 Figs-Z: + Plus

This method of transmitting upper and lower case was originated by Peter, G3PLX. It is used in the 'PLX' AMTOR mailboxes that he has written.

WARNING - The latest versions of the PK-232 also implement upper and lower case using a different technique. Your users must not use that mode or the upper and lower cases will become confused and/or stray graphics characters may appear in their text. Tell your PK-232 users to set the parameter 'CODE 0' in their controllers.

## CHAPTER 6

### The Forwarding File

The method of routing messages for autoforwarding is the same hierarchical routing (h-routing) scheme that is used by the packet network.

Routing is strictly a function of the station you are linked to and is independent of whether you are linked on AMTOR or packet.

Using the Norton editor, create an ASCII file named FORWARD.APS. Make entries into the file that look something like this (assume you are WA8DRZ for this example and that N6IIU is the packet bbs you normally forward to):

- . A line beginning with a period is ignored
- . Blank lines are ignored
  
- . The first entry should be your call typically (see below)  
WA8DRZ WA8DRZ
- . The second entry should be the packet bbs you forward to.  
N6IIU N6IIU  
VK2AGE AH6D VK2AGE VK3EHQ  
TG9VT TG9VT  
#SOCAL.CA N0IA  
#NOCAL.CA N6IIU
- . This entry routes all NTS traffic with a zip code starting with  
. 78 to KE5HE  
78\* KE5HE
- . The next entry would hold all Alaska traffic in the system  
AL WA8DRZ
- . The following state code entries are exceptions to the rule  
. that USA traffic goes to N6IIU  
HI AH6D  
TX KE5HE  
IL WA1URA WB7QWG  
IN WA1URA WB7QWG  
USA N6IIU  
AUS AH6D VK2AGE VK3EHQ  
EU TG9VT ZF1GC  
NA N6IIU  
AS TG9VT ZF1GC  
OC AH6D  
SA TG9VT ZF1GC  
AF TG9VT ZF1GC

and so on. The first entry on a line is a routing token and the remaining entries on the same line are bbs/mbo stations that messages with those routing tokens may be sent to. Messages that have nothing in the 'at' field will not move unless there is an exact match to the 'to' field.

You may use a wild card (a '\*') on the left hand token. DO NOT USE WILD CARDS EXCEPT FOR ZIP CODES OR WHERE THE FIRST THREE LETTERS ARE 'NTS'. Wild cards on anything else will potentially confuse the h-routing scan process.

If you have a token with a leading '#' then the expected following token must be included also: see #NOCAL.CA above.

If you put a call (other than your own and the call of the packet bbs you forward to) in a routing token field then also put that call in the intercept file with full h-routing so that down stream stations will know how to deal with it.

Put the most specific tokens first, such as call letters, followed by tokens beginning with '#', followed by zip codes (including zip codes with wild cards), followed by state codes, followed by country codes, followed by continental codes. The scanning process is complicated and the order of entries in FORWARD.APS is very important. For example, if a message has HI.USA in the 'at' field it will not forward to N6IIU in the above sample file because it will have 'hit' on AH6D first and the system will hold the message for that station. Put your own call in the first line in both the first and second field to insure that traffic addressed 'at' your station stays there.

Messages that do not match any routing on the list will not move - even on packet. Packet is no longer the default if nothing matches. Make sure that the call of the packet station you forward to has some broad coverage tokens to pick up the bulk of the traffic that does not otherwise move out on AMTOR.

Messages with your own call in the 'to' field will not move unless you have put 'CALLFWD=1' in the APLINK.CNF file. Messages with the call of the station that you are linked to in the 'to' field move unconditionally to that station.

Any number of bbs calls can follow the routing token as long as they are separated by one or more spaces and do not exceed a total line length of 80 characters.

The routing table is then kept in memory to speed things up a bit. If you change FORWARD.APS the system will see a change in the file time stamp and reload the routing table the next time routing is requested.

## HINTS

Do not try to put every possible h-routing token in your FORWARD.APS file. It is enough to put 'USA' and/or 'NA' for the station(s) that handle most of your U.S. traffic and then just enter the state codes that are exceptions ahead of it. Use 'EU' for the station(s) that takes your European traffic, etc... If your FORWARD.APS file is growing large you may not be making the best of it. Make sure there is at least one entry for each continental code.

## FORWARDING ON THE PACKET LINK

APLINK still has the limitation that you may only forward to one packet bbs automatically (The station set into the PKTBBS parameter in the APLINK.CNF file). This restriction will be eventually be removed in a later version.

There no longer is a restriction on other packet stations linking to you and initiating reverse forwarding.

## REJECTED MESSAGES

If the system attempts to forward a bulletin and it is rejected (usually meaning that the other station already has it) its status is changed to STATIC and it is left in the system for all to read.

If a private or NTS message is rejected it is marked as REJECTED and held for the sysop to take action on it. A rejection of a private or NTS message usually means there is some problem, typically a case of "round robin" routing. In any case the sysop should look into it. When the sysop does a message listing rejected messages will show a '\*' in the status column, or '\*\*' if it is over 24 hours old. The message status is restored, of course, by the MCB editor once the problem has been solved.

## CHAPTER 7

### Message Import/Export

The import/export facility provides a means of transferring messages into or out of APLINK using MS-DOS ascii text files. The file format, defined below, may hold multiple messages.

#### APLINK SETUP

To activate the import/export facility include a parameter in the APLINK.CNF file defining a file path to a subdirectory where the import and export files are to be located. This parameter takes the following form:

```
EXPORTPATH=C:\MB\
```

where the text to the right of the equal sign is set to match your particular installation. Note: You must include the trailing '\' in the string.

By way of example, if you are going to import or export messages to a WORLI packet BBS then EXPORTPATH would point to the subdirectory where the WORLI BBS would place its import and export files.

The presence of the EXPORTPATH declaration in APLINK.CNF activates the facility. Once activated, APLINK enters an import/export cycle at startup and approximately every six minutes after the completion of the last cycle. This process normally only takes a few seconds but if there is an unusually large number of messages pending it could take a minute or two. For this reason the import/export cycle will not be started while there is an AMTOR link in progress.

To select messages to be exported use the token EXPORT in the FORWARD.APS file as if it were the call of a remote BBS.

#### WORLI BBS SETUP

You should already be familiar with your WORLI packet BBS installation and operation before attempting to use message import and export with APLINK. Read the file SERVER.DOC that came with your WORLI BBS disk for a discussion of this function in the WORLI system.

APLINK import/export runs as a complex server in the WORLI system. The server program, named APEX.EXE, is supplied on the APLINK distribution disk. This file must be located on a subdirectory where it can be run by the WORLI system, typically, in the same

subdirectory as the WORLI code.

The file that the WORLI system should be directed to export is APEX.OUT and to import is APEX.IN. The file format specifier is H8.

## MESSAGE FILES

You do not need to concern yourself with the details of the file formats but in case you are interested here they are (borrowed from the WORLI documentation):

The following is an example export file produced using format H8.

Things to note about this file:

1. There is a blank line following the RFC-822 header, and another following the MailBox header.
2. The special header item "X-msgtype" is used to show whether the message is a Bulletin, is Personal, or is an NTS message.
3. The special header item "X-BID" is used to show the BID, if the message has one.
4. The file can contain multiple messages.

```
Date: 12 Mar 89 17:09          <- Date at originating MailBox
Message-ID: <8988@N6IYA>      <- Message number at orig MailBox
X-msgtype: P                  <- Message type (B, P, T)
X-BID: 1234_N6IYA            <- BID, if the message has one.
From: N6IYA@N6IYA            <- User at orig MailBox
To: ECHO@WORLI.OR.USA.NA     <- Full location as sent
Subject: Testing path turnaround. <- Message title
        <- Blank between RFC-822 hdr and MailBox hdr
        R:890312/1722z @:WORLI.OR.USA.NA West Linn #:3571 Z:97068
R:890312/1709z @:N6IYA.CA.USA.NA Felton #:8988 Z:95008
        <- Blank between MailBox hdrs and text.
Test message.                 <- Message text.
../EX <- ".." added, not there in actual format
```

## CHAPTER 8

### Starting the System

If you have not already done so, re-boot the system to make sure MBBIOS.COM has been loaded. To start the system the first time, keep your transmitters turned off but your AMTOR terminal unit and your TNC turned on, and run AP.EXE. The system will go through its initialization procedure and when it is ready for service will display the copyright notice on the screen.

Type the following sysop commands to enter the tutorial help files (if you are upgrading from an earlier version, delete your old help files):

```
SH AMTOR HELP1(return)
SH AMTOR HELP2(return)
etc. thru HELP9
```

To see if it all worked type:

```
LH(return)
```

and you should get the message list with the help files showing. If uncertain about this procedure read KEYBOARD OPERATION and SYSOP COMMANDS sections first.

This completes the installation. You should be up and running unless the AMTOR terminal unit or TNC installation has not been previously checked out. You can use the AP.EXE program to do that by simply switching off the related MBO or BBS function and using it as an ordinary terminal, following the installation instructions.

#### SPECIAL NOTE REGARDING THE PK-232

The AMTOR PK-232 driver has been enhanced. You may now 'cold start' the PK-232 provided you have the PK-232 19 July 1990 (or later) ROM installed. You can continue as you are now or you can remove the battery (or pull jumper JP-1) and simply turn the PK-232 on just before running APLINK and APLINK will do a full configuration including setting the baud rate to whatever you have set in the APLINK.CNF file (AMTRATE=nnnn, default is 2400). This should work OK where you want the system to automatically restart from a power failure.

## CHAPTER 9

### Bulletins

Bulletins entered into the system from the AMTOR channel or by the Sysop are visible to everyone who uses the system. Because of the proliferation of bulletins that arrive at any BBS via PACKET, bulletins that enter the system from the PACKET channel will not be visible to AMTOR users unless the Sysop uses the MCB Editor to change the "Channel" field from PACKET to SYSOP.

Bulletins may be entered by any station. If there is no entry in the 'at' field then the bulletin will remain in the system but will not be forwarded to any other station. If there is an entry in the 'at' field the bulletin will be forwarded once only to the station indicated by the FORWARD.APS file for that routing. APLINK does not do "flood" forwarding of bulletins. If the bulletin is forwarded to a packet bbs however, that bbs may "flood" the bulletin to many stations.

Bulletins entering the system via PACKET are deleted after 21 days unless the Sysop changes the channel designator with the MCB Editor. All other bulletins are held in the system until deleted by the sysop or the originating station.

## CHAPTER 10

### System Logs

The system maintains three log files. The paths (file names) of two are declared in the APLINK.CNF file. These are the AMTOR and PACKET text logs. They record everything transmitted or received on their respective channels. Their main purpose is diagnostic and can be turned off once the system is known to be stable and free of programmer errors. In order not to fill the disk with endless text logs, the current text logs are renamed AMTLOG.OLD and PKTLOG.OLD when UPDATE is executed and the previous AMTLOG.OLD and PKTLOG.OLD files are deleted.

The third log is a text format event log file that records logons, logoffs, filing of messages, reading of messages, etc., etc. It is named EVENTLOG.APS. If UPDATE is run on the first day of the month EVENTLOG.APS is renamed EVENTLOG.OLD and a new EVENTLOG.APS is started.

The current AMTOR log may be read with the F7/F2 command when the keyboard is in AMTOR mode, the current PACKET log with the F7/F2 command when the keyboard is in PACKET mode and the EVENT log with the F7/F2 command when the keyboard is in SYSOP mode.

If a failure occurs during system operation the three log files should immediately be saved to give the programmer half a chance at finding what happened.

## CHAPTER 11

### Console Operation

When the system is started, three windows will be displayed with the copyright notice showing on the top window when the system has completed initialization.

The top window is always devoted to displaying characters received on the AMTOR channel, the middle screen to characters received on the PACKET channel, and the bottom window to characters received from the keyboard or files being transmitted. Over each window is a status bar related to that window (and channel).

The keyboard has four normal operating states; OFF, AMTOR, PACKET and SYSOP. There are two additional states, ATEST and PTEST, that the Sysop will not normally use - they are for diagnostic purposes only.

If the keyboard is OFF the console will beep as a reminder whenever a key is pressed. The numeric key pad is used to re-assign the keyboard:

- 9 (PgUp) for AMTOR,
- 6 (Right Arrow) for PACKET,
- 3 (PgDn) for SYSOP and
- 7 (Home) for OFF.

The labels on the keys don't make much sense but, given a normal keyboard layout, it 'feels right' for the purpose.

In PACKET and SYSOP mode the keyboard is line buffered. Characters are transmitted only when return is pressed allowing backspace over the whole line. In AMTOR mode the keyboard is word buffered. Characters are transmitted when the space bar, return, a control character, or +? is pressed.

If a 'T' (talk to the Sysop) command is received on one of the channels during a session the keyboard is automatically assigned to that channel for 5 minutes when the Sysop alarm is sounded. After 5 minutes the keyboard reverts to its pervious assignment.

Some of the function keys are always active and some will respond only if the keyboard is assigned to the relevant channel. This will make sense to you when you use the system.

Here is the meaning of the status bar indicators:

AMTOR:aaa/bbb:cccc <gmt time and date> ddd/eee/fff

aaa = MBO when the AMTOR Mailbox is alive and well

aaa = KSR when the SYSOP has shut off the mailbox by one or another means.

bbb = SBY when the MBO is waiting for a logon.

bbb = OPN when someone has logged on, but there is no command outstanding.

bbb = INP when receiving a file.

bbb = OUT when transmitting a file.

bbb = TSF when transmitting files in response to an RN command.

bbb = CFM during the time a message header is being confirmed.

cccc = Is the call of the last user to have signed onto the AMTOR mailbox; or, if the system has just been initialized, it is the call specified in the CALL parameter of the configuration file.

ddd = RCV when the AMTOR link is in the receive direction.

ddd = SND when the AMTOR link is in the transmit direction.

eee = FEC during standby and when operating in FEC mode.

eee = ARQ when linked or operating in ARQ-Listen mode.

fff = ERR, RQ, TFC, IDL, OVR, PHA, SBY, or ESC depending on the state of the AMTOR controller. See your controller manual for explanations.

PACKET:aaa/bbb:cccc <local time and date> !RTS:dd/CTS:ee

aaa = BBS when the Packet BBS on.

aaa = KSR when the Sysop has turned off the BBS.

bbb = SBY when the BBS is waiting for a logon.

bbb = OPN when someone has connected but there is no command outstanding.

bbb = INP when receiving a file.

bbb = OUT when transmitting a file.

bbb = TSF when transmitting files in response to an RN command.

bbb = SBJ while waiting for the subject input for a message.

cccc = Is the call of the last user to have signed onto the PACKET mailbox.

dd = OK when RTS is sent to the TNC.

dd = NO when RTS is not sent to the TNC.

ee = OK when CTS is received from the TNC.  
ee = NO when CTS is not received from the TNC.

KBD:aaaaa

PTR:bbb

aaaaa = KOFF when the keyboard is off.  
aaaaa = AMTOR when the keyboard is assigned to the AMTOR channel.  
aaaaa = PACKET when the keyboard is assigned to the PACKET channel.  
aaaaa = SYSOP when the keyboard is assigned to the SYSOP command handler.  
aaaaa = \*ATEST\* when the keyboard is assigned to the AMTOR test routine.  
aaaaa = \*PTEST\* when the keyboard is assigned to the PACKET test routine.

bbb = NCF when the printer is not configured.  
bbb = SYS when the printer is assigned to the system.  
bbb = AMT when the printer is assigned to the AMTOR channel.  
bbb = PKT when the printer is assigned to the PACKET channel.

## FUNCTION AND CONTROL KEY COMMANDS

The function key assignments will 'feel' right with the function keys arranged vertically at the left hand edge and the Gray + and - keys are on the right hand edge (standard XT layout). If your keyboard arranges the function keys along the top they will be more awkward to use. Note: The keys described below are active when the keyboard is in the relevant mode.

Keys	Function
----	-----
Control-O	Transmits a WRU to the far station when the keyboard is in AMTOR mode. (This replaces the '\$' which formerly performed this function. Since the AMTOR channel is capable of transmitting the full ascii character set the '\$' is now allowed as embedded text.)
Grey +	ARQ/FEC receive mode. In the ARQ mode, a +? is transmitted and in the FEC mode a begin transmit.command is issued to the AMTOR terminal unit.
Grey -	ARQ/FEC transmit mode. In either mode an appropriate break command is issued to the AMTOR terminal unit. (Note: The PK-232 will not execute this command until it sees an IDLE status.)
Esc	Stops any file transmission in progress and clears all keyboard and send buffers.

End	In AMTOR mode - closes the ARQ link. In PACKET mode - send and END command to the TNC.
Del	Issues a return-to-letters-case command to the AMTOR terminal unit. This provides an immediate manual override when text is being received is figures-case.
F1	Displays a short help menu.
F3	Displays the Mode Selection menu.
F3 F2	In AMTOR mode, forces the AMTOR terminal unit into STANDBY mode. (With the PK-232 there may be some delay in execution.)
F3 F4	In AMTOR mode switches the MBO on and off. In the PACKET mode switches the BBS on and off.
F3 F6	In the AMTOR mode commands the AMTOR terminal unit to monitor ARQ.
F3 F8	In the AMTOR mode, begins an AMTOR automatic forwarding cycle; in the PACKET mode, begins the PACKET automatic forwarding cycle.
F3 F10	Ends the APLINK program and returns to the operating system.
F5	Displays the Clear Selection menu.
F5 F6	Clears all windows.
F5 F10	Sends a formfeed command to the printer.
F7	Displays the File Operations menu.
F7 F2	Read or edit a log file. In AMTOR mode, the AMTOR log file; in PACKET mode, the PACKET log file; and in SYSOP mode, the EVENT log file.
F7 F4	Invoke the Norton Editor to edit any ASCII file.
F7 F6	Invoke MS-DOS as an overlay. APLINK will be suspended but will remain resident. Type exit at the DOS prompt to return to APLINK.
F7 F8	Prompts for a file name and then transmits that file.
F7 F10	Switch the printer to print the channel indicated by the current mode. If in SYSOP mode the printer is switched off.

F9	Display the AMTOR On-Line Commands menu.
F9 F4	Enter call letters and optionally the selcal for a station to be called. If the selcal is not entered then it will be generated automatically from the call letters by APLINK.
F9 F6	Begin an ARQ call.
F9 F8	Switch on a steady carrier to the AMTOR transmitter for testing or tuning.
F9 F10	Send an identification sequence on the AMTOR channel.
Alt-F9	Send an identification sequence followed by a LOGOUT command on the AMTOR channel.

## SYSOP COMMANDS

Remember, the following are SYSOP commands. They are not the same as the commands used over the air by a remote station. These commands are not normally invoked while linked but may be, usually without harm, unless autoforwarding is in progress. The system will delay response to an online user while SYSOP commands are being executed.

In the table below <number> is any integer between 0 and 29999, <id>, <id1> and <id2> are standard 1 to 6 character PACKET routing designators (usually call letters), and <filename> is any valid MS-DOS path/filename.

COMMAND	FUNCTION
-----	-----
CANCEL <number>	Marks message <number> as CANCELED. This is normally used to remove bulletins from the system but may be used to remove a defective or possible illegal message as well. The next UPDATE will archive all canceled messages PRIVATE and NTS messages and will delete all canceled bulletins.
CANCEL <number 1> <number 2>	Marks all messages from <number 1> through <number 2> as CANCELED.
E <number>	Invokes the Message Control Block Editor for message <number>. See the separate section describing the MCB Editor.
EXPORT	Manually starts an import/export cycle.
K <number>	Same as CANCEL <number>.

K <number 1> <number 2> Same as CANCEL <number 1> <number 2>.

KB <number> Same as CANCEL <number> except bulletins only.

KB <number 1> <number 2> Same as CANCEL <number 1> <number 2> except bulletins only.

L List all messages in the system except bulletins.

L <number> List all messages in the system equal to or greater than <number>, except bulletins.

LP List all "pending" messages; messages awaiting forwarding or delivery.

LT List all messages addressed to this station and to "SYSOP".

LT <id> List all messages to <id>.

LF List all messages from this station.

LF <id> List all messages from <id>.

LB List all bulletins.

LH List all help files.

LR List users logging into the system in the last 24 hours.

LU List all users registered in the system.

NTS List all NTS messages in the system. (Note: This command when invoked on the AMTOR or PACKET port will only list NTS messages marked as FILED or ACCESSED.

P <number> Print message <number> to your printer. If the message is addressed to your station it will be marked as forwarded.

PN Print all new messages to your station and mark them as forwarded.

R <number> Read message <number>. This invokes the Norton Editor with message <number>. Not only can the Sysop read but he can also modify any message in the system. It is generally not socially acceptable to modify other people's messages. Any message accessed in this way addressed to your station

will be marked as forwarded.

- RESTORE <number> Restores a canceled message provided it has not been archived.
- SP <id1> [AT <id2>] [<filename>] If file name is included, copies <filename> into APLINK as a message to <id1>. If <filename> is not included then the Norton Editor is invoked. After the message has been typed and edited, exiting the editor stores the message into APLINK. If the Norton Editor is exited without saving the text (i.e., F3 Q Y) then the operation is canceled.
- SB . . . Same as the SP command above except the message is marked BULLETIN.
- ST . . . Same as the SP command above except that the message is marked NTS. Certain restrictions may apply to NTS messages. See the section on NTS operations.
- SH . . . Same as the SP command above except the "message" is a help file only.
- UPDATE Manually initiates the system update routines. This is normally done by setting the 'TUPDATE' parameter in the APLINK.CNF file.

## IN AND OUT OF AMTOR MBO MODE

With the keyboard in AMTOR mode the system is toggled in and out of MBO mode by pressing F3 F4. The system will automatically return to MBO mode after about ten minutes time, once the system is no longer linked, in the highly unlikely event that the Sysop forgets to return it.

If a user is using the MBO when F3 F4 is invoked, all operations will stop, any open message files closed and the system will send:

PLEASE STANDBY...

At that point you may converse with the user. F3 F4 again will return the system to MBO mode. Once out of MBO mode the program operates as an ordinary AMTOR terminal program and may be used to call stations, send files manually, etc.

If a station that you want to talk to has logged off before you could catch them just press F9 F6 with the keyboard set to AMTOR and if the other station is still on the frequency the link will be re-established.

Whenever an ARQ call is initiated (F9 F6), the MBO mode is switched off. It may be restored by the F3 F4 toggle.

## USING THE PRINTER

If the printer has been declared in the configuration file it is available to the Sysop for either logging or printing messages.

To log a channel to the printer, put the keyboard in that channel mode and press F7 F10. To return the printer to standby put the keyboard in SYSOP mode and press F7 F10.

## THE MCB EDITOR

Each message in the system has a tag record called a message control block maintained in a separate file. This record contains pertinent information about the message such as its type, filing time, from and to fields, etc., etc. Any item of data in the MCB may be changed by the Sysop except the message number and the filing and forwarding times. This is done with the MCB Editor which is invoked on the Sysop's command line with:

E <message number>

Once the Editor's window is opened on the display, typing any of the following key words

(upper or lower case) will change the appropriate parameter in the MCB:

AMTOR, PACKET, SYSOP, PRIVATE, BULLETIN  
NTS, HELP, CANCELLED, PENDING, FORWARDED, STATIC  
BID... TO... AT... FROM... BBS...

The TO, AT, FROM, and BBS fields may be changed by typing:

TO <new field>,  
AT <new field>, etc...

Pressing return with no other entry will record any changes and return to the SYSOP command line.

## THE USER FILE MAINTENANCE PROGRAM

Supplied with APLINK is the program USERS.EXE. This program can only be run when APLINK is not running, even if you are using a multitasking system such as Desqview. Operation of the program is reasonably self-evident. A user is automatically entered into the USERS.APS file upon the first logging into APLINK. A call may also be entered directly with USERS.EXE.

There are a number of parameters that may be set for any given user using USERS.EXE. Here is a list and their meanings:

**MBO** Set this to 1 for any APLINK station that you directly autoforward traffic to on AMTOR. This enables that station to read any uncanceled message in your system in order to obtain fills and to enable the RF and RI commands.

**PROTECTED** Prevents removal of the station from the file when the user file maintenance program purge command is used.

**ASCII** Enables use of the full ascii printing characters set with the user. This must only be set if the user is fully compatible with the full ascii protocol.

**EXPERT** 1 sets EXPERT mode for a user.

**LOCKOUT** 1 prevents the indicated call from logging into your system on AMTOR or PACKET.

The LAST MESSAGE and LAST BULLETIN parameters cannot be changed except to set them to zero with the zero command. These two parameters determine what number the message and bulletin lists begin with.

LAST LOGIN shows the time and date of the last time the indicated call logged into the system. The purge command removes all calls from the file that have not logged in within the last 180 days.

## CHAPTER 12

### Program Distribution

APLINK is now being distributed by three methods. There is a free landline bbs at 512-225-8254 (San Antonio, TX). It accepts 1200 to 9600 baud, 8-bits, no parity, one stop pulse. Log in with your name and follow the instructions. Load the file named APFILES.EXE using XMODEM. When APFILES.EXE is run it will expand into a full set of program files.

If you have access to Compuserve (CIS), the latest version may be downloaded from the Hamnet forum.

A disk with all the APLINK files may be obtained by mail from TAPR. Send \$2.00 US for a 5-1/4 inch disk or \$3.00 US for 3-1/2 disk plus cost of postage if outside of North America and specify that you want an APLINK disk. If you request, TAPR will automatically send you an update when it is received with the understanding that you will mail them the costs when you receive the disk.

Tucson Amateur Packet Radio (TAPR)  
PO BOX 12925  
Tucson, AZ 85732  
USA

TAPR Telephone: 602-749-9479

### SYSOP ASSISTANCE

If you are having problems bringing up APLINK for the first time please read, and then re-read the documentation provided on the disk. Most questions received to date are covered in this information.

If you still are having problems, or have other questions relating to APLINK system operation please direct them, in writing, to Craig, WA8DRZ/6:

Craig McCartney, WA8DRZ  
160 Montalvo Road  
Redwood City, CA 94062  
USA

Via AMTOR, leave an note on the WA8DRZ/6 APLINK system on 20 or 30 meters.

Via Packet, send a message to:  
WA8DRZ @ WA8DRZ.#NOCAL.CA.USA.NA

Via CIS send a note on Hamnet or Email to user id 73126,3260.

## APPENDIX A

### Packet Channel Commands

The following is a verbatim copy of the packet channel help file included in the APLINK distribution:

#### APLINK PACKET Channel Commands:

- B            Bye - Log off the BBS. Just disconnecting does the same thing.
- H            Help - Sends this file.
- I            Info - Sends the Information file.
- L            List - Lists all messages.
- L #          List # - List all files from message #.
- LB          List all bulletins.
- L< <call>    List From <call> - Lists all messages to <call>. If <call> is omitted it lists all messages from you.
- L> <call>    List To <call> - Lists all messages to <call>. If <call> is omitted it lists all messages to you.
- LH          List all help files.
- LR          List all users who have signed into the system in the last 24 hours.
- LP                            List all pending traffic (for MBO operators only).
- LOGIN <call>    Logs you into the system by a call other than the one that began the link.
- NTS          List all NTS messages that have not been forwarded.
- R #          Read # - Read message #.
- RN          Read New - Read all new messages addressed to you.
- SP <call> @ <route> Send - Send a message to <call> (optionally) at <route>.
- SB <name> @ <route> Send a general interest bulletin of <name> (optionally) via <route>.

SB <name> @ <route> \$<bid> Send a general interest bulletin of <name> via <route> using <bid>. Note: A bid will be assigned by the system if not entered by the user.

ST <id1> @ <id2> Send NTS traffic using current conventions.

T Talk - Signal the Sysop.

V Version - Read system version number.

CANCEL # Cancels message # if you are the originator.

There is no Kill command. Messages that have been read or forwarded will be deleted automatically from the system after 24 hours. Unread messages will be deleted automatically after 21 days. Bulletins will remain until the originator or the Sysop cancels them.

## APPENDIX B

### AMTOR Channel Commands

The following is a verbatim copy of the AMTOR channel help files included in the APLINK distribution.

(File: HELP1) AMTOR CHANNEL COMMANDS

#### AMTOR Channel Commands

Type any of the following commands on a new line and end with either (CR/LF) or the + ? sequence (but not both). If you do not use the + ? sequence the system will change the direction of the link for you when it recognizes a valid command.

H or HELP - Send the help file

CNCN - Cancel whatever is in progress. (Usually a message you are entering into the system)

LOGIN (your call) - Logs you in

LOGON (your call) - Same as LOGIN

L - List all available messages in the system, not including bulletins (see note)

L (number) - As above equal or greater than (number)

LTO or LM - List all messages to you

LTO (call) - List all messages to (call)

LFM - List all messages from you

LFM (call) - List all messages from (call)

LT - List all NTS messages

LB - List all general interest bulletins (see note)

LB (number) - As above equal or greater than (number)

LR - List users who have logged on in the past 24 hours

NTS - List all unforwarded NTS messages

RN or RM - Read all new messages addressed to you

R (number) - Read message (number)

RH (number) - Read message (number) including routing headers

SP (call) - Send a message to (call), end with NNNN

SB (name) - Enter a bulletin with (name), end with NNNN

SB (name) AT (route) BID (bid) - Enter a bulletin with (name) at (route) with a bid of (bid)

SP (call) AT (route) - Send a message to (call) to be forwarded via (route)

ST (zipcode) AT (NTS statecode) - Send an NTS message (use accepted NTS subject and message format)

NNNN - End a message. Must have been started with SP, SB, or ST.

CANCEL (number) - Cancels message (number) if originated by you

T - Talk to the sysop

I - Information about this system

V - Read version number

A - (After seizing the link) Abort a file being received

LOGOUT - Logs you off

LOGOFF - Same as LOGOUT

/// - Anywhere on the line cancels the line (except in messages)

NOTE: The L, and LB commands will only list messages you have not previously listed. Follow the command with a number to override this feature. Use 0 to list all messages in the category.

Here are some special commands for the expert user:

EXPERT - Toggles the 'EXPERT' mode

RI - Reads the MBO's intercept file

RF - Reads the MBO's AMTOR autoforward routing file

Note: RI and RF are available to other MBO's only

F - (After seizing the link) Abort a file being received and mark it forwarded if it is for you. (This is for use with duplicate messages.)

(File: HELP2) LOGGING IN ON AMTOR

Logging In On AMTOR

This MBO has an automatic login procedure for registered stations with automatic answerback (AAB) enabled. When you first link with

the system, it seizes the link, identifies, sends a 'WRU' character (figs-D), and waits for an answerback response. The expected response is:

```
(CR/LF)QRA CALL SELCAL + ?
```

or

```
(CR/LF)DE CALL SELCAL + ?
```

For example '(CR/LF)QRA WA8DRZ WDRZ + ?' IS TYPICAL RESPONSE.

If no AAB response is received the system sends a manual login request followed by the + ? sequence. At this point a user should send either 'LOGIN (call)(CR/LF)' OR 'LOGON (call)(CR/LF)'. If the call has been registered the system will respond with a 'GA' prompt. If an error was received or the call is not registered the system will ask you to confirm the call. If you answer the confirmation request with 'YES' the call becomes registered.

APLINK will disconnect after three minutes if no login has been recognized.

Once you have logged on, the system is ready for your command whenever it sends a 'GA' (Go Ahead) prompt.

You may log out of the system with 'LOGOUT(CR/LF)' or 'LOGOFF(CR/LF)'. any time the link is lost the current user is automatically logged out.

If a message is being sent to the system during a link failure, that part of the message that was received is filed and is available to the addressee.

## (File: HELP3) RECEIVING YOUR MESSAGES ON AMTOR

### Receiving Your Messages on AMTOR

The quickest and simplest way to receive your messages is to give the 'RN' (meaning 'Read New') command as soon as you sign on. All messages in the system not already marked 'forwarded' will be transmitted to you automatically without further action on your part. As each message is completely forwarded to you it is marked 'forwarded' and will not be transmitted again with this command. (You may read it again with the 'R (number)' command.

If you are receiving an unforwarded message and the link is lost it will still be available to the 'RN' command.

If you have logged into the system with your automatic answerback then the system will mark your messages 'forwarded' only after it triggers your answerback at the end of each message.

You do not have to (in fact, cannot) delete a message. Once it is forwarded the system will delete it 24 or more hours later. In the meantime it may be read again using the 'R (number)' command.

Use the list commands to see what messages are available.

## (File: HELP4) ENTERING A MESSAGE ON AMTOR

### Entering a Message On AMTOR

Messages may be entered directly from your keyboard into the system, however it is better if you prepare a file before logging on and then send it at machine speed. This reduces the connect time to the system and the potential for transmission errors.

You may send three kinds of messages:

'SP (call)' which is a message to a specific station and may only be read by that station (or you or the sysop) and will appear on the message list only for those stations. For others, it simply isn't there. 'SP' messages will remain in the system for 21 days or 24 hours after being marked 'forwarded', whichever comes first.

'SP' type messages may also be entered for automatic forwarding to another MBO/BBS. They may be entered in the form 'SP (call) TO (route)' where (call) is the addressee and (route) is the hierarchical route to his local MBO/BBS. Since AMTOR does not provide for a number sign character (unless you are in full ascii mode), use the equal sign character in its place when required in an h-route address and APLINK will convert it to a number sign character.

'ST (zipcode) TO (NTS statecode)' is used to enter a message to anyone to be delivered by the National Traffic System. The subject (first line) should read: QTC (city, state) and the body of the message should be in standard ARRL message format.

'SB (id)' addresses a message to 'id' and marks it as a bulletin. You may also include a bulletin identification (BID) by adding 'BID ' followed by the bin on the same line. For example:

```
SB ALL BID 12345W1ABC
```

is a message to 'ALL' with a bid of 12345W1ABC.

Bulletin type messages will remain in the system until removed (cancelled) by either the originator or the sysop.

To send a message, type the command (i.e., 'SP W5SMM(CR/LF)') and wait for a response from the system. The line will be typed

back and you will be requested to confirm with 'YES' or 'NO'.  
At the 'GA SUBJ/MSG' prompt type the subject of the message on its own line and then enter the text of the message.

At the end of the message send 'NNNN' on a new line. 'NNNN' embedded in text is ignored. After sending 'NNNN' wait for a new 'GA' prompt to enter a new command.

Identify your station at regular intervals by sending your identification after a 'GA' prompt. Any character sequence that is not a valid command is ignored by the system.

If you have already sent a partial command line and want to cancel the line just send three or more '/'s in a row anywhere on the line. That line will be ignored. This only works on command lines. /// embedded in a message will be passed on to the addressee.

While transmitting a message and before sending the 'NNNN' you may cancel the message with the command 'CNCN' on a new line.

After you have transmitted a message you may cancel it with the 'CANCEL (number)' command. This is normally used to remove a bulletin you have placed in the system, but it may be used to remove any message you have previously sent.

## (File: HELP5) MESSAGE LIST EXPLANATION

### Message List Explanation

The format for the message list is similar to that of commonly used packet BBS programs. The symbols for type and status are consistent with the packet system.

Msg = Message number (assigned by the system)

T = Message type as follows:

- P - A private message, may only be read by the addressee, originator or sysop
- B - A bulletin
- T - An NTS message

S = Status as follows:

- N - Message not yet accessed forwarded to the addressee
- + - Same as 'N' except over 24 hours old

++ - Same as 'N' except over 48 hours old  
Y - Message forwarded

TO = Call of addressee

AT = Call of addressee's BBS (followed by a period when hierarchical routing is used.

FROM = Call of originator

FILED = Date/Time message was entered into the originating BBS

SUBJECT = The subject line of the message

## (File: HELP6) LISTING MESSAGES

### Listing Messages

There are several commands for listing messages that are in the system. The 'LTO (call)', and 'LFM (call)' ('List To' and 'List From') default to the call of the user logged into the system if no argument is given.

The 'L', and 'LB' commands when given without arguments will list only messages not previously listed for you. You may override this feature by adding a number following the 'L', or 'LB'. The argument 0 will list all the messages in the category.

NTS messages that are waiting to be delivered may be listed with the 'NTS' command. This is the preferred way to list NTS traffic. The 'LT' command will also list NTS traffic but includes traffic that has already been accepted.

Messages that have been cancelled will not appear on the message list even though they may still be in the system.

Messages that are type 'private' will only appear on lists for the addressee and originator of the message.

Read the help files named 'System Maintenance' and 'Message List Explanation'.

## (File: HELP7) SYSTEM MAINTENANCE

## System Maintenance

The maintenance routines for this system are typically run once a day by the sysop. At that time the following rules apply to all message files:

1. All messages marked cancelled are removed.
2. All messages marked as forwarded for more than 24 hours are removed.
3. All messages except bulletins that are over 21 days old are removed.

## (File: HELP8) AMTOR PORT OPERATING HINTS

### AMTOR Port Operating Hints

If you have been sitting idle for a few seconds before typing a command, type CR/LF just before issuing the command. This clears any stray leading characters from the buffer that may have been received in error during the idle period.

If you get a long file started and would like to abort, simply seize the link, wait for idle status on your AMTOR controller, and type 'A(CR/LF)'. The system will return a 'BK GA' prompt and accept a new command from you.

Remember that the first line of a message will appear on the message list as the subject. Make it meaningful to someone scanning the list.

## (File: HELP9) USING 'EXPERT' MODE

### Using 'EXPERT' Mode

An 'EXPERT' mode has been added. It is toggled by the AMTOR user by entering the command 'EXPERT'. The expert mode shortens the exchange when entering a new message. When on, the beginning of a message looks like this:

```
From user:  SP W1ABC AT WA8DRZ.=NOCAL.CA  
From system: SP W1ABC at WA8DRZ.=NOCAL.CA GA Subj/Msg+?
```

If there is a hit in the response the user must type the 'CNCN' command to kill the message and start over. NNNN, of course, files the message. CNCN may be typed anywhere in the message on a line by itself.