Contents

Note: You can use the SEARCH button at the top of this screen to search for different topics.

Getting Started

The WiSP Package is a large software package and requires many files to run.   These files are supplied in ZIP compressed files.   Before the program can be run, all files must be decompressed and placed in the appropriate directory.

The following is a list of supplied files, and the directories in which they should be placed.

File	Directory	Notes
BWCC.DLL	Windows\System Directory	You may have a newer version of this file already on you system. If so, use the newer file.
GSC.EXE	WiSP Directory	
LHA.PIF	WiSP Directory	
MSGMAKER.EXE	WiSP Directory	
MSGVIEW.EXE	WiSP Directory	
MSPE.EXE	WiSP Directory	
PKUNPAK.PIF	WiSP Directory	
PKUNZIP.PIF	WiSP Directory	
PKZIP.PIF	WiSP Directory	Only required if you select ZIP as your compression technique in Message Maker.
PROCMAIL.EXE	WiSP Directory	
UPDKEPS.EXE	WiSP Directory	
VIEW-DIR.EXE	WiSP Directory	
WISP.HLP	Windows Directory	
WISP.OBS	WiSP Directory	

The Windows Directory is the directory where all your windows files are located.
The WiSP Directory is the directory where you place all your WiSP program files.   It is also defined in the setup screens.

Some other system configuration changes may be required to allow the system to perform correctly.   The FILES= and BUFFERS= values in the CONFIG.SYS must be set high enough to allow all programs running under Windows to execute properly.   I recommend a value upward of 70 for these two.
<Problems may occur if these values are set below 70>.

Because there are some common files that are used by more than one of the programs at a time, *SHARE.EXE* must be loaded to allow files sharing to be performed correctly.   I recommend SHARE be run with the following perameters.   SHARE /f:4096 /l:75.
SHARE is not required with WFWG 3.11.

For more information on the above system configuration changes, refer to your DOS manual.

The WiSP Directory should be added to you <u>DOS PATH statement</u>.   The PATH statement is normally located in your *AUTOEXEC.BAT* file.

After making the above system changes, you should restart your computer to allow the changes to take effect.

Once all the above is set up correctly, you may want to add a WiSP Group to Program Manager.   This is done by using the <u>F</u>ile/<u>N</u>ew option, and selecting PROGRAM GROUP.
Then add *GSC*, *MSPE*, *VIEW-DIR* and *MSGMAKER* to this group using the <u>F</u>ile/<u>N</u>ew option again, and selecting PROGRAM ITEM.
The WiSP Group is not really necessary as all programs can be run from within *GSC*.

All the <u>PIF files</u> that are supplied as part of WiSP may be edited with PIF Editor to ensure that the

filename and directory that the PIF file will execute is correct.   This is not necessary so long as the EXE files are in a directory that is in your PATH, but if you put the full path name to your EXE files, it will speed up the running of these files.

It is then best to run GSC and go through all the setup screens.   As you look at each new setup screen, press the Help button to get information on how the different options will affect your system.   Before the system will work correctly with your system, you must setup Station Setup, Satellite Setup, and Satellite Directory Setup.   Following this, you should reload the GSC Keplerian element database using the DATABASE/UPDATE SATELLITE DATABASE option.

If you use *File Manager* to view files, you should add the following line to the WIN.INI file under the [Extensions] group.   The WIN.INI file is located in your \WINDOWS directory.
msg=msgview.exe F~^.msg

Once GSC is running, it is possible to obtain further ONLINE HELP using the help options and buttons in the program.   You can also search for topics in the help system.   For example to get a list of all setup screens, search for *SETUP*.

See Registration Information for information on registering your copy.

System Overview

WiSP is a multi program package used to access the Amateur Radio Micro Satellites.   There are Seven programs in the package that work together to perform a complete groundstation function.

The programs are -:

GSC   GroundStation Control.   This program provides housekeeping and scheduling functions for the complete groundstation package.   Features include file deletion and log processing along with system wide setup functions.

MSPE   MicroSat Protocol Engine.   This program provides all the uploading and downloading functions required to access the satellites.

View-Dir   View Directory.   This provides the directory viewing and message viewing/reply functions, along with some message housekeeping functions.

MsgMaker   Message Maker.   All message creation and replies are performed through Message Maker.   It gives the user a large amount of flexibility when sending messages and binary files while still providing a quick, automated function.

ProcMail   Process Mail.   Processes received messages as they are downloaded from the satellite, and places them in the required directories for viewing.

MsgView   Message Viewer.   Views all ASCII messages received from the satellite. Messages can be replied to and deleted.

UpdKeps   Update Keps.   Automatically updates the keplerian database when new keps files are received from the satellite.

The programs all interact and advise each other of any events that other programs may need to know. For example,   when *MsgMaker* creates a new file for uploading, if *MSPE* is currently running, *MsgMaker* will advise *MSPE* that a new file is available for uploading.

Breaking the system down into six small programs instead of having one large programs provides flexibility, and also enhances the systems power.   You can view many messages at the same time (in different windows), while also having a *MsgMaker* window open to reply to a message.   You can then Cut and Paste text between the different windows.

Messages can be viewed and replied to while uploads and downloads continue in the background.

Also, as *MSPE* downloads a message, it can be processed by *ProcMail* while *MSPE* continues to operate.   If the message is addressed to your station, it will automatically pop up for viewing using *MsgView*, again while the other functions continue in the background.

The system can automatically select a free uplink frequency before uploading commences.   This is presently only available with TrakBox.

All documentation is available as online help.   It is recommended that before you run the system, you check through the set up options in the help screens.
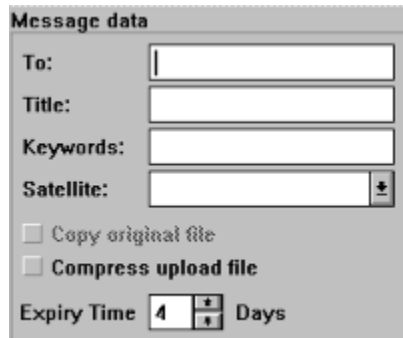
Message Maker

Message Maker provides the user with a method of sending files to the satellite.   You are required to enter the appropriate header information, and select a target satellite before sending the file.   A file can be either a standard message, or it can be a binary file, or a message can be sent with binary files attached.

When the program starts, the <u>Main Screen</u> is displayed.   All data should be entered and checked on this screen before the file is created.   If you want to attach binary files, press the <u>Attach</u> button.   Presently up to 2 files can be attached.

Message Maker Main Screen

The Main Screen is broken down into many different areas.   All data should be checked **BEFORE** sending the message.

Message data	
To:	
Title:	
Keywords:	
Satellite:	
☐ Copy original file	
☐ Compress upload file	
Expiry Time 4 Days	

Copy original file

If you are replying to a message, and the original message is available, you may wish to copy the original message into your reply.   Tick this option if this is the case.

Compress upload file

This should normally be left as Message Maker sets it.   Compression should occur under the following condition -:

When one or more files have been attached.
When the filesize of your message exceeds approximately 1K.

Some files should not be compressed.   These are files that have already been compressed before.   This includes GIF, JPG, ARC, LHA and ZIP files.   If any of These filetypes are sent by themselves without another binary file or an attached message, compression should not occur.

Message Maker decides on compression using the above rules.

There are however times when the user may select no compression, but Message Maker will still compress the file.   This should only occur when more than two files are to be sent.   This is because you can not send more than one file without binding them together using the compression program.

Message information

The message information is the data that will be placed into the Pacsat File Header.   All required data must be entered before sending the message.
The To: field should be entered before you edit the message if you want Message Maker to add the destination stations name to the message file.

Expiry Time

The expiry time (in days) can be adjusted before sending the message.   Normally it can be left at the default which is set up on the Message Maker Setup screen in *GSC*.

<u>Filetype</u>

Filetype
- ● [0] ASCII
- ◇ [6] EXE File
- ◇ [7] COM File
- ◇ [8] AMSAT Keps
- ◇ [9] NASA Keps
- ◇ [12] Binary File
- ◇ [14] GIF File
- ◇ [15] PCX File
- ◇ [16] JPG File

You should check that Message Maker has made the correct selection of FileType.   If it is incorrect, select the correct type before sending the message.

Once you have edited your message and/or selected the files you wish to send, and have checked all the PFH header information, press the Send button to send the message.   This will create an OUT file in the satellite directory, ready for upload by MSPE.

If you wish to send a message with your file, press the edit button.   If you are replying to a message and have the Copy reply box ticked, the original message will be copied to your outgoing message.   Also, if you have a <u>Signature file</u>, this will be appended to the message.

You can attach up to 2 files to the outgoing file.   Press the Attach button and you will open the <u>Attach Files</u> window.

This will cancel the current message and exit Message Maker.

Message Maker Attach Files

This option is only available if you have selected a compression technique in the <u>Message Maker Setup</u> screen in <u>Ground Station Control</u>.

This window allows you to select up to 2 files that will be attached to your message.   You can change directories and select a file in the left listbox.   Files that are selected will be listed in the right listbox.

   If you have a file highlighted in the left hand listbox, this will be added to the attached file list in the right hand listbox.   If you already have 2 files in the attached files listbox, the Add button will be disabled.

   If you have a file highlighted in the right hand Attached Files listbox, this will be removed from the attached file list.   If there are no files listed in the right hand listbox, the Remove button will be disabled.

MsgMaker Get Name

When you address a message to a station whose name is not in the name database, *MsgMaker* will prompt you to enter the name of the station operator.   This will then be stored in the text file USERLIST.TXT which is in the WiSP Directory.

The name can not include any tabs or exclamation marks (!).

You could also specify no greeting in the MsgMaker Setup, and then put the greeting in when you enter the name.   This way you could have a different greeting for different stations.

If you already have the USERLIST.TXT file that JA6FTL produces, you have 3 options.
1. Do nothing.   *MsgMaker* will append new entries to the end of the USERLIST.TXT file.   This should work fine, but will get a bit messy.   Also, when JA6FTL publishes a new file, you will not be able to directly copy it across as you will loose the additional entries that you have made.
2. Rename the original USERLIST.TXT file (eg. USERLST.TXT) and start fresh with the new file.   This means that for the first few days you will be entering a lot of names when you first send messages to stations, but this will decrease as the names are added to the file.
3. Edit out all of the unused text from the original USERLIST.TXT file to leave just the CALLSIGN and NAME (separated by a space) in the file.

Message Maker Setup

The setup screen for Message Maker is located under the Setup menu in <u>Ground Station Control</u>.

The following Message Maker setup options are available.

Copy original file

This is the default state of the Copy original file checkbox on the *MsgMaker* main screen when you are replying to a message.   If you check this box, and you are replying to a message, the box on the MsgMaker main screen will also be checked.   You can still enable/disable this function for each message each time MsgMaker runs.

Remove message source

Checking this option will remove the ASCII message source once the message has been sent.   If you leave this option unchecked, your message file will be saved with the message name, but the extension will be changed to the day number.   The file will be saved in the directory specified in the Save source directory option.

Save source directory

If you want to save your messages, you can specify a directory where they will be stored.   The message will be stored as its original filename, but with the numerical extension of the current day of year.

Compression threshold

This is the threshold above which ASCII message files will be compressed.   Raising this figure will save computer time because the compression program will not be required, but it will also waste space on the satellite.   Please keep this reasonably low.

Signature File

A signature file can be attached to the end of your message.   This file must be in the WiSP Directory and it must be a text file.   The filename can be entered here.   You can edit the signature file from within *GSC* using the <u>S</u>etup/Edit signature file option.

Greeting

Message Maker will search a file called <u>USERLIST.TXT</u> to search for the names of the station(s) you are sending the message to.   You can specify the greeting you wish to have placed before the names.

Message expiry time

This is the default message expiry time.   The <u>expiry time</u> for each message can be adjusted from the <u>main screen</u>.

Editor Name

Enter the full path name of your favorite editor here. This will be used to edit the messages that you send. It will default to NOTEPAD.EXE.

Compression Type

This is the compression technique that you wish Message Maker to perform on your upload file if compression is required. The two types of compression are PKZIP and LHARC. Message maker runs a PIF file for each of these compression techniques. The <u>PIF files</u> must be in your WiSP Directory.
For -:   PKZIP you need PKZIP.PIF
          LHA you need LHA.ZIP

This file is produced by JA6FTL.   It is a text file list of stations using the 9600 baud satellites, and their equipment.   Send a message to JA6FTL to have your data entered in the file.
If you don't have JA6FTL's file, *MsgMaker* will produce one for you by asking for the name of stations the first time you send them a message.   See Message Maker GetName for more info.

Ground Station Control

Ground Station Control provides housekeeping, scheduling and setup functions to provide full automation of the station.

Other WiSP programs can be run from *GSC*, equation files can be edited, logs viewed files deleted etc.

Station Setup and Satellite Setup must be complete before *GSC* will schedule correctly.   Also, the Ground Station Control General Setup will need to be checked to ensure that the scheduling setup is optimised for you station.

The hardware real time clock is used to update the DOS clock every hour to keep your system time correct.

Ground Station Control General Setup

The main purpose of this setup screen is to select the program scheduling timing perameters, and some system wide setup options.

The timing perameters should be set up such that they occur in a certain order.   Failure to do this can cause problems, mainly when programs overlap.   As decisions are made as to whether a pass will run or not at the time that MSPE runs, this should be the first event to run.   Only the Popup Time should be longer than the *Time before pass to run MSPE*.

Minimum elevation to run pass

Passes whose maximum elevation is less than this value will not be run.

Send message before pass

Checking this box will enable a pop up message box to appear before a pass advising that a pass is approaching.

Time before pass to send message

If you have enabled the above option, then this option sets the time before a pass that the message box will appear.

Time before pass to start MSPE

This is the number of minutes before the AOS time that *MSPE* will be started.

Minimum duration to run pass

Passes that are shorter than this time will not be run.

Time after pass to close MSPE

This is the number of minutes after LOS that *MSPE* will be closed.   Of course *MSPE* may have already terminated due to either a manual exit or not having received any data for a preset time.

Timezone

This is the default timezone that the *GSC* on screen clock will display the time in and also the timezone that the schedule list displays the time in.

GSC uses the DOS TZ variable to work out the difference between UTC and your local time.   Ensure this variable is set correctly or you may have a problem with time.   For more information on the TZ variable, see your DOS manual.

WiSP Program Directory

This is the directory where all the WiSP system files are located.   This includes the EXE files and the equation files.

Calc. Speed

You can specify the speed at which *GSC* calculates passes.   The lower the value, the faster *GSC* will calculate the pass information.   On some slower computers too low a value may slow your machine down when *GSC* is calculating pass information.

Call DOS programs as

You can specify how you want to call the DOS programs that the system uses.   Generally you should always run a DOS program from within a PIF file, as this allows you more control over how the program will be run in the multitasking environment.   The PIF files must be located in the WiSP Directory.   If you are running under OS-2, you will want to use the EXE option as OS-2 does not know about PIF files.   In this case, you will need to have the EXE files located in the WiSP Directory.

Update Satellite Database

GSC maintains a set of Keplerian elements for satellites that it uses.   This is required for the scheduling and tracking functions.

The satellite database length is (currently) 50 satellites.   This allows enough room to store all Amateur satellites and other satellites of interest, eg weather satellites.

To update the database, select the filename of the Keplerian element file, and select the filetype (NASA/AMSAT keps file).

Normally you will want the element set updated, but occasionally you may need to rewrite the database. This option will remove all satellites from the database before loading the data from the keps file you select.

Ensure that any unwanted text in the file is removed before updating the database.   Most of the keplerian files that are distributed by <u>AMSAT</u> have formatting and explanatory text at the top of the file and sometimes during the file as well.   This is especially necessary for NASA files.

When new keplerian element sets are received from the satellite, they will automatically update the database.   Presently this is only available for AMSAT keps files as they are less susceptible to errors with extra text in the file.

Manually Run a Pass

From the *GSC* Tracking menu, you can manually run a satellite pass.   This will run a pass just as though it was a calculated pass.   In fact, it creates a listing in the schedule list for a half hour pass.   It has priority 0, so it can not be over ridden by any other satellite.   When you exit *MSPE*, the manual pass will be deleted from the schedule list.

Select the satellite you wish to run from those available in the listbox.

File Housekeeping

The File Housekeeping option allows you to delete files that may not be required by the system anymore. Old PFH (Directory) files can be deleted leaving only a certain number of files left in your satellite directory.   Old uncompleted downloads, completed uploads, and completed downloads (DLX), can be deleted if they are older than a certain age.

The selections you make will be saved for you for next time you use File Housekeeping.

Event Notification

A pop-up window will appear before a satellite pass.   The amount of time before the pass that the pop-up will appear can be set with the GSC General Setup screen.   The pop-up displays information about the next pass.

If you have enabled the system sounds, they will also sound at the same time.

The buttons on the pop-up window perform the following functions

The pass will proceed normally.   If you have Pass Checking turned on for the particular satellite, this will decide if the pass will run or not.

The pass will be canceled and the next pass for the satellite will be calculated.

The pass will run.   If you have Pass Checking turned on for the particular satellite, it will not try and stop the pass.

Set System Time

Option not currently enabled.

This screen allows you to set the system time.   This sets the hardware real time clock and the DOS clock.   The DOS clock is updated from the hardware real time clock every hour by *GSC*.

GSC uses the DOS TZ variable to work out the difference between UTC and your local time.   Ensure this variable is set correctly or you may have a problem with time.   For more information on the TZ variable, see your DOS manual.

View MSPE Logs

Here you can view the *MSPE.LOG* file from each satellite.   The pass data is displayed on a line, with one pass per line.

Select the satellite whose log you wish to view, using the **Satellite** listbox.   Log entries will then be displayed in the main listbox.

If there are upload entries in the log file, the <u>Uploads</u> button will be enabled.

To erase the log file and start fresh, press the **Clear** button.

Running ProcMail

This will process all DL files in the directory for the satellite that you select in the listbox.

Any errors that occur will be able to be viewed with the <u>View ProcMail Errors</u> option under the <u>H</u>ousekeeping menu

View Upload Logs

The upload logging screen displays entries from the *MSPE.LOG* file for uploads.   Each upload action is displayed on an individual line.

The filename is displayed first on the line followed by the number of bytes actually uploaded while connected to the satellite, and the time in which it took to upload them.   The average bytes per second is displayed next, followed by a short comment on the transfer.

The upload time is actually slightly longer than that actually taken to upload the file.   This is because when the satellite receives the file, it checks the file to ensure it has received it correctly.   This can take a few seconds to perform.   For short files this few seconds is a large percentage of the upload time so the upload time, and hence the CPS, is adversely affected.   For larger files it has little effect.

Upload speed is affected by the number of stations on the satellite, both connected to the BBS (uploading), and those with download requests.   This is because if the satellite must transmit data to fulfill requests from other stations, it cannot immediately acknowledge frames that you are uploading.   If the satellite is lightly loaded, it will acknowledge your frames immediately and upload throughput will be faster.

View Upload File Status

This screen gives you a list of all OUT, PUL, UL, and ULX files in a satellite directory.

Press this button to delete the file you have highlighted in the listbox.

Press this button to <u>copy</u> the highlighted file to another satellite.

Copying an upload file

From the View Upload File Status screen, you can highlight a file in the listbox, and press the Copy button.   This will enable another combobox with a list of satellites.   You can select a satellite from the list, and press the OK button.   This file will be copied to the satellite directory of the selected satellite.

If the file is not an OUT file, its extension will be changed to .OUT.   In this manner it is also possible to copy a ULX file back to an OUT file be selecting the same satellite name in both boxes.

View ProcMail Errors

When <u>ProcMail</u> processes files it does so automatically and does not alert the use to any problems encountered during the process.   It does however keep an error log that can be viewed from within <u>GSC</u>. The display function is located under the Housekeeping menu option.

The satellite, filenumber, and reason for the error are displayed.   You can scroll through the list if there are more than one page of errors.

There are times when an error will be recorded, but the file will still be processed.   This will occur mainly when the error is a Body Checksum Error or Header Checksum Error.

   The Clear button will clear the list and delete the *ProcMail* error log from the disk.   This should only be complete after you have checked out all the errors in the list.

   The Process button will allow you to manually process a message by running <u>ProcMsg</u>. Thus you can make the decisions required in the processing task and possibly allow the message to be recovered.   This will mainly happen when the station sending the message has entered incorrect data into the file header.

Edit Keplerian Database

You can manually edit the satellite elements in the satellite database.   This is not normally necessary, but may be required if you find the element set you are using has an incorrect field in it, or you find the satellite AOS/LOS times are slightly out.

<Presently this data is not saved>

Select Displayed Timezone

The timezone that *GSC* displays the time in is switchable between local time and UTC.   There are two ways to switch the timezone.   One way is the GSC General Setup screen, the other is to double click the left mouse button when the mouse pointer is over the time display.   It is then a simple matter of selecting which timezone you want displayed.

Enable Rotator

GSC reads the TrakBox satellite database into memory and displays a listbox with all the available satellites that you can track.   Select the satellite you want by either double clicking on top of the satellite name, or selecting the satellite name and pressing <u>OK</u>.

The satellite will be selected for tracking and the rotator will be enabled.

Tracking

The Tracking screen allows you to select satellites that you want to track in real time.   These satellites are displayed in the lower portion of the main screen.

The tracking interval is not fast, but it is sufficient to allow you to accurately follow the satellite (About one calculation per satellite every 10 seconds).

The selection you make will be saved and automatically loaded next time you start *GSC*.

Edit Observer Database

<All the observer database functions are not complete>

You can add, delete or edit cities and stations from the Observer Database.

Change Observers

<All the observer database functions are not complete>

You can select up to five observers.   Azimuth/Elevation values will be calculated for all the observers that you select.

You can also add an observer by pointing on the map with the mouse cursor, and double clicking the left mouse button.   This will add an observer to the end of the list for the Lat/Long that the mouse is pointing to.   If there are already five observers in the list, the last observer will be overwritten with the new data. Note: The Lat/Long that is calculated from the mouse pointer is not exact.

Update Rotator Database

This option is used to update the TrakBox satellite database.

IT IS NOT CURRENTLY USABLE.

Setup Sounds

WiSP can produce audible alerts when certain system events occur.   These alerts can take the form of either beeps from the PC loudspeaker, or, if your system is fitted with a sound card, it can play WAV files. You can select which sounds you want using the check boxes on the left of the window, and the type using the radio buttons at the top of the window.
If you are using WAV files, you need to enter the name of the WAV file that you wish to run for each event in the edit box next to the selection boxes.

Alerts can be sounded for the following events -:

Errors

Whenever an error occurs.   This will normally be associated with a message box advising of the nature of the message.

Pre Pass

If you have the pre pass pop-up enabled in <u>GSC general Setup</u>, this sound will be associated with that event.

New Mail

Whenever *WiSP* receives a new message addressed to your station, it will sound this alert when it pops up *MsgViewer*.   This will only happen if you have 'Allow reading of personal messages' checked in <u>ProcMail Setup</u>.

Setup Events

You can set the system up to run programs at certain times.   A program can be set up to run at various intervals during a day, or can be set up to run before or after a satellite pass.

The **Activate** box must be checked for the event to work.

If you check the **Run Minimsed** box, the application will run as an icon.   This should be the normal mode, as you are not normally interested in the actual program since it is providing an automatic function.

Notes for setting up events

You an run DOS programs or Windows programs.   All programs should terminate themselves.   If you run a DOS program, you should use a PIF file to allow the multitasking ratio and windowing to be set up. *Background* execution should be checked as should *Windowed*.   Under *Advanced* you should set *Background Priority* to a reasonably small number to allow foreground tasks to continue running smoothly. You may want to set other options as well, but these are the main ones (apart from the program name etc.).

The Time field will have different meanings depending on what type of event you are running
Once per day events	The time is the time of day that you want to run the event. The Sec/Min fields perform no function. eg. If you have 120 in the Time field, the event will run at 0120 UTC.
Before pass events.	The time is the time before a pass to run the event.
After pass events.	The time is the time after the completion of a pass that the event will run.
Regular events.	The time is the repetitive duration to run the event.

If you have Pass Checking enabled for any satellites, and have Before pass events set up, the event will still run even if the pass is aborted, if the event time is programmed before the Pass Run time.

Housekeeping

The **File Cleanup** option under the *Associate With* group is a special predefined event.   If you select it, then you must also select either *Every Day* or *Regularly* in the *Run Details* group.   This event will automatically run the **Housekeeping | File Housekeeping** menu option with the options already selected in that window.   It will perform the function on all satellites.   For information on setting up the Housekeeping, refer to the File Housekeeping help.

GSC Graphic Tracking

The graphic map screen displays a map of the world and plots the satellite position and its associated circle of visibility.

If you **double click the left mouse button** over the map screen, it will place an observer in the observer for this location.

If you **hold the right mouse button** over the map, it will give you the local time in the place that the mouse cursor points to.   Note that this is an approximation only. It could be an hour or so out, especially if daylight time is in effect.

Command keys valid while in the Map Screen

F   Will cause the display to fast foward.   The time will increment at a rate of 100th of the orbital period.   You can change the direction of the stepping using the B key.   Pressing the F key again will return to real time tracking.
B   Will change the direction of the stepping while in Fast mode.
P   Will PAUSE the display.   You can also use the SPACE bar.

Microsat Protocol Engine

MSPE (Microsat Protocol Engine) is used for simultaneous uploading and downloading of files and directories to and from a Microsatellite using the FTL0 file transfer protocol.

Help is available on the following topics

General Overview

General Setup
TNC Setup
Station Setup
Satellite Setup

MSPE Auto Select Equations

MSPE General Program Overview

MSPE is short for MicroSat Protocol Engine.   It is the heart of the Microsat groundstation software, and provides the uploading and downloading functions.

MSPE uses its own inbuilt TNC software, and requires a KISS TNC to operate.   This approach is necessary to allow the software   to operate in both the connected mode (used for uploading) and also the broadcast mode.   It does also have some advantages
The software becomes just about TNC independent.
The software knows more about what is happening at the AX25 transfer level, and is able to supply better information to the user.

Before *MSPE* can be used, you must configure the satellite setup and station setup.   Other setup options should be checked and configured to allow your station to work the way you wish.

MSPE will automatically select files for downloading using equations that are in an equation file.   For more information on this, refer to <u>MSPE Equation Files</u>.

MSPE has several methods of increasing the efficiency on the downlink and thus increasing the number of stations able to access the satellites.   These methods include -:
1. Random hole requests.   *MSPE* offers some randomness in the way it requests hole fills.   Last hole first, first hole first, or largest hole first requests should mean that if there are several stations all downloading a large file, then chances are that they will request different parts of the file.   Thus they will all benifit from each others requests.
2. End of queue requests.   When you reach the end of the queue, *MSPE* can retransmit a hole list.   This refreshes the hole list that the satellite holds for you, and takes into account any holes that may have been filled from other stations requests.   The random hole requests also benefits from this.
3. Requested file checking.   *MSPE* makes some basic checks to try and decide if another station is currently downloading the file you want.   If that is the case, then *MSPE* will look for another file with the same download priority that is not being requested.   If no other files with the same priority are found then the oldest file with that priority will be requested.
4. File completion detection.   *MSPE* will detect when the file (or Directory) that you are filling is complete, even if you remain in the queue.   If you fill the file through other stations requests, *MSPE* will request a new file without waiting for your call to leave the queue.
5. Files have priority over directory.   When *MSPE* is requesting he directory, if it receives a directory entry for a file that your station requires, *MSPE* will instantly request that file, even though you are still in the queue.   You will continue to fill the directory through the requests from other stations.

Automatic selection of download file can be overridden using the manual fill and selection the Auto Override box.

File uploading is prioritised to allow smaller files to be uploaded first.   There are however some situations when this will be overridden.   See <u>File Uploading</u> for more information.

MSPE General Setup

The following general options are available to setup *MSPE.*

Auto save after *X* min.

This sets the length of time after *MSPE* stops receiving data, that it will automatically exit.   Set to 0 if you wish to disable this feature.
Note also that *MSPE* can also be closed by *GSC* at the end of pass time.   This option is set up with the GSC General Setup.

Processing thresh *X* b

MSPE can automatically process messages as they are received during a pass.   This option sets the maximum size of files (in bytes) that will be processed during the pass.   This should be kept reasonably small.   Larger files are usually binary files and therefore aren't normally required to be processed during a pass anyway.   The larger this perameter is set the more files will be processed, and the more computer time will be spent processing files.   If your computer is not powerful enough, you may end up with overrun errors on the Com port.   This can be viewed with the Information option under the Help menu.

Satellite Change

MSPE can automatically change satellite depending on what it receives on the downlink.   This option is not really necessary if you are running the system with *GSC* as it will schedule the required passes and start *MSPE* with the correct satellite loaded.   The options are as follows -:

Auto   *MSPE* will automatically change satellite after it has received three frames from the same satellite.   This will change satellite just as though you had performed the change manually.
Manual   *MSPE* will not automatically change satellite.   You must change manually.
Ask First   Once *MSPE* has received three frames from the same satellite, it will ask you if you want to change satellite.   Select OK to perform the change.

Uploading

MSPE will normally upload files automatically when the satellite BBS is *Open*.   If you want to stop uploading files, select **Disabled**.   Normally you will have uploading **Enabled**.

Info

MSPE will print various types of data on the screen during a pass.   You can disable printing by deselecting any of the items.   If you have a slow machine, you may get a small speed advantage by deselecting some or all of the items.

Print directory entries   As directory entries are received from the satellite, they will be printed in the info area.
Files heard   When a new file is heard on the downlink, this information will be printed in the info area.
Status Messages   Various system status messages will be printed in the info area.   This includes connect messages etc.
Print headers   As each frame is received from the satellite, you can print the header in the Text area.

Print text frames   Any frames received from the satellite that are text frames will be printed in the Text area.

<u>General</u>

Maximise upload pop up   When file uploads commence, a status window will appear if you have this option ticked.   If you don't tick this option, and you want to view the status window, double click the left mouse button when the mouse cursor is over the U in the bottom right of the main screen.   The U will only be present when an upload is taking place and you don't have the status window active.

Log KISS frames   This is the default status of KISS logging.   If you want to log all data received from the satellite by default, check this option. You can change the option during a pass using the <u>F</u>ile/Log KISS menu option.   KISS logging will capture data to a file with the name of the date and extension of KSS.

Log Telemetry frames   This is the default status of Telemetry logging.   If you want to log all telemetry received from the satellite by default, check this option.   You can change the option during a pass using the <u>F</u>ile/Log Telemetry menu option.   Telemetry logging will capture data to a file with the name of the date and extension of TLM.

Load View-Dir at start of pass   This option will load *View-Dir* at the start of a pass.   This option is not recommended for unattended stations but may be useful for attended operation.

Automatically select U/L freq.   *MSPE* can attempt to automatically select a clear uplink frequency before you start uploading a file.

Grab all heard files   With this box checked, MSPE will grab any files it has heard on the downlink. If you turn this off, you will only receive files that you have selected.   Turning this on is more efficient, but will use a lot more disk space.

Block ALL BBS files   This option is specifically for BBS Gateway stations, but user stations may also wish to use it.   With the option selected (ticked), you will only download BBS files (filetypes 1 and 2) if they are already present in your download files list.   This means that you will only download BBS file when you have requested them.

AOS Upload delay   This is the number of Open frames that the satellite sends before *MSPE* will attempt to connect to the satellite.   This is to allow the satellite to gain sufficient elevation, and thus signal strength, before uploads commence.

MSPE Manual Fill

Select either *Fill File* or *Fill Directory*.   With *Fill File* you must enter the file number of the file you wish to fill.   You can also bring down the listbox and select a filenumber form the list of files that your system has selected for automatic download.

The fill request will be sent immediately when you press the OK button.

If you tick the **Auto Override** box, MSPE will continue to fill this file until it is complete.

Press Cancel to ignore the action.

MSPE Main Screen

The *MSPE* Main screen displays information on the status of downloads and uploads during a pass, as well as information received from the satellite.

The screen is broken down into areas.   Each area displays different information.

File Download Progress.

The top left of the screen displays the progress of files being downloaded.   There is one line per file and up to 10 files will be displayed (the actual amount depends on the size of your *MSPE* window).   This line is displayed as follows -:

<FILENUMBER>   <HOLES>   <PERCENT COMPLETE>   <FILESIZE>

Double clicking in a file status box when it is displaying information will pop up a <u>file information screen</u>.

Information Display

The top right of the screen is the information area.   This window scrolls program information and status.

Text Display

Text transmissions that are received by *MSPE* are scrolled in the area below the Download File and Information displays.

Status Display

Program and satellite status is displayed at the very bottom of the window.

DIR Old	Auto Idle	0%	T:0	D:0	F:0
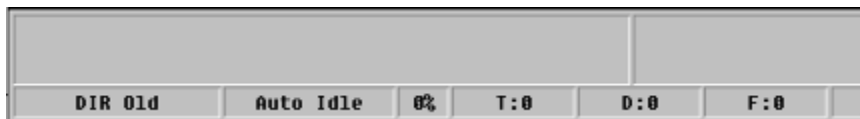
The top line -:
    The top left box displays the PBLIST frame sent from the satellite.
    The top right box displays the BBS Status frame sent from the satellite.

The bottom line -:
    The first box displays the directory status.
    The second box displays the Auto status.
    The third box displays the current received percent efficiency.
    The fourth box displays the total number of bytes received from the satellite.
    The fifth box displays the number of directory bytes received from the satellite.
    The sixth box displays the number of bytes received in broadcast files.
    The last box displays a 'U' when an upload is in progress.

Double clicking in the upload status box when it displays a 'U' will pop up the upload file information window.

MSPE TNC Setup

Since *MSPE* uses its own internal TNC code, perameters that you have your TNC set up with will not work with *MSPE*, so you must set up *MSPE* to act like a TNC.

It has been noted with the DSP-12 that it will not send a packet if the TNC's PACLEN is set to less than 255.   Therefore, ensure that the TNC PACLEN is set to 255 or greater.   Users of other TNC's should also keep this in mind if they are having upload problems.
Note that although the DSP-12 manual sais that this value has no affect in KISS mode, this is incorrect.
Also, the DSP-12 manual incorrectly states that the maximum value for PACLEN is 255.

Retry Time   This is the amount of time that *MSPE* will wait between sending successive retries.   If the maximum number of retries is exceeded then *MSPE* will disconnect the link.

Maximum retries   This is the maximum number of retries that *MSPE* will make without an acknowledgment from the satellite, before it will disconnect the connection.

MaxFrame   This is the maximum number of frames that *MSPE* can transmit before it requires an acknowledgment from the satellite.   It can be set between 1 and 7. A good compromise for this setting is 3 or 4.

TX Delay   This is the time that the TNC will delay sending of data after the start of transmissions.   This should be long enough to allow the satellite to lock on to your signal before you transmit data to it.   Also, your transmitter may need time to stabilise after the PTT is actuated.   For most modern radios, this should be in the order of 150 to 200ms.

TX Tail   This is the time that the TNC will continue to hold the PTT line on after data has stopped being transmitted.   This should be kept to around 30ms.

Packet Length   This is the number of data bytes transmitted in each packet.   It can not be set above 255 bytes due to limitations in the AX-25 protocol.

Note: some TNC's may not support all of these options.

MSPE COM Port Setup

This screen allows you to set up the communications port you are using with your TNC.

Port

You can select from COM1 to COM4.   The port addresses and interrupts that are used can be set up using Control Panel's Ports option.

Speed

This is the speed that *MSPE* communicates with your TNC.   It does not effect the communications speed with the satellite.

Stop Bits

The number of stop bits that your modem is set to should be selected here.   Normally this is set to 1.

Buffers

The size of the Com port buffers can be selected up to a maximum size of 64k.

TX Buffer Size	There is no need for this to be set very high. 2048 bytes should be perfectly adequate. It must be set to a value higher than MaxFrame x PacLen bytes. If it is set to a value lower than this, your uplink speed will be compromised and you could loose some packets.
RX Buffer Size	The receive buffer may need to be changed to suit your computer. It may be necessary to set this to a reasonably large value. The reason for this is that when programs such as *ProcMail* are running, or *View-Dir* is loading, *MSPE* can not process data that is being received from the satellite. There must be enough space in the buffer to allow a few seconds worth of data to be accumulated. *MSPE* will process all the data as soon as it has control back. I have this value set to 32767. This is the maximum size possible.

Temporary Settings

The selections you make in this window will only affect the current session.   They will not be saved to disk unless you use one of the main setup windows.

Uploading Enabled

This option will enable/disable all file uploads until they are re-enabled.

Broadcast Requests Enabled

This will enable/disable any requests to the satellite to start broadcasting, or hole fill, a file.

Auto Upload Selection Enabled

This will enable/disable the auto uplink selection feature.

Uplink Selection

You can check one of the four radio buttons to force the uplink to the desired frequency.

Broadcast Options

These options control the way *MSPE* handles broadcast requests.   They can help make the satellite more efficient by limiting the number of stations requesting the directory, and also (possibly) limiting the number of requests for the same part of the file.   *MSPE* uses a random method for deciding which holes it will request when requesting a file, and this should increase download speed and efficiency. For example, with a large file with a few holes required, one station may request fills of the beginning of the file, while another station may request fill of the end of the file (this is done automatically, and is random).

Send Auto Fill Requests

Checking this option will enable the automatic filling of files.   This should normally be checked.

Customisation

Don't Interrupt Dir

Selecting this option will allow the directory to be completely filled before any requests for files are made.

Interrupt when not in queue

This option will interrupt the directory fill, and download any requested files, when you are no longer in the PB queue.   Therefore, even if your directory is not up to date, but you have files to download, the files will be requested before resuming the directory fill.

Interrupt Dir for MY files

With this option, if you are filling the directory and a message addressed to your station is received in the directory, that file will be requested.   Once all of your personal mail has been received, *MSPE* will continue filling other requested files before resuming the directory fill.

Interrupt Dir for ANY file

With this option, if you are filling the directory and a message is received in the directory that is selected to automatically download, that file will be requested.   *MSPE* will continue filling other requested files before resuming the directory fill.

Action when at tail of queue

MSPE can request a new hole fill when you are at the end of the queue.   This should increase the speed of downloads because if some of your holes have been filled as a result of other stations requests, the satellite will not have to transmit the parts that you have received.

One possibility however is that your request may be beaten to the satellite by another stations request. This will cause you to be pushed back by one position in the queue.   You won't be removed though.

You will not miss out on a position in the queue.   If you are already in the queue, you can't be removed.

Randomly send request

On average, every four or five times that your call gets to the tail of the queue, a new request will be sent to update the hole list that the satellite is holding for your requests.   This is a reasonably sociable option to select because you will keep your hole list reasonably well up to date, and you will also exit from the queue and allow others to have a go (of course when you exit from the queue, you have just as much chance to get back in as anyone else).   Over less populated areas, where the queue normally doesn't get full, the Send new request option is probably better.

Nothing

This option will allow you to just continue in the queue until you are removed by the satellite in the normal way.   No special action will be taken when your call gets to the tail of the queue.

Send new request

Every time that your call gets to the end of the queue, a new request will be sent.   While this will probably result in the most efficient downloading, it may also be unsociable in heavily populated areas where the queue is often full.   This is because you will not normally exit the queue until a file is complete.

MSPE Select Satellite

Select the satellite that you wish to receive.   *MSPE* will set up the callsigns etc. that you have entered in the Satellite Setup screen.

Upload File Information

The upload file information window gives you information on the progress of your uploads.   It shows how many bytes have been uploaded, how many bytes still to be uploaded, the average characters per second that the upload is progressing at, and the expected time remaining to complete the upload if the average CPS remains the same.

If you minimise this screen, a U will appear in the bottom right corner of the MSPE Main Screen.   To restore the screen after it has been minimised, double click the left mouse button when the mouse pointer is over the U.

It is possible to make the default status of this window minimised.   In this case a U will appear in the bottom right corner of the MSPE Main Screen when an upload starts.   To enable this option see the MSPE General Setup.

   Stop the upload.   If you press this button, the upload will be immediately terminated.   Uploading will be disabled for a short period (Up to 1 minute).

   Show this help page.

See Also

File Uploading

File Uploading

MSPE uploads file while it continues to download files, request broadcasts etc.

The order in which files are uploaded is prioritised.   The priority is something like this....

PUL files older than 2 days
PUL files less than 20KB
OUT files older than 2 days
The smallest PUL or OUT file

This order should ensure that small files that are sent in between passes where a large file is being uploaded, will be sent before the continuation of the partially uploaded file (PUL).   If however the PUL is getting old, it has higher priority.   This is to try and get that file up to the satellite before the satellite deletes the file.

Download File Information

This gives you information on the file being download.   To get this information, double click the left button of your mouse when the pointer is over the file you would like information on.

The current status of the file will be displayed.   You can change the status by checking the Status radio buttons.   If you check the Never option, the file will be removed from the download list in the *MSPE* main screen.

If you have *View-Dir* running, information may be provided on the Source, Destination, and Title of the file as well.   *View-Dir* may also print the filesize.   This means that event if *MSPE* has not yet received the filesize, you may be able to view it if *View-Dir* knows it.

You can also mark the status of the file using the Status radio buttons.

If you check the Send immediate fill request box, *MSPE* will automatically request a hole fill of the file.

Press the OK button to allow any status change you have made to take effect.

Press the Cancel button to cancel any changes you have made.

MSPE Auto Select Equations

The *MSPE* Auto Select Equations allow you to specify how a file will be automatically processed when its directory broadcast is received.

Note that you do not need to specify your callsign in the equations.   Any messages to your call will automatically be downloaded with the highest priority.

There are six **equations** that can be specified.   They are listed in order of decreasing priority.

PRIORITY   Files that pass the equation will be marked for priority automatic download.

AUTO   Files that pass the equation will be marked for automatic download.

AUTO1   Files that pass the equation will be marked for automatic download.

AUTO2   Files that pass the equation will be marked for automatic download.

AUTO3   Files that pass the equation will be marked for automatic download.

NEVER   Files that pass the equation will be marked and never downloaded.

The equation file is called *MSPE.EQN* and must be located in the WiSP Directory.

See Equation Format for information on writing equation files.

Equation Format

All text in the equation file is case insensitive and tabs, spaces, carriage returns etc. can be inserted if you wish to make the file more readable.

At this stage, you MUST HAVE A SPACE SEPARATING EACH FUNCTION.   This is a bug that I will fix at a later date.

Each equation must follow the following format.

```
[EQUATION NAME]
{
EQUATION
}
```

EQUATION NAME is one of the three names specified above.

Each equation must be made up with a keyword, an operator, and an operand.

Valid **keywords** are -:

Name	Type	Explanation
destination	Text	The text in the TO field
source	Text	The text in the FROM field
title	Text	The text in the TITLE field
keywords	Text	The text in the KEYWORDS field
filesize	Number	The filesize of the file
filetype	Number	The filetype of the file

Two additional keywords are available in *View-Dir*.   These are -:

percent	Number	The percentage of the file that has been downloaded.
status	Text	This is the current status of the file. It can be defined any of the following values. Case is insensitive and no quotation marks are to be placed around the words. Valid values are -:

downloaded	The file has been downloaded
auto	The file is marked for auto
auto1	The file is marked for auto1
auto2	The file is marked for auto2
auto3	The file is marked for auto3
never	The file is marked to never download
priority	The file is marked for priority download
mine	The file is addressed to your station

The use of this keyword in *MSPE* will cause an error.

Operators are the operation that is performed.   Some operators are only permitted with specific keyword types.

Valid **operators** are

Name	Types	Explanation
=	Text, Number	Equals
!=	Text, Number	Not equal
<	Number	Less than

>	Number	Greater than

Text operands must be placed between double quotes ie. ".
Numerical operands must be in decimal notation.

Each equation can be linked to another equation with a logical operator.
Valid **logical operators** are -:

Name	Explanation
&	Logical AND. The resultant answer will be True only if the answer of both equations is True.
|	Logical OR. The resultant answer will be True if the answer from either of the equations is True.

Brackets can be placed in the equation to ensure that the equation performs the function that is required.
A maximum of four levels of brackets can be used at one time.
Do not use brackets unless they are required.   Over use of brackets will require extra processing time and consume more memory.

EXAMPLE

```
[auto]
{
(destination = "ALL" & filesize < 25000) |
title = "dsp"
}

[priority]
{
title = "DX"
}

[never]
{
filetype = 2
}
```

View Directory

From View Directory you can view the satellite file directory, mark a files auto status, read messages and reply to messages.   Message searching and file deletion are also available.

Binary files can be run directly from *View-Dir* if there is an association for the file extension already setup. Associations can be set up in *File Manager* using the File/Associate... menu option.   This will work for most files that have an association.   However, if you have ProcMail set up to decompress files, then this feature will not work and you must run the programs from *File Manager* or DOS.

View Directory Main Screen

The *View-Dir* main screen displays the satellite directory.   At the top of the screen is a toolbar that provides easy access to commonly used functions.   These functions are also available via the menu.

Mouse Functions

To **select a file**, click the left mouse button while the mouse cursor is over the file you want to select.

To **view a file**, double click the left mouse button while the mouse cursor is over the file you want to view.

To **view file information**, click the right mouse button.   This will show information on the file that is currently selected, not the file that is under the mouse cursor.

To **reply to the current message**, click the middle mouse button.   This will reply to the file that is currently selected, not the file that is under the mouse cursor.

Message Status

The status of a message is displayed as a single character under the **S** column.   The characters represent the following

M	Mine	This is the highest priority message and will be downloaded before any other files.
P	Priority	
A	Auto Download	
g	Grab	
D	Downloaded	
N	Never Download	

Toolbar Button Explanation

P	Mark the message for PRIORITY download.
A	Mark the message for AUTO download.
1	Mark the message for AUTO1 download.
	Mark the message for AUTO2 download.
3	Mark the message for AUTO3 download.
G	Mark the message for GRAB.
N	Mark the message for NEVER download.
✎	Write a message. This will run MSGMAKER.
📖	Read the current message.

Reply to the current message.   This will run <u>MSGMAKER</u>.

Save the current message to disk.

Delete the current message and any associated ACT and HOL files.

Search for messages.

Display HELP.

View-Directory Equations

The *View-Dir* Select Equations allow you to specify predefined search routines for viewing the directory.

The equation file is called *VIEW-DIR.EQN* and must be located in the WiSP Directory.

You can have up to 20 equations in the equation file.

See Equation Format for information on writing equation files.

View Directory Setup

The following View-Dir set up options are available -:

Maximum PFH files to load   *View-Dir* will stop loading directory entries into memory when it has loaded messages from *X* number of PFH files. Don't set this too high as it will increase the time required to load the program. This should be set in conjunction with Maximum messages.

Maximum messages to load   *View-Dir* will stop loading messages into memory when it has loaded *X* number of messages. Again, don't set this too high as it will increase program start time.

Mark files NEVER after deleting   When you delete a file, you can have *View-Dir* mark the file to Never download. This is especially useful if you are deleting half completed files, as the ACT and HOL files are deleted, and the file will not be downloaded again.

Load BBS messages into View-Dir   You can elect not to load BBS messages (filetypes 1 and 2) into *View-Dir*. This will decrease the number of files loaded on some satellites, and thus lower the memory used. Files address to your station will still be loaded regardless of whether they are BBS files or not.

Message Search

The message search function will search through the directory and display messages that meet **all** the criteria entered in the data entry boxes.   Therefore, the more information you enter, the less entries will be found.

With string searches (Destination, Source, Title and Keywords), text found anywhere in the field that matches that entered in input box, will be classified as a match.   String searches are also case insensitive.
For example, "ALL", will match "Allowance".

Select Satellite

Select the satellite you wish to change to by either double clicking on the satellite name, or selecting the satellite name and pressing <u>OK</u>.

Find Message

If you are looking for a specific message number, the Find Message function is used.   Enter the message number (in Hexadecimal) into the input box and select <u>OK</u>.

If the message is currently selected for viewing then it will be displayed at the top of the page.   If it is not selected then the information screen will pop up and display the information on the desired message.

Station Setup

The **Station perameters** are required by most of the programs and must be set properly for the system to work correctly.

The **Callsign** must be set to you amateur callsign.   It will be used in all programs to identify messages addressed to you station and send messages.

The **Station coordinates** are required by *GSC* so that the scheduling and tracking functions will work properly for your stations position.   They should be entered in as decimal numbers and not degrees, minutes and seconds.

You should set your **TNC type** to match your TNC.   If your TNC is not on the list, select TNC-2.   This should work for most TNC's.   The purpose of this selection is just to enable the additional features of some TNC's such as Modem Changing for DSP machines.

Satellite Setup

Satellites must be fully set up before they can be used by the system.   Names, callsigns and directories must all be correctly defined or the system will not work with a particular satellite.

Some of these options can not be changed from within *MSPE* if *GSC* is running.   This is to stop *GSC* missing out on changes to the information that it requires to schedule satellites successfully.   As a general rule, it is best to to all setting up from *GSC*.

Options to be set up are

Name   This is the name of the satellite as it will appear in all the selection menus.   This name must be spelt **exactly** the same as it is spelt in the NASA/AMSAT element sets or *GSC* will not be able to generate tracking information.

Broadcast Callsign   This is the callsign that the satellite uses for transmitting broadcast packets.

BBS Callsign   This is the callsign that the system uses to connect to the satellite when uploading files.

Priority   The priority number is used by GSC to schedule satellites.   The lower the number the higher the priority.

Use satellite time to update clock   If this option is checked, your computers time will be updated from the satellite clock.   This option should only be selected for satellites that have their clock maintained accurately.   Presently this is not used.

Use pass checking with GSC   If this option is checked each satellite pass will be checked before it is run to ensure that the pass is in fact required.   A pass will only be run if there are files to be uploaded or downloaded, or the directory is older than a certain age.

Pass check time   This is the maximum age (in minutes) that the directory can be before the pass will be run.

        Delete the currently selected satellite.

        Clear all the fields ready for new entries to be entered.

        Pressing the Directories button will present you with the Directories Window screen.

        Pressing the Info button will present you with the Satellite Information screen.   Here you can enter all the uplink and downlink frequencies into the system for each satellite.

Satellite Directory Setup

The directories that the system uses must be specified before running the system.   If you don't set **ALL** up the required directories you will end up with files in funny places.   The system will not know where to place files and will also not know where to find them when it wants them back.

If there is a type of file that you don't want (eg. BBS files), you can specify a directory for every satellite that holds unwanted files.   All you then need to do is periodically delete all files in this directory.

When entering directory names, specify **full path names**.   This will stop any confusion that may arise. Also, all directories should be on the same disk drive as some functions will not move files between drives.

Directories can be specified with or without a trailing \.   If your directory names end with a \ it will be removed by WiSP.

Directories are required for the following.

Satellite Directory	This is the directory where all your active satellite files will be stored.
Message Directory	All processed messages (filetype 0) will be stored in this directory.
My Messages Directory	All messages (any filetype) addressed to your station will be stored in this directory.
Binary Directory	All binary files (filetypes 6,7,12,13) will be stored in this directory after processing.
Keps Directory	Any keplerian element files (filetypes 7,8) are stored in this directory after processing.
Image Directory	Any image files (filetypes 14,15,16) are stored in this directory.
Log File Directory	Log files are stored in this directory.
Unknown Directory	File with an unknown filetype (filetype 255) are stored in this directory.
DLX Directory	Once files have been processed, they are renamed to a DLX extension, and moved into this directory.
BBS Directory	Any BBS files (filetype 1,2) are placed in this directory after processing.

A recommended directory structure is:
```
\WISP     \KO-23   \BBS
                   \BIN
                   \DLX
                   \IMAGES
                   \KEPS
                   \LOGS
                   \MSGS
                   \MYMSGS
                   \UNKNOWN
          \KO-25   \BBS
                   \BIN
                   .
                   .
                   .
```

For the Keps directory it is allowable to specify the same directory for all satellites.   ProcMail has an option to ensure that only one copy of the keplerian element file is saved in that directory.   This works well for keplerian files because they are generally uploaded to more than on satellite but have the same filename, and the same information.   For further information on this option refer to the ProcMail Setup. Don't do this with other filetypes.

Browse

This screen allows you to look through your disk(s) and select a filename.   This filename will be entered into the filename box when you press <u>OK</u>.

Satellite Information

The satellite information screen allows you to enter all the satellite uplink and downlink frequencies into the system.   These are used in some parts of the system to select a required uplink/downlink frequency, but can also be used as a convenient place to store the information for reference purposes.

The Schedule box is used for satellites that have a transponder schedule that changes with the phase of the satellite.   (Not currently used).

ProcMail - The Mail Processor

Once a message is downloaded it must be processed to remove the Pacsat File Header. *ProcMail* performs this function, and places messages and binary files into an appropriate directory for later viewing.

The directory structure used by *ProcMail* is set up with the <u>Satellite Directory Setup</u> screen.

ProcMail can process messages after a pass is complete, or during a pass as soon as the file has been downloaded. The post-pass processing is run from *GSC*, while the during-the-pass processing is run from *MSPE*. Only files that are smaller than the Processing threshold level will be processed by *MSPE*. This can be set up with the *<u>MSPE</u>* <u>General Setup</u> screen.

Because other programs may be running while *ProcMail* is processing the downloaded mail, it is desirable to not use too much system time. For this reason *ProcMail* performs a small part of the processing function at a time before allowing another program to run. This means that *ProcMail* will take at least 5 seconds to process a file, longer if the file is compressed.

ProcMail produces a log file of any errors it encounters while it is processing files. This log file is viewable in <u>GSC</u> from with the <u>H</u>ousekeeping/<u>View ProcMail Errors</u> menu option

ProcMail Setup

The *ProcMail* setup screen is located under the setup menu in <u>GSC</u>.

ProcMail setup options are -:

Decompress binary files

Check this option if you want binary files decompressed.   If there is more than one file in the archive file, the   decompressed files will remain in their own directory.   This directory is the message number.
If there is only one file is the archive, it will be move back to the normal directory.

Allow reading of personal messages

When *ProcMail* receives a message addressed to your station, it can automatically run <u>MsgView</u> to allow you to read   your mail.

Add a header to received messages

ProcMail can add a simple header to the top of received messages.   This is not normally required as <u>MsgView</u> has its own header.

Process keps to original filename

If you check this box, *ProcMail* will process all keplerian element files into their original filenames.   If the filename already exists, the new file will be deleted.   You can then specify the same Keplerian directory for all satellites, and you will only end up with one copy of each element set.   This option is useful to stop multiple copies of element files ending up in all your directories, since AMSAT uploads the keplerian element files to multiple satellites with the same filename.

Place all BBS files in BBS directory

This option is really only for BBS Satellite Gateway operation.   If the option is checked, then all BBS files received will be placed in the BBS directory.   If you don't check this option, BBS files addressed to your station will be placed in the MYMSGS directory.

Message Viewer

Message Viewer is a very simple program used to view downloaded messages.   It simply displays the messages on the screen, and provides the user with three option buttons.   These buttons allow the user to **Delete** the message, **Reply** to the message, or simply accept the message and exit Message Viewer (**OK**).

You can also print the message using the **Print** button.

The ability to cut text from the file is planned in the near future.

Process Message

ProcMsg allows manual processing of messages.   This is normally only required when <u>ProcMail</u> reports an error while it is trying to process a file.

ProcMsg allows you to make all the decisions that *ProcMail* would normally make.   This allows you to process messages that have incorrect filetype, compression type or invalid filenames.

Rotator Setup

Rotator setup is used to tell *GSC* what type of rotator is connected to your system. *GSC* can then enable the rotator at the beginning of a pass, and disable it after the pass.

Time before pass to run rotors

This time is the number of seconds before AOS when information will be sent to the rotor controller. Ensur that this time is less than the MSPE run time. Failure to do this could result in incorrect tracking under certain circumstances. See GSC General Setup for more information on these timing perameters.

Possible selections are -:

NONE

Select this option if you don't have any rotator attached.

Level 1

Select this option if your rotator driver supports the Windows Level 1 rotator driver. The current version of the KCT driver is Level 1. Later versions will be Level 3.

With Level 1, GSC sends all AZ/EL and Radio Uplink/Downlink information to the driver software. The driver takes care of moving the rotator and tuning the radios, and contains setup screens to set up this system.

Level 3

Select this option if your rotator driver supports the Windows Level 3 rotator driver.

The driver takes care of all tracking and moving the rotator and tuning the radios, and contains setup screens to set up this system. It holds its own keplerian database and undertakes all tracking routines.

TrakBox

This option is a temporary option until the external TrakBox driver has been written. This will not be in the immediate future. Set up the com port with the SETUP option.

SatTrak 4

This option is a temporary option until this driver is written. Set up the Com Port that the SatTrak is connected to by pressing the SETUP button. Ensure that the frequencies are set up correctly in the Satellite Info screen if you want WiSP to set the frequencies for you.

PACSAT Filetypes

Filetypes are used on the Packet Satellites to help with processing the file once it has been received. Incorrect selection of the file will cause problems for the receiving station, and may possibly corrupt the file.

Filetypes currently allocated are

0	ASCII Text message.
2	Bulletin Board Satellite Gateway Files
3	UOSAT whole orbit data
6	MSDOS EXE file
7	MSDOS COM file
8	Keplerian elements - NASA format
9	Keplerian elements - AMSAT format
12	Binary file(s).
13	Multiple files, all ASCII text
14	Picture file - GIF format
15	Picture file - PCX format
16	Picture file - JPG format
17	Confirmation Message
200	Config. files U/L from command stations
201	AL FTL0/PB activity logs
202	BL Broadcast logs
203	WD whole data logs
204	ADCS logs
205	TDE data
206	SCTE data
207	Transputer logs (including EISLOG)
208	SEU logs (ELTLOG)
209	CPE files (UO3)
210	Battery charge logs
211	Image files
212	PL* (SPL Logs)
213	CU* (PCT Log Files)
214	PC* (PCT Command Logs)
215	Quick look image files
221	CCD Image files (KO23)
222	CPE Result files (KO23)
255	All others not fitting in the above

This is the time from when you create the message until when the satellite will delete the file.   Note: The file may be deleted earlier if satellite memory gets low.

PIF Files are Program Information Files.   They are used to provide Windows with information on how a DOS program will want to operate under Windows.   Refer to you Windows Manual for more information. The PIF files that come with *WiSP* should be edited to confirm that the filename is correct.

A Signature File is a short file containing information on your station.   Information that should be included is your name, callsign and home BBS/Satellite.

AMSAT

AMSAT is an acronym for the Amateur Radio Satellite Corporation.   It is a worldwide organization of Amateur Radio Operators and others who are interested in and communicate through Amateur Radio Satellites.   AMSAT menbers are involved in the organization at all levels, from observing or operating through the satellites to participating in the design, construction and on-orbit "housekeeping" duties of the satellites.

AMSAT-NA (North America) is a non-profit, tax exempt 501(c) (3), scientific corporation founded in the greater Washington, DC area early in 1969.   It is staffed by a volunteer group of AMSAT members who donate their time to providing the services of the organization.   As you can imagine, building and placing Amateur satellites into orbit is a very expensive proposition.   Funding for these endeavors come from corporate and personal contributions, membership dues and donations received for the receipt of AMSAT publications and AMSAT software.   It is through this latter item that AMSAT gets its largest funding.   You are encouraged to join this organization and support it so that we may continue to enjoy this most fascinating area of our Amateur Radio interests.

Other AMSAT organisations around the world include AMSAT-UK (United Kingdom), AMSAT-DL (Germany), AMSAT-VK (Australia) and many more.   All these orgainisations work together to provide satellite services to the amateur radio community.   They can only do so with the support of those that use the services.

Radio Amateur Satellite Corp   (AMSAT NA)
850 Sligo Ave
Suite 600
Silver Springs MD
phone 301-589-6062
fax   301-608-3410
internet: martha@amsat.org>

AMSAT-DL Warenvertrieb
Reinhard Richter, DJ1KM
Lohfeldweg 40
D-30459 Hannover/Germany
CI$ 100114,756
fax 49(0)511 411112

AMSAT UK
Ron Broadbent G3AAJ
E12 5EQ
England
phone 44(0)81 989 6741
fax   44(0)81 989 3430

AMSAT-Australia
G.P.O. Box 2141
Adelaide S.A. 5001
AUSTRALIA
Phone   (08)2975104 Int'l 61-8-2975104
          between 0800 and 1100UTC daily

Bugs

Please read the documentation before reporting bugs to ensure that you do in fact have a problem and not just a setting up error.

If you have a repetitive problem, it is helpful if you can include a DRWATSON.LOG file.   This is generated by DrWatson, which is included with MS Windows.   DrWatson runs in the background, and when there is an error will save information on where the problem occurred.   When DrWatson pops up the information box, enter as much information as you can on your current configuration. ie. How many programs are running, which WiSP programs are running, and possibly which order they were started.

All bug reports can be sent to ZL2TPO on packet satellite KO-23 or KO-25, or my home BBS @ZL2WA, or via internet zl2tpo@amsat.org.

Any updates will be posted to the amateur satellites.   **Version numbers** for all the programs can be viewed from the GSC About window.

If you have any ideas that would help make this software even more useful, please let me know.

COM Ports and MS Windows

You may find that you need to run more than two com ports with MS Windows.   This can easily be accomplished, but may require some modifications to a com port card.
The problem is that when IBM first designed the originally PC in the early 1980's, they did not think that people would want to use more than 2 com ports at once, so they allocated COM1 and COM3 to share an interrupt, and COM2 and COM4 to share another interrupt.   Unfortunately, IBM PC's can not share interrupts properly, so each device must have its own interrupt line.
I have successfully used IRQ 5, IRQ 10 and IRQ 11 under Windows.

Changing COM Port addresses and IRQ settings

To change the port address or IRQ setting that is assigned to a port, you must use the **Ports** option under **Control Panel**.   Under the advanced settings, you can set both the port address and the IRQ setting for the port.

Windows for Workgroups 3.11

The COMM.DRV com port driver that comes with WFWG 3.11 may not work properly with WiSP.   You should endeavor to use the COMM.DRV that comes with Windows 3.1, or another 3rd party driver.

 The Help button will give you context sensitive Online Help about the screen you are currently viewing

 The OK button is used to acknowledge the contexts of a screen.   If this is for a setup screen, the options will be saved to disk for future use.

    The Cancel button will cancel any changes made on the current screen since you opened that screen.   Any changes made will not be saved to disk, and will not take effect in the program

Registering Information

This program requires a registration number to remove the annoying screens that will pop up from time to time.   This number is available from AMSAT-NA, AMSAT-DL and AMSAT-UK.

If you decide you like the system and intend to use it, **you must obtain a registration number**.   If this request is overlooked, and stations choose not to register their copy, then the package may need to be programmed such that it will not work at all without registration.

Unregistered copies will have <W> placed in the Keywords line of any messages they create.

All money received from the registration of this program will go to AMSAT to allow them to build and launch more satellites.

GSC, MSPE, View-Dir, ProcMail, MsgMaker, UpdKeps and MsgView are all copyright to Chris Jackson ZL2TPO.   They are available for use by Amateur Radio Stations under the above conditions.

Registrations are being accepted at the following organisations.

Radio Amateur Satellite Corp (AMSAT NA)
850 Sligo Ave
Suite 600
Silver Springs MD
phone   301-589-6062
fax   301-608-3410
internet: martha@amsat.org

AMSAT-DL Warenvertrieb
Reinhard Richter, DJ1KM
Lohfeldweg 40
D-30459 Hannover/Germany
CIS 100114,756
fax   49(0)511 411112

AMSAT UK
Ron Broadbent G3AAJ
London E12 5EQ
England
phone   44(0)81 989 6741
fax   44(0)81 989 3430

AMSAT-Australia
G.P.O. Box 2141
Adelaide S.A. 5001
AUSTRALIA
Phone   (08)2975104 Int'l 61-8-2975104
            between 0800 and 1100UTC daily

The lower the priority value the higher the actual priority.   Priority 1 is the highest priority.   If a satellites priority is set to 0, it will not be run.
If there is a satellite with priority 0 in the schedule list, it is a manually selected pass.

The DOS Path= statement is a list of used by DOS to search for files when it does not know where the file resides.   Refer to your DOS Manual for more information.

UpdKeps

UpdKeps will automatically update your WISP.KEP file when new keplerian element files are received from the satellite.

Whenever a new set of elements is received, <u>ProcMail</u> calls UpdKeps and passes it the filename of the new keps file.   UpdKeps then updates the WISP.KEP file with the new information.

UpdKeps must be in your WiSP Directory.   No other action is required.   It will go about its job of keeping your systems information up to date.   When the keps are updated, UpdKeps will advise you of this with a message box.   You will need to acknowledge this before the box will dissappear.

Frequently Asked Questions

Q: How do I disable a satellite without deleting it altogether?
A: To stop GSC from running passes from a particular satellite, without deleting that satellite altogether, all you need to do is to set the satellites priority to 0.