DOVE Telemetry Decoder HELP

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If you are not familiar with Windows Help, choose **Help**|**How To Use Help** from the Help menu now.

Help File Version

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All questions and comments are welcome.

Setup Packet

This menu item will allow you to setup the RS-232 interface between your computer and your packet TNC. Check for the proper selections by reading the manual that came with your packet TNC. The Store button will store these selections for this and future executions. The cancel button will not store any new selections that were made.

COM PORT - You will want to make sure that you select the correct RS-232 COM port. Check to see where on the back of the computer you have this selected. Then click on the corresponding radio button.

BAUD RATE - This allows you to select the baud rate from the computer to your packet TNC. More than likely this will 9600 Baud.

PARITY - This is the type of parity to use. Most likely "None", but check your TNC manual.

DATA BITS - This is the number of data bits. Most likely "8", but check your TNC manual.

STOP BITS - This is the number of stop bits. Most likely "1", but check your TNC manual.

Start

　　The Start menu item can be used to start acquiring data via the RS-232 interface that is hooked up to a packet TNC. The data will be displayed as it is received. When a valid DOVE telemetry selection is received it will be saved into a temporary file and can be saved into the database at a later date via the Database Store dialog. Thus you can leave it running for weeks if you wish and it will have stored all valid data decodes into files that you can store into the database. This gives you the ability to preview all decodes before being put into the database. The main window gives a display buffer of approximately 20000 characters that you can scroll through. When the buffer fills up then old data will be discarded as new data is entered.

Stop

The Stop menu item can be used to stop the acquiring of packet data via the RS-232 interface.

Log to File
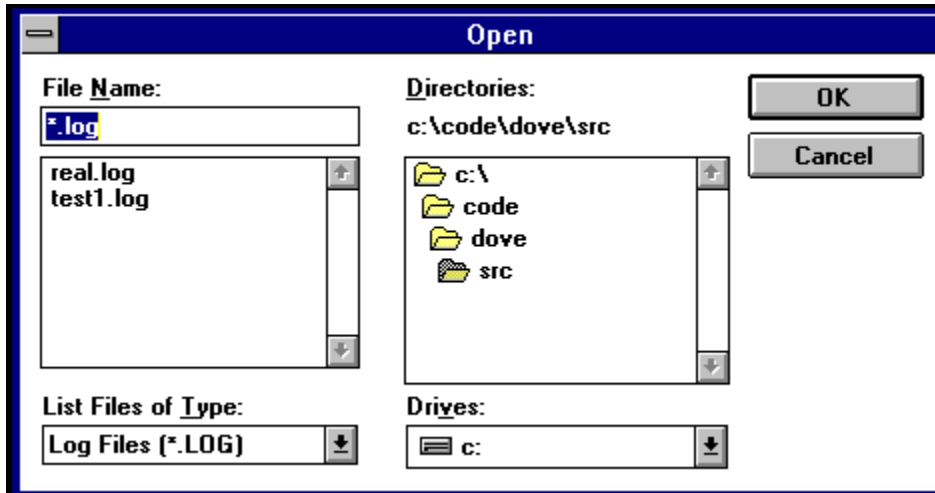
Any text data that is displayed in the DOVE window can be output to to a file as well. This includes the View Processed and View Raw options that are available under the Database Store and Retrieve menu items. You can open a new file as a log file or an existing file. If you use an existing log file then the new data will be appended onto the end of the file.

Choose Font
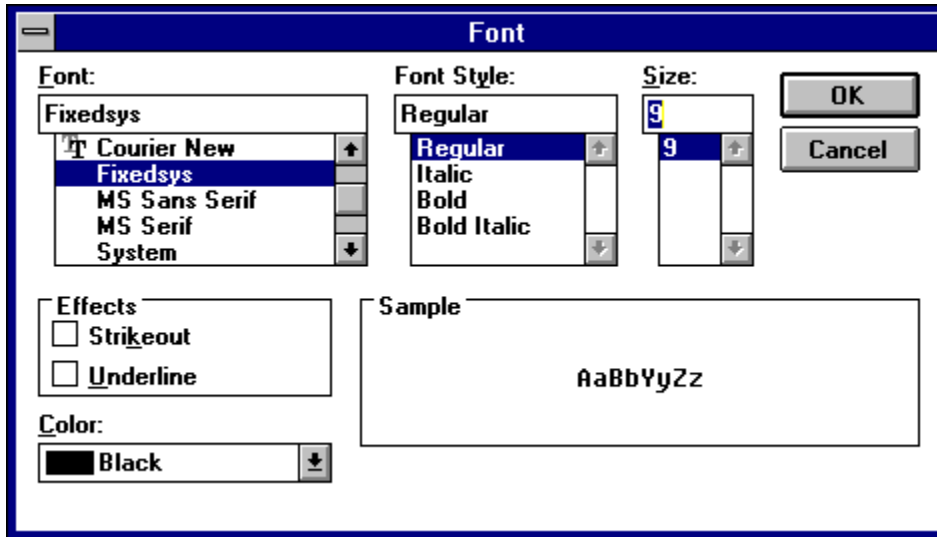
You can choose the font and color of the text that is displayed in the DOVE window with this option. If the text in the DOVE window runs off the side then you will need to make the window larger or use a smaller font.

Print

With this function you can print the text that is in the DOVE window. It will also print the graph from the plot function in the Database Retrieve dialog if your printer supports this.

Paste

The Paste menu item can be used to Paste ASCII text data from another source that supports cutting and pasting data to and from the clipboard. For instance you can use the windows   notepad or write application to display the packet data. Then select the data you which to input into this DOVE application and select Copy. Then go to the DOVE application and select Paste and then the ASCII text data will be copied into this application and processed.

If the Paste command is greyed out then this is because valid data is not in the clipboard.

In order for the decoder to decode and store the data pasted into this application the following lines need to appear in the pasted file.

1) First must be the time line:
 DOVE-1>TIME-1:PHT: uptime is 212/05:48:35.   Time is Sun Jan 08 19:52:16 1995

2) Second must be both data lines in order:
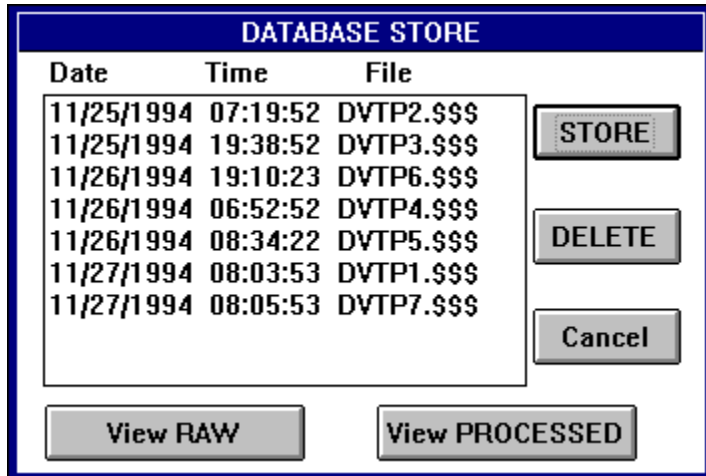DOVE-1>TLM:00:58 01:58 02:87 03:35 04:56 05:57 06:6C 07:54 08:70 09:70 0A:A2
0B:F6 0C:E8 0D:DA 0E:40 0F:26 10:DC 11:9D 12:00 13:D7 14:9D 15:AC
16:74 17:75 18:77 19:77 1A:74 1B:46 1C:7C 1D:79 1E:D0 1F:63 20:D3

DOVE-1>TLM:21:C3 22:79 23:28 24:1C 25:33 26:30 27:01 28:00 29:01 2A:00 2B:6A
2C:01 2D:6C 2E:59 2F:9F 30:CE 31:9E 32:00 33:00 34:A7 35:AA 36:AE
37:B0 38:90

Clear

This menu item will clear the text display.

Store

DATABASE STORE

Date	Time	File
11/25/1994	07:19:52	DVTP2.$$$
11/25/1994	19:38:52	DVTP3.$$$
11/26/1994	19:10:23	DVTP6.$$$
11/26/1994	06:52:52	DVTP4.$$$
11/26/1994	08:34:22	DVTP5.$$$
11/27/1994	08:03:53	DVTP1.$$$
11/27/1994	08:05:53	DVTP7.$$$

STORE

DELETE

Cancel

View RAW   View PROCESSED

Once data has been acquired and processed by this DOVE software it will store the results in a file. This file is available via the Store menu item. You can view both the raw and processed data by highlighting the file you wish to view and then selecting the appropriate button. This allows you to preview the data before it is stored into the database. Once you have verified that the data is good then select STORE and the data will be put into the database. The file will not be deleted though.

To delete a file just highlight the file and then press DELETE.

To exit this dialog press cancel.

Retrieve

The Retrieve menu item will allow you to retrieve select data from the database. It will allow you to filter the data on both date and time. Once you have entered the date and time filter info just press Retrieve and the data from the database will be retrieved. To view a select item, highlight the item desired and click on View RAW or View PROCESSED to view the raw or processed data respectively. When you are finished click on Cancel to quit. The retrieve list has a limit of 500 items. If this number is exceeded then only the first 500 will be displayed.

To filter data there are two filter criteria; date and time. To filter by date you can leave both the start and stop data blank in which case all dates will be retrieved. If only a start date is entered then all dates starting with this date will be retrieved. If only a stop date is entered then all dates up to this date will be retrieved. If both a start and stop date are entered then all dates between these dates will be retrieved. The time filter works the same as the date filter. With the time filter, time is in 24 hour format and you can wrap the time. For instance you can search between 21:00 and 01:00.

From this menu item you also have the capability to plot an element of the DOVE telemetry data. First you will need to perform a retrieve as outlined above of the data that you desire. Then click on the arrows to select the correct item to plot. Then select the Display Mode button. It will change the   name of the button to Plot Mode and give you an option to plot on the x-axis by date or time. To switch back just click on the button again.

What is DOVE

DOVE (Digital Orbiting Voice Encoder) is the name for a Satellite that was launched on January 22, 1990. Intended for the Amateur radio community. This satellite's main purpose is to provide a good readable signal usable for educational purposes. Its main output is in the middle of the Ham 2 meter band at 145.825 MHz. Its output consists of normal FM modulation that can be received on any 2 meter FM Ham rig or scanner that has a good antenna. In some cases when conditions are right a handheld can be used. The output consist of speech and digital data. It is the digital data that we will utilize in this program. The digital data is of the form AFSK AX.25. This is normal packet radio that you can receive with a normal TNC. To setup to receive this data see the Hardware Setup section.

The DOVE satellite is considered a LEO (Low Earth Orbit) satellite. This means it orbits around the earth at an altitude of about 800 Km. Its coverage of the earth at any one time is small but being low to the earth it does not require expensive antennas. At any point on the earth this satellite will make about 2 - 3 passes in a 24 hour period. You can expect each pass to last no more then about 10 - 15 minutes. To obtain more information on tracking the DOVE or other satellites I would recommend that you obtain a satellite tracking program. There are numerous programs available for both DOS and windows. My favorite is WinOrbit by K8CG.

If you have never heard DOVE telemetry or packet data before there is a sound file called DOVE.WAV that you can play through your sound card to hear what it will sound like. This file is in windows wave format so any player that handles this format should work.

Below is a sample of the telemetry received at my location in San Diego, CA. USA. during one pass.

DOVE-1>TIME-1:PHT: uptime is 212/05:48:35.   Time is Sun Jan 08 19:52:16 1995

DOVE-1>TLM:21:C0 22:77 23:29 24:1D 25:30 26:00 27:02 28:00 29:26 2A:06 2B:74
2C:00 2D:72 2E:5F 2F:9E 30:D0 31:9F 32:01 33:00 34:A4 35:AB 36:B0
37:B0 38:97

DOVE-1>STATUS: 80 00 00 83 07 18 AA 02 00 10 00 00 09 0B 3C 05 0F 31 01 0A 52

DOVE-1>LSTAT:I P:0x25B2 o:0 l:3837 f:6778, d:0 st:0

DOVE-1>TIME-1:PHT: uptime is 212/05:49:05.   Time is Sun Jan 08 19:52:46 1995

DOVE-1>BCRXMT:vmax=759160 battop=766771 temp=357713

DOVE-1>LSTAT:I P:0x25B2 o:0 l:3837 f:6778, d:0 st:0

DOVE-1>TIME-1:PHT: uptime is 212/05:49:35.   Time is Sun Jan 08 19:53:16 1995

DOVE-1>TLM:00:5A 01:58 02:88 03:35 04:58 05:59 06:6B 07:52 08:70 09:70 0A:9F
0B:FA 0C:E6 0D:DB 0E:40 0F:26 10:DB 11:9F 12:00 13:DA 14:A1 15:A6
16:7D 17:74 18:79 19:77 1A:74 1B:49 1C:7D 1D:78 1E:CC 1F:64 20:D1

DOVE-1>TLM:21:C3 22:79 23:30 24:20 25:31 26:01 27:22 28:00 29:24 2A:04 2B:5F
2C:00 2D:7A 2E:63 2F:A0 30:D0 31:9F 32:00 33:01 34:A6 35:A6 36:A737:AC 38:92

DOVE-1>STATUS: 80 00 00 85 07 18 AA 02 00 10 00 00 09 0B 3C 05 0F 31 01 0A 52

DOVE-1>LSTAT:I P:0x25B2 o:0 l:3837 f:6778, d:0 st:0

DOVE-1>TIME-1:PHT: uptime is 212/05:50:05.   Time is Sun Jan 08 19:53:46 1995

DOVE-1>TLM:00:58 01:58 02:87 03:35 04:56 05:57 06:6C 07:54 08:70 09:70 0A:A2
0B:F6 0C:E8 0D:DA 0E:40 0F:26 10:DC 11:9D 12:00 13:D7 14:9D 15:AC
16:74 17:75 18:77 19:77 1A:74 1B:46 1C:7C 1D:79 1E:D0 1F:63 20:D3

DOVE-1>TLM:21:C3 22:79 23:28 24:1C 25:33 26:30 27:01 28:00 29:01 2A:00 2B:6A
2C:01 2D:6C 2E:59 2F:9F 30:CE 31:9E 32:00 33:00 34:A7 35:AA 36:AE
37:B0 38:90

DOVE-1>BCRXMT:vmax=760045 battop=766771 temp=318063

DOVE-1>LSTAT:I P:0x25B2 o:0 l:3837 f:6778, d:0 st:0

DOVE-1>TIME-1:PHT: uptime is 212/05:50:35.   Time is Sun Jan 08 19:54:16 1995

DOVE-1>TLM:21:BE 22:7B 23:2A 24:1C 25:31 26:00 27:26 28:10 29:01 2A:01 2B:6C
2C:01 2D:70 2E:59 2F:9D 30:D0 31:9F 32:00 33:01 34:A8 35:A9 36:AA
37:AC 38:90

DOVE-1>STATUS: 80 00 00 87 07 18 AA 02 00 10 00 00 09 0B 3C 05 0F 31 01 0A 52

DOVE-1>LSTAT:I P:0x25B2 o:0 l:3837 f:6778, d:0 st:0

DOVE-1>TLM:00:70 01:57 02:87 03:34 04:58 05:58 06:6C 07:51 08:70 09:70 0A:A2
0B:FF 0C:E8 0D:DB 0E:FF 0F:26 10:DA 11:9E 12:00 13:D4 14:9D 15:AC
16:6E 17:78 18:7A 19:78 1A:76 1B:53 1C:7D 1D:7C 1E:C4 1F:65 20:D2

DOVE-1>TLM:21:BE 22:7A 23:28 24:1B 25:30 26:01 27:00 28:00 29:07 2A:00 2B:86
2C:01 2D:65 2E:59 2F:9F 30:CD 31:9F 32:01 33:00 34:A9 35:AA 36:AA
37:AC 38:8B

DOVE-1>STATUS: 80 00 00 87 07 18 AA 02 00 10 00 00 09 0B 3C 05 0F 31 01 0A 52

DOVE-1>BRAMST:27th December 1994 22:40 UTC

Voice experiment has been switched OFF.

S Band ON.

The Dove Command Team would like to wish
all listeners compliments of the season
and best wishes for 1995.

73   WD0E WJ9F VK7ZBX N5AHD PY2BJO

    If you would like more information on the Amateur satellite program I would suggest
you purchase the book "The Satellite Experimenter's Handbook" by Martin Davidoff and
published by the American Radio Relay League, 225 Main Street, Newington, CT 06111. I
would also suggest that you contact the Radio Amateur Satellite Corporation (AMSAT),
850 Sligo Ave., Silver Spring MD, 20910. AMSAT is the group that is responsible for
launching most of the Ham satellites and has chapters in many countries.

Hardware Setup

The hardware setup is designed to be as simple as possible. If you are already on packet on 2 Meters then all you have to do is run this program and execute the Setup Packet menu item to configure the RS-232 port to match your TNC. If you are not sure of the settings then check what ever program you use to display packet and copy these settings.

If you have never used packet before then you will have to do a little experimenting. Your best bet is to read the setup portion of your manual that came with your TNC. In that book it should state what the various RS-232 parameters are. Use these to setup this program. One item that you will need to have setup on your TNC is you will need to execute the HEADERLN OFF command. This causes the header and packet text to be on the same line. This is required for the program to decode DOVE packet data correctly.

To test this program once you have run the Setup Packet dialog, tune to any common packet frequency. In the USA these will be from 144.91 to 145.09 in .02 increments. Then select the start menu item and you should start receiving packet data. Once you know it works then just tune your radio to 145.825 MHZ and click on start and let the program run. When the satellite passes overhead you should start receiving DOVE data if it is in the telemetry mode. This program was designed to run while iconified, so once you have started it, iconified it and go run something else on your PC. It will run   by itself in the background.

Future Enhancements

I will continue to make changes to this program. Below are a list of items that I may be working on. Please write me if you like this program and let me know what changes you would like.
1. More and better graphic displays.
2. A Report dialog to print out tabular reports of the DOVE data.