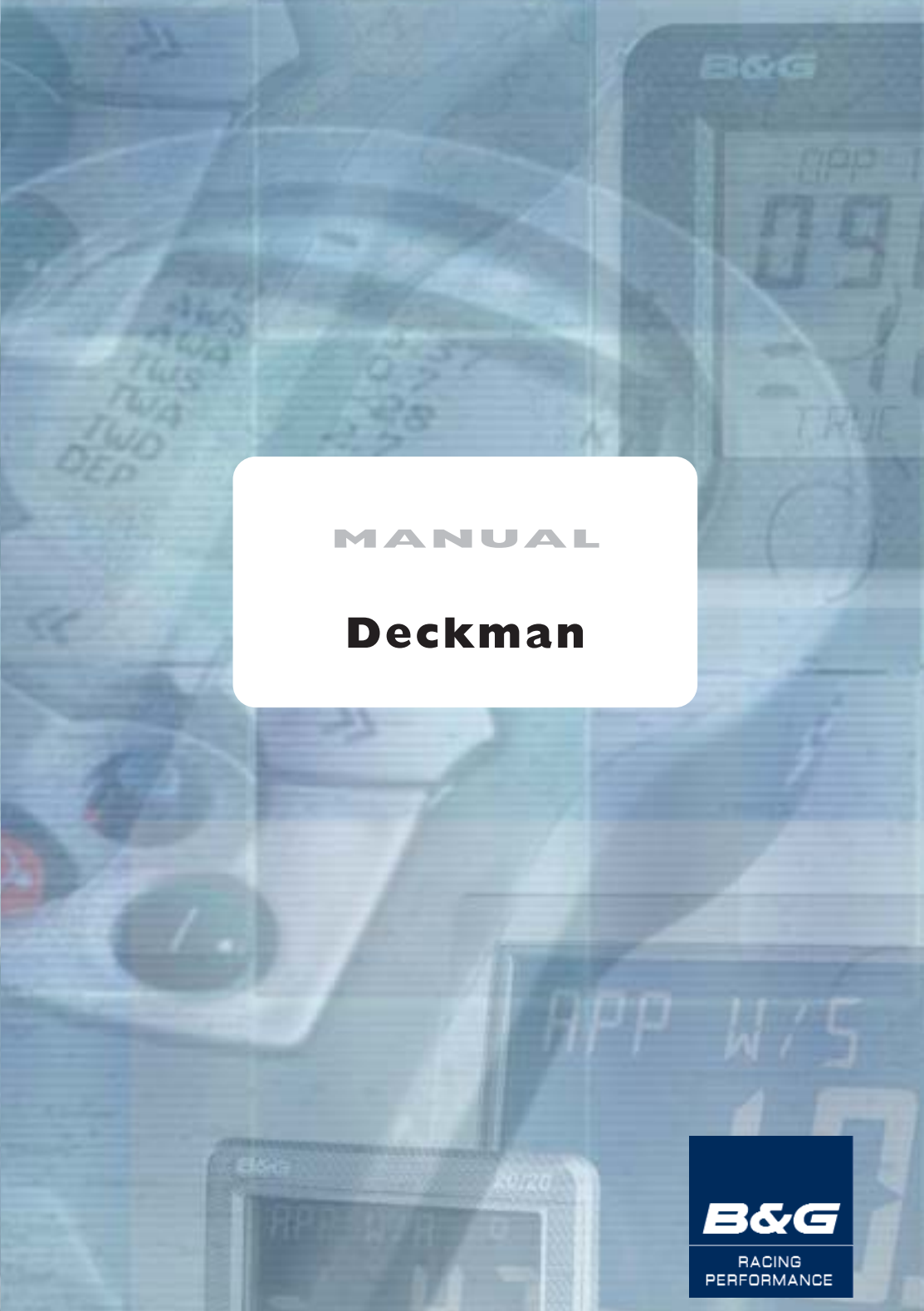

MANUAL

Deckman

Deckman

User Manual

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Product Liability and Safety Warnings

Product Liability

Brookes and Gatehouse Ltd. accept no responsibility for the use and/or operation of Deckman. It is the user's responsibility to ensure that under all circumstances the product is used for the purposes for which it has been designed.

Warning - Calibration

The safe operation of Deckman is dependent on accurate and correct calibration. Incorrect calibration of this product may lead to false and inaccurate navigational readings placing the yacht into danger.

Warning – Dongle Security

The Dongle is a security device that renders the software inoperable when not plugged into the computer. As such, the Dongle is of significant importance and care must be taken to ensure that it does not become lost or stolen. Replacement of a Dongle will require the full purchase cost of Deckman, as well as the cost of any charts that may have been purchased to run with Deckman.

It is recommended that all original CD's, chart codes and user documentation be kept together to allow the simple re-installation in the event of a fault occurring with your computer.

To facilitate the upgrade process of Deckman, or to purchase new charts, record the Dongle Serial Number below:

Dongle Serial Number:	

Preface

This manual is written in two parts: the first is a general introduction to Deckman. The second section contains instructions on how to use Deckman.

Part 1: In the first chapter, a general overview of the Deckman display screen is given with descriptions of the various parts.

Part 2: This section deals with the operation of Deckman. The first chapters cover the installation and general use of Deckman. After this, there are chapters dealing with specific features.

The manual includes a full Contents and Index. Since many things are referred to in more than one place, it is advisable to check these if the information you need is not immediately obvious.

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Contents

Chapter 1 : Deckman Introduction

Congratulations and thank you for choosing B&G Deckman, the world's most advanced race navigation software. Deckman represents B&G's commitment in providing software of the highest quality and performance.

To get the most from Deckman, take the time to carefully read this user manual so that you can fully appreciate its functionality.

Figure 1.1 shows a typical Deckman display and the table overleaf describes the functions of the labelled parts:

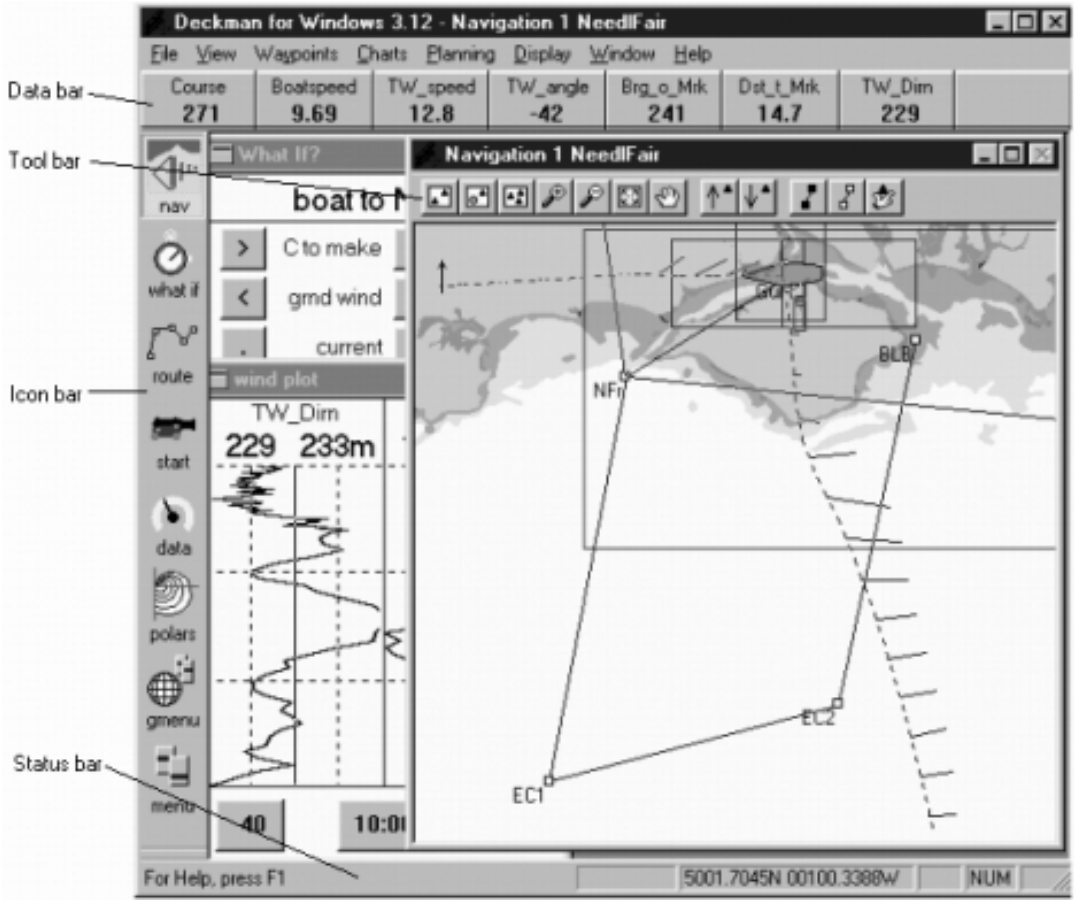


Figure 1.1

Data bar — shows the value of any variable. You can select which variables you want displayed: simply click on the top half of a particular box and choose from the menu. You can display either the present or damped value (time specified in minutes; variable is shown underlined): choose when first selecting variables, or change by clicking on a displayed variable and then enter the averaging time. You can also arrange variables in the data bar using drag and drop.

A new line of data boxes will appear when the last box on the previous line is filled, so make sure this is left empty if you do not want a new line of boxes.

Can be toggled on and off by selecting menu>view>Data Bar.

Tool bar — gives shortcuts to frequently used tools.

Icon bar — clicking on an icon will either access a display window or provide a menu.

Status bar — bar along the bottom of the display. Shows the latitude and longitude of the present position of the cursor and also the range and bearing from the boat to the cursor (right hand side).

Also provides information about the effects of some menu choices when the cursor is held over them (left hand side).

Can be toggled on and off by selecting menu>view>Status Bar.

When using the program it is generally found best to have it set up with the main Navigation window covering the majority of the display. Behind this, but accessible, you could have things such as **What If?**, Planning and a wind plot, as in Figure 1.1. That way, you can always see your position on a chart, but are able to get to other information as and when required.

Clicking **menu>refresh** updates the display, thus getting rid of old or unwanted lines or marks. If, for example, you want to view only the isochrones from the present plan, this is a useful function.

Throughout this manual, **bold** text is used when options—such as menu choices—are referred to. The > symbol is used when menu selections are being discussed. For instance, **menu>zoom>from boat to mark** would mean clicking on **menu** on the Icon bar and then selecting the **zoom** option from the pop-up menu, followed by **from boat to mark**—this is illustrated in Figure 1.2. Information regarding the effect of a particular command can be seen in the status bar.

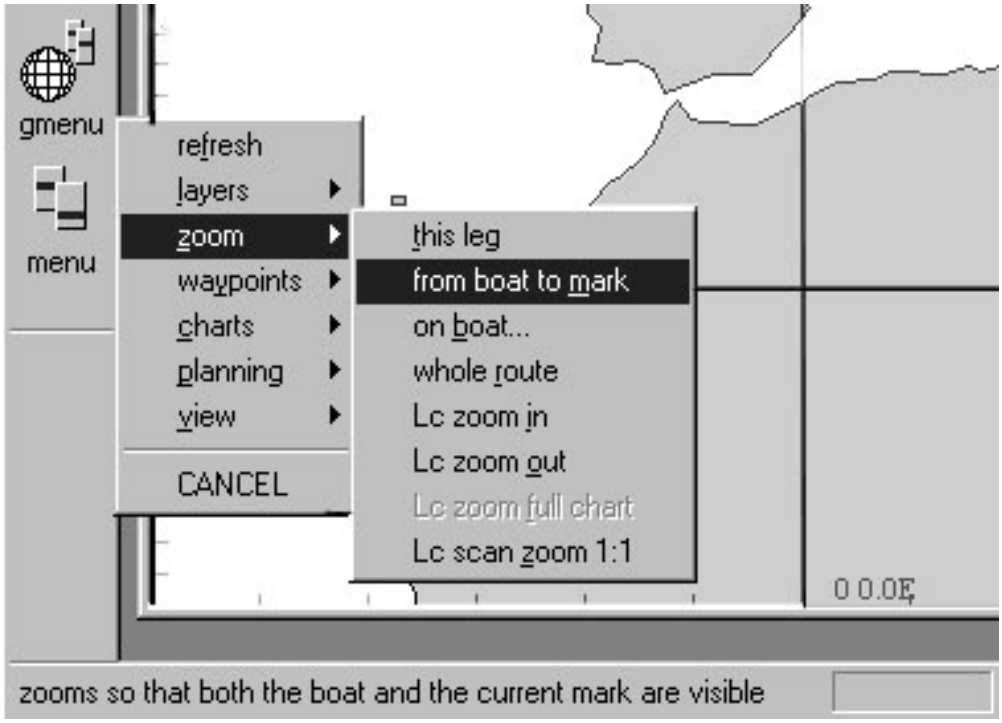


Figure 1.2

Shortcuts

The following shortcut keys are available in Deckman:

F2	Next waypoint
Sh+F2	Previous waypoint

F6	Wind plot
F7	Start display
F8	Navigation display
F9	Next window (the least recently used of all the windows currently open in Deckman)
Sh+F9	Previous window (the most recently used of all the windows currently open in Deckman)

Hint: using the F9 and Sh+F9 allows you to toggle between two windows.

Chapter 2 : Getting Started

Deckman Installation

As previously mentioned, there are currently two versions of Deckman that support either the C-Map or Euronav charting systems. The install for each version varies slightly as detailed below.

Install Deckman by running the **SetupDeckman.exe** installation program on the CD-ROM. Note that for a Euronav version, there are two parts to the installation: Deckman itself and the Euronav Charting System (ECS).

Deckman requires a security device known as a dongle, and this will need to be connected to either the parallel or USB port of your computer before you go any further. Having connected the dongle, run Deckman from the **Start** button. At this point Deckman should recognize this is a new installation and put up a dialog asking you to install the driver for the dongle: the installation procedure is slightly different for the two different types of dongle, but for both simply follow the on-screen prompts.

If installing a C-Map version, then the necessary drivers will be found on the Deckman CD so you simply tell Windows to search on your CD drive. The Euronav dongle drivers are installed onto your hard drive with the ECS.

Once you have installed the dongle drivers it may be necessary to restart your computer.

Start Deckman again. The program will now go through the complete startup routine, and then ask you for a 16-digit security code – enter the code you have been supplied, then click **OK**. You should then see the navigation window with some initial waypoints in the English Channel.

Installing charts

Deckman works with a variety of different chart formats, both raster and vector, and the installation of each is slightly different, so make sure you refer to the correct section below. If installing ARCS or Livecharts then this can be done from within Deckman (assuming you are using Deckman version 4 or later). For C-Map and Maptech charts (BSB, PCX or REML formats) the installation is done without Deckman running.

When you first start the program after installing new charts the effect of updating the chart folio may not be immediately apparent because the supplied charts do not cover the area of the English Channel occupied by the default waypoints. Use the zoom out tool: this works in the opposite way to zoom in—the image you are looking at now will be zoomed to fit the rectangle which you define by clicking and dragging. Then use the panning tool (the hand) and drag to different areas of the chart.

Note. For Maptech charts, special action is required (see below).

C-Map

The installation of C-Map charts is via a separate CD which should have been supplied with Deckman. Note that you will need this CD to do any further chart installations, so make sure you keep it in a safe place. In addition, there are different CDs for different parts of the world so you may need more than one. Contact your agent or B&G if necessary.

Insert the CD into the drive. It should Autorun, but if not select **setup.exe** from the **NT/PC Selector** folder. Follow the on-screen instructions to install the C-Map NT/PC Chart Selector program, and then run this program. This program then contains everything you need to browse the charts, select the ones you wish to install and order from C-Map. Once you have completed the process, close the Chart Selector program, run Deckman in the normal way and the charts will be seen in the appropriate areas.

Livecharts

With Deckman version 4 or later, the complete catalogue of Livecharts is supplied on the program CD. Charts can then be enabled by obtaining an unlock code from your local agent or B&G.

For help in choosing the charts you require, view the chart catalogue: open Deckman, select **menu>charts>chart interaction** to stop the regular Deckman display updating and instead interact directly with the charting package. Hold down the right mouse button until a popup menu appears. Select **Properties>Chart Settings (Global)**. Check the **View** box in the **Chart catalog viewing** and then click OK. Select **Livecharts** followed by OK and you will be presented with a toolbar that enables you to view details about different charts.

When you know the charts you wish to use, contact your local agent or B&G to obtain the unlock codes. Once you have the necessary codes, run the **Unlock.exe** program on your distribution CD from Windows Explorer. The path for this is:

D:\Livechart Archive\unlock (where 'D' is your CD drive)

The paths for the location of the charts on your CD and the desired destination should be displayed correctly automatically, but if not set these as follows:

Install charts from	D:\Livechart Archive\charts\live_b (where 'D' is your CD drive)
Install charts to	C:\Charts\Live_b (where 'C' is the drive where Deckman is installed)

For each chart you wish to install enter the unlock code (which will be supplied in four groups of characters) into the four boxes marked **Code 1, Code 2** … etc and the name (e.g. BA2045) into the fifth box (if installing a folio of charts leave the final box empty). This procedure must be repeated for all the charts you wish to install.

The next step is to tell the program where to find the charts. Choose **menu>charts>chart settings.** A dialog will pop up giving you all of the options for controlling the appearance of the charts. Select the **Chart Directories** tab and set the directory for **Livecharts - Vector** by hitting the **Browse** button. Move to the correct directory and then choose the **Select Path** button. The path for Livecharts should be:

C:\Charts\Live_b (where 'C' is the drive where Deckman is installed; if you specified an alternative destination for the charts in the **Install charts to** box above, this should be entered here)

Note If using versions 3 or earlier, the installation for Livecharts is as follows.

Close Deckman, enter the CD-ROM (or diskette) into the drive and follow the installation procedure. If you are prompted for a filename then use the 8 character names as follows: progra~1\BandG\deckman\charts\live_b. When you have finished, restart Deckman and **select menu>charts>update folio** to update the chart folio.

ARCS charts

Deckman needs to be running for this installation. The first task is to install the permits: put the permits floppy disk into the disk drive then choose **menu>chart>install chart** and you will be presented with a series of dialogs which help you do the installation.

Choose **Yes** to install new permits

Choose **Skipper** permits

Install permits from disk

Choose the **PRESS to Install Permits** button, then **Next**.

Now you will be asked to insert the CD-ROM (the CHART CD-ROM not the UPDATE). Select the **PRESS to start installation** button for the install to begin. In the summary information you will see that some of the charts require an update; after you have hit the **Next** button you will

be asked to insert the UPDATE CD-ROM. After clicking **Finish** you will be asked to update the folio again.

The next step is to tell the program where to find the charts. Choose **menu>charts>chart settings.** A dialog will pop up giving you all of the options for controlling the appearance of the charts. Select the **Chart Directories** tab and set the directory for **HCRF - Raster** by hitting the **Browse** button. Move to the correct directory and then select the **Select Path** button. The path for ARCS charts should be:

C:\Charts\ARCS (where 'C' is the directory where Deckman is installed)

Maptech charts

When using BSB, PCX or REML charts it is advised that these are copied onto the hard drive of your computer. It is possible to run Maptech charts directly from a CD-ROM, but Deckman will operate much more quickly if the charts are read from the hard drive. If you wish to read the Maptech charts directly from a CD, then go straight to **Updating the Folio** below. In this case the path to specify will be a folder on your CD.

If you wish to run the Maptech charts from your hard drive, copy the charts into a folder in the top level of the drive in which you installed the program, for instance:

Chart type	Directory (where 'C' is the drive where the program is installed
BSB	C:\BSBChart
PCX	C:\PCX952 (see below for more information)
REML	C:\REMLChart

For BSB and REML charts simply copy the required charts into the folder and then go to **Updating the Folio** below.

For PCX charts, the simplest thing to do is to copy the entire contents of the CD into a folder in the top level of the drive on which Deckman is installed. It is advised that this folder is called something like **PCXnnn** (where nnn is a reference number from the particular CD: if installing

charts from a number of different CDs, it is advised that these be installed into different folders each with appropriate names/numbers for recognition).

However, if you are short of memory space on your hard drive, it is possible to copy only certain charts. This is more complicated because of the way Deckman interacts with the PCX chart format. Each chart is stored in a folder which has a corresponding chart header in the folder

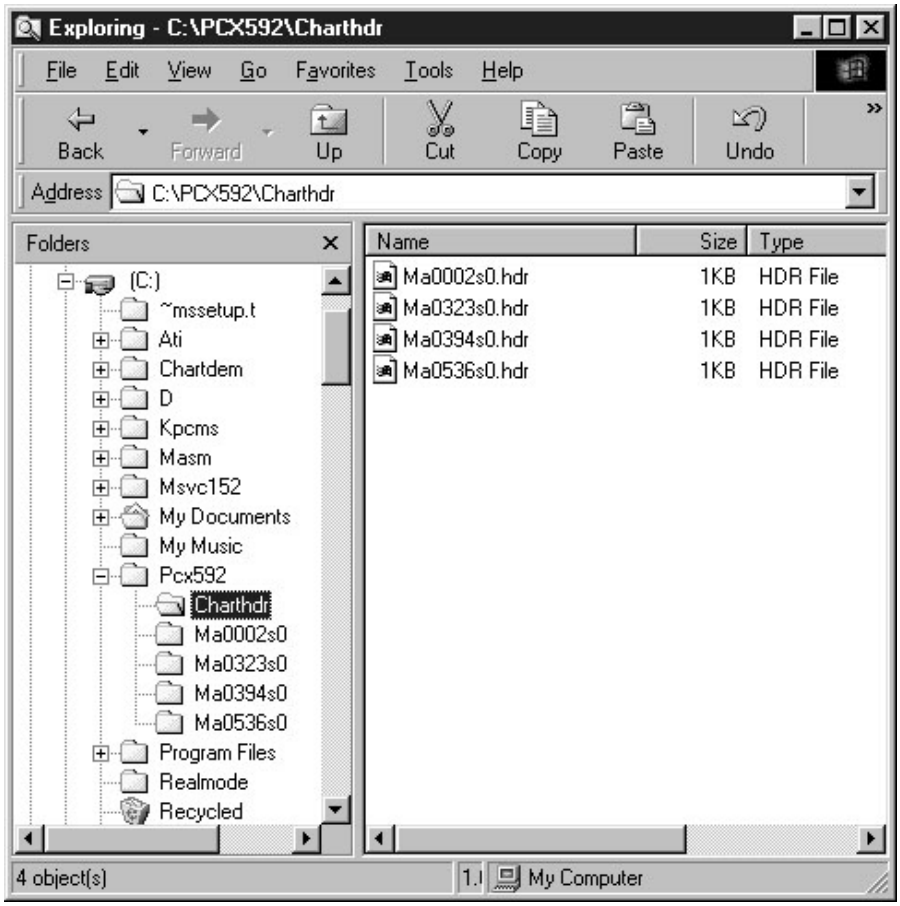


Figure 2.1

Charthdr on the CD-ROM. Both of these sections are required by Deckman and must be stored in the same structure as on the CD. You must therefore create a subfolder named **Charthdr** within the **PCXChart** folder on your hard drive. The required chart headers from the **Charthdr** folder on the CD must then be copied into here with the corresponding chart folders copied into the main PCX folder on your

hard drive. An example of what a PCX folder might look like is shown in Figure 2.1.

Updating the Folio

Once all the required charts have been copied, run Deckman, select **menu>charts>use Maptech charts** and then check the **Use Maptech charts in preference to others** box to switch to using Maptech charts. Select **menu>charts>update chart folio** and you will be presented with a dialog in which you must specify the locations of the Maptech charts. Click **Add** and then browse through the tree structure to specify the directories in which the Maptech charts are installed. Once you have specified the directories for all the Maptech charts you have loaded, click **Update** and you will see Deckman running through all the charts.

Note. For PCX charts, select the Charthdr folder as the path.

Connecting to the Instruments

Initially Deckman uses the simulated yacht instruments which enable you to learn to use the program without having to be on the yacht. To change to use the boat instruments go to **gmenu>change instruments** and you will be presented with a dialog so that you can select your instrument type. After clicking on OK you will be asked to set up the communications (for further details see Part 2, Chapter 7 on Instruments).

Select the COM port which is connected to your instrument system (usually COM1 or COM2 but Deckman can use any port up to COM10). Then set the protocol according to the table below.

	B&G WTP	**Performance Processor**	**NMEA**	**Ockam**
Baud rate	9600	9600	4800	4800
Parity	NONE	EVEN	NONE	NONE
Data bits	8	7	8	8
Stop bits	1	2	1	1

Note. For connection to an NMEA FFD, h1000 or Silva NMEA, the connections are the same as for NMEA.

When you have specified the correct settings, click **Next** to specify the settings for your GPS (see below).

Note. To operate a working version in demonstration mode so that it may be used without a dongle see **deckman.ini** in Chapter 12.

Wiring

The following table details the connections between different instrument systems and Deckman:

	Performance Processor	**Ockam**	**9-pin to Deckman**
Instrument ground	11	7 black	5
Instrument transmit	10	3 green	2
Instrument receive	9	2 blue	3
	join 7-8		join 4-6, 7-8

Note. The instrument transmit is connected to receive on your computer and vice versa.

Setting up the instruments

You must configure your instrument system so that it outputs information in the correct format for Deckman.

Performance Processor

You must set the system to 9600 baud, EVEN parity, 7 data bits and 2 stop bits.

On an FFD, select **waypoint>cross tr** on one section of the display, and **calibrate>cal val1** on the other. Set the value to 0.

Now select **waypoint>cross tr** on one section of the display, and **calibrate>cal val2** on the other. Set the value to 6.2.

Ockam

To set the Ockam RS232 interface to 4800 baud, NO parity, 8 data bits and 1 stop bit, set both switches A and B to 9.

Direct connection of GPS

It is possible to connect your GPS directly to Deckman. The main advantage of this is that you can easily see if you lose GPS signal for any reason and Deckman may also receive the GPS data at a higher frequency.

After clicking **Next** to setup the communications with the instruments, you will be presented with a dialog which controls how your GPS is connected. Select **Instrument System** if your GPS is connected via your instruments or **Deckman** for a direct connection, followed by **Finish.**

Show incoming data

After you have connected and correctly configured your instruments, and possibly GPS (if going directly to Deckman as described above), you may wish to check that the instrument data is being received by Deckman. Click **gmenu>show incoming data**, select either **Instrument Data** or **GPS Data** followed by **Start**. You should then see the data in the window of this dialog.

Deckman re-installation over an existing version

Note. This section should be skipped if NOT installing over an existing version.

With Deckman running and with an instrument system connected, choose **gmenu>configure comms** and make a note of the settings in the Communications dialog. For the old style dongle (serial number beginning 1071) you must also make a note of parameters: in Notepad open the **Deckman.ini** file (see "**deckman.ini**" in Chapter 12) and note the **[livechart] path**. Close Notepad.

Next, you must remove the existing version. Select the **Start** button and then **Settings>Control Panel>Add/Remove Programs**. For Euronav versions, both **Deckman Vn.n** (where n.n is the version number) and **Euronav Charting System** must be uninstalled.

Run **Windows Explorer** and make copies of following files in the **Data** subdirectory (see page 12.5) to somewhere other than the **Deckman** directory:

Adjvt.d	wind speed calibration	
adjwa.d	wind angle calibration	
bgbounds.d	B&G instruments	data bounds
Bgcalib.d		Calibration
Bgdamp.d		Damping
bgout.d		Output
databar.d	Data bar settings	
diamonds.d	Tidal stream data	
j_nav28.d	Layers information	
j_way.d	Waypoints file	
Navpol.d	Navigation polar	
Ockcalib.d	Ockam instruments	Calibration
Ockdamp.d		Damping
ockoptn.d		Options
ockout.d		Output
Perfpol.d	Performance polar	
report.d	Reports file	
shore.d	Shoreline information	
Startpol.d	Start polar	
Tides.d	Tidal heights data	

Once all these files are backed up, delete the **Deckman** directory (before doing this, it is just worth checking that no charts have been installed here: chart directories should be as described in 'Installing Charts' above).

Install Deckman by running the **SetupDeckman.exe** installation program on the CD-ROM. There will be two sections to the installation: Deckman and the Euronav Charting System which is automatic after Deckman.

Once installation is complete, if using an old dongle (SN beginning 1071), you must set the **[livechart] path** in the **Deckman.ini** file to that noted above.

Copy the files you backed up above into the new **Data** directory, overwriting the files that have been installed with the new installation.

The remainder of the installation is as normal (as described at the beginning of this chapter). Run Deckman and connect to the appropriate instrument system. Select **gmenu>configure comms** and set the Communications protocol as noted in the first step.

Chapter 3 : Navigation

Introduction

When you first run Deckman you will see a display something like that shown below in Figure 3.1

The best way to get to know how the program works is to run **Simulation** (see next page). Here you can practice and start to get to grips with some of the functions before trying to use them under pressure! If not already in Simulation mode select **gmenu>change instruments** and then check the Simulation box.

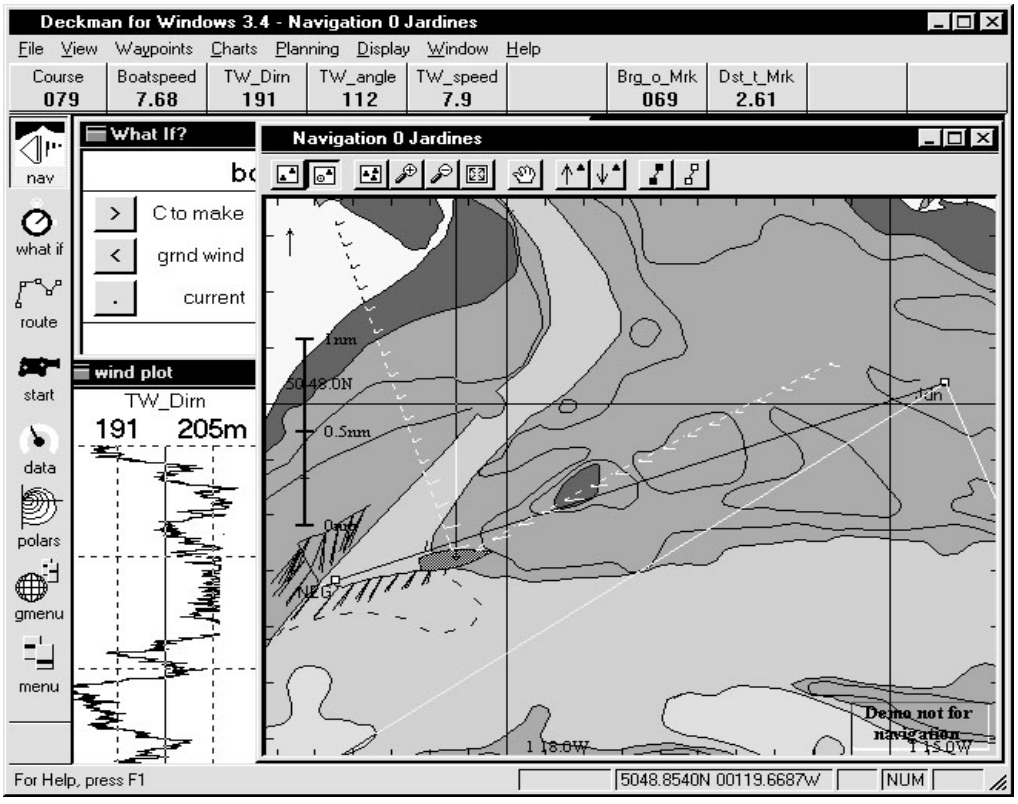


Figure 3.1

The numeric keypad

Whenever Deckman expects you to enter a numeric value a keypad will appear like the example in Figure 3.2. The number you enter is shown at the top in larger size; a message is shown below which usually gives the current value.

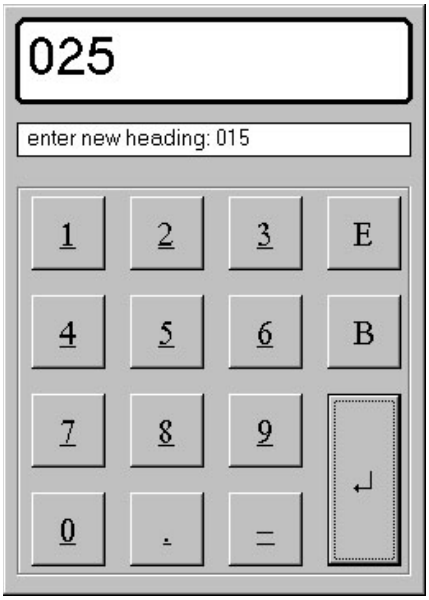


Figure 3.2

The keys down the right have the following functions:

Escape: this exits without making any changes

Backspace: deletes the last digit entered

Minus: makes any value entered negative. For inputting West longitudes or South latitudes as these are both considered negative on Deckman.

Enter or Return: tells Deckman to accept the value entered

Simulation

When Simulation is running Deckman generates instrument data that you can use to practice running the other displays. In Simulation mode you can only control the boat's heading and the true wind speed/direction. Deckman then uses these to calculate boat speed and all the other variables.

As you will not be connected to any position fixer, such as GPS, when running in Simulation mode you will have to use Deckman's dead reckoning (DR) capabilities to set the position of the boat. This will be done automatically when you start the program.

When using DR, position is updated regularly according to the boat's speed and course and the tidal information. The DR position can also be set manually to the position of a mark or by specifying a latitude and longitude. The most useful function (especially in Simulation mode) is **menu> waypoint>set DR>DR at waypoint** to put the boat at the first mark. See **Set DR position** (on page 3.9) for more details on this.

To change the boat's heading or control the wind, choose **gmenu>instruments control** and you will be presented with the following dialog:

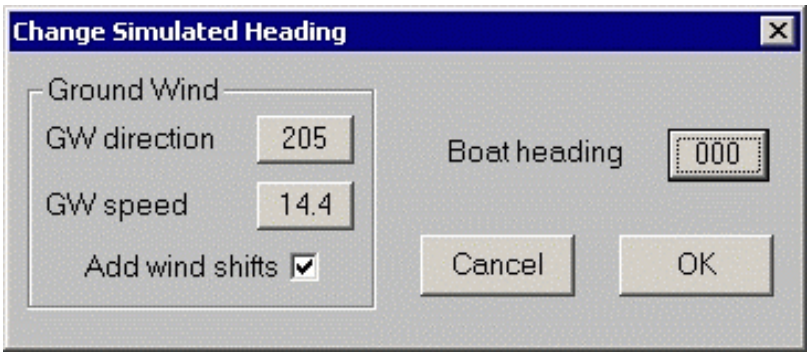


Figure 3.3

The left pane controls the wind: click on a box to input the desired value. If **Add wind shifts** is checked then Deckman will add changes in both wind speed and direction.

On the right you can control the boat's heading: click on the box where the present heading is displayed, (000° in the example), input the new heading on the numeric keypad and then hit the **Enter** key.

After you have made the desired changes hit **OK**. The **Data bar** gives you the option of viewing any of the variables from the database. Click one of the boxes when highlighted with the cursor over it and select a variable to be displayed from the list.

In some ways running Deckman Simulation mode is actually harder than when it is being fed data by a real instrument system on board as you have to alter the boat's heading (as described above) rather than this being done by the helmsman. It does, though, provide an excellent way to learn how to use the program.

Selecting a route

Before the race begins you will set up a route by choosing marks from the waypoint list, then during the race you only have to instruct Deckman to go on to the next waypoint and all of the calculations will be done with respect to the new mark. Deckman does not automatically advance to the next waypoint on a route when the current waypoint is reached.

The list of waypoints is divided into named sectors. The purpose of this is to divide up the waypoints to make them easier to manage when sailing in different places. When you first get Deckman you will find that there are sectors named *Triangle, Solent_A-M, Solent_M-Z, Channel, Fastnet, Nioulargue, Porto Cervo, qkroute* (these refer to Quick route, see next page); if you are sailing in any of these areas this list will cover most of the marks needed—though of course we take no responsibility for their accuracy. However, if you are sailing in another area then you will need to enter you own lists as described later in **Edit Marks** (page 3.20). In addition you should also have entered subsidiary marks which, though not marks of the course, are nevertheless useful as

reference points on the plot—rocks and positions marking channels for example. Sometimes it is useful to make one of these marks a mark of the course because then you can relate laylines to that point and these will help in making tactical decisions regarding the course to sail.

To create a route select **menu>waypoints>make route** or click on the icon (shown left) on the tool bar. When you open the display you see the names of all the waypoint areas and below a list of waypoints in the area selected; click the arrows next to the name to move to a new sector. You can alter the order in which the waypoints appear: clicking on **sorted** will display the waypoints alphabetically, whilst **unsorted** will show them in the order they were entered—useful if this is the order they will be needed in a particular race.

To make a route click on the waypoints from the lists in the order of the course beginning with the start mark. Those selected will then be displayed in the **Route** box on the right of the window; highlight in the Route box and click **delete** to remove. Also shown will be a letter P or S indicating the direction of rounding—highlight a waypoint and click **switch rnd** to change this. If the start and finish are the same you do not need to select the finish because Deckman treats routes as circular: when it gets to the end it goes back to the beginning again.

The first sector in the list, *Triangle*, is a special list: in many races you have a triangular course, or some marks which will be set by the committee—almost certainly a leeward mark at the start, and often an initial windward mark—and to make it easy to set up triangular courses Deckman has special facilities to set a wing mark and a mark half way up the windward leg by simply specifying the range and bearing of the windward mark from the leeward mark. In addition, the positions of each end of the start line (see Setting the start on page 4.3) are stored in this sector so you can use these as marks of the course.

Note. Do not remove the *Triangle* sector from the list.

Note. You can edit the Triangle sector and change the names (to use a language other than English, say) but do not change the order of these waypoints—Deckman positions all the marks for triangular courses by using the order of waypoints.

Quick route

Selecting **menu>waypoints>quick route** or clicking on the icon shown on the tool bar allows you to choose a route by setting marks using the position of the mouse. It is also possible to include fixed marks in a Quick Route – simply hold the cursor near an existing mark (it will turn red) and then click the left mouse button.

Once you make the selection the cursor will be accompanied by a box containing the range and bearing of the position of the cursor from either the boat (if the first mark) or from the previous waypoint. The value beside *Total* at the bottom of the box shows the total distance in the present quick route.

Click the mouse at the position you wish to set each mark and then double click at the final mark. You will then be given the following options:

Repeat	allows you to repeat the above process
save as marks	puts the positions of the marks you've created into the waypoints file, where they can be edited or used in routes as normal.
save as route	turns the quick route into the present route, in which case it will operate as usual.

With either of the second two options, the marks will be given the names 'q1, q2....' etc though these can be changed to something more meaningful in the Edit Marks window (see page 3.20).

Note. While the Quick Route option is turned on, you are still able to zoom in and out. You can, therefore, zoom in to see the position of a mark accurately and then zoom out again to set the next mark.

The **Quick Route** facility also allows you another way to set the positions of waypoints (see also *Sailing the Course* below). Click on the Quick Route icon, point the cursor at the waypoint you wish to move (it will turn red). Hold down the left mouse button and drag to the required position. If you are moving a quick waypoint (q1, q2 etc), then the waypoint will be moved; if you try to move a fixed mark, then a new waypoint will be created in the position you drag to with a Quick Route name.

You are also able to add or remove waypoints from the current route using the **Quick Route** facility. To add a waypoint to the current route, select the Quick Route icon and then point the cursor at the waypoint after which you want to add the new mark (it will turn red). Without clicking the mouse button, move the cursor to where you want the new waypoint and double click, followed by **save as route**. To remove a waypoint, select the Quick Route icon and then highlight the waypoint you wish to remove from the route (it will turn red). Hold down the left mouse button and drag the waypoint to either the previous or next waypoint, release the mouse button.

Sailing the course

All of the above preparation should ideally happen before the race begins; during the race you then just instruct Deckman to go to the next waypoint and all calculations will be done with respect to the new mark (the name of the present leg is shown in the box at the top of the display):

 (F2)

next waypoint—clicking on this means all calculations are made with respect to the next waypoint.

 (Shift F2)

previous waypoint—all calculations are made with respect to the previous waypoint.

There are, however, ways of changing the position of the current waypoint to make it fit in with your observations once you start racing. Choosing **menu>waypoints>set waypoint**—or by clicking on the icon shown left on the tool bar—gives you a number of methods to set/adjust the position of the current waypoint (usually, these would only be used with the movable marks in the **triangle** sector, as the fixed marks shouldn't normally move!):

to boat	sets the position of the current waypoint to the position of the boat. For example, when rounding a particular mark for the first time or to set the start mark.
drag current waypoint	allows you to highlight and then click-and-drag and current waypoint only to a new position. Once you release the mouse button, you will be asked to confirm the move.
Ww/Lw from windward	sets the position of the leeward mark and finish line by range and bearing from the windward; brings up a dialog exactly the same as that shown under **Set windward/leeward** (see **Setting the start** on page 4.3) except the bearing you set in the top box is from the windward to the leeward mark.
triangle from lee	you position the windward mark by entering a range and bearing from the leeward.
RB from prev WP	set the position of the current waypoint as a range and bearing relative to the previous mark.
RB from boat	set the position of the current waypoint as a range and bearing from the boat.

Laser RB from boat	as above. For use with a laser range finder.
triangle from mid	set the position of the current waypoint as a range and bearing relative to the mid mark
by lat, long	allows you to specify a latitude and longitude

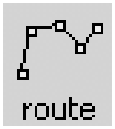
Make sure that the waypoint you wish to position is the one currently selected—its name should be at the top of the navigation display. If used to set the windward and leeward marks in a triangular course then not only will the positions of these be changed, but the gybe and mid marks will also be set.

Set DR position

Choosing **menu>waypoints>set DR** position allows you to set your dead reckoning position by one of three methods:

DR at WP	sets DR position to the position of the current waypoint. This is particularly useful in Simulation mode when, having set up a course, you can put the boat at the position of the first mark.
DR at GPS	puts the dead reckoning position to the current GPS position. Especially useful to set a DR immediately if the GPS fails.
DR by lat, long	allows you to input your own dead reckoning position. This will generally only be used if running Deckman after a GPS failure.

List Route



Clicking **route** on the icon bar brings up a window containing information about the current route, as well as your present latitude and longitude—see Figure 3.4.

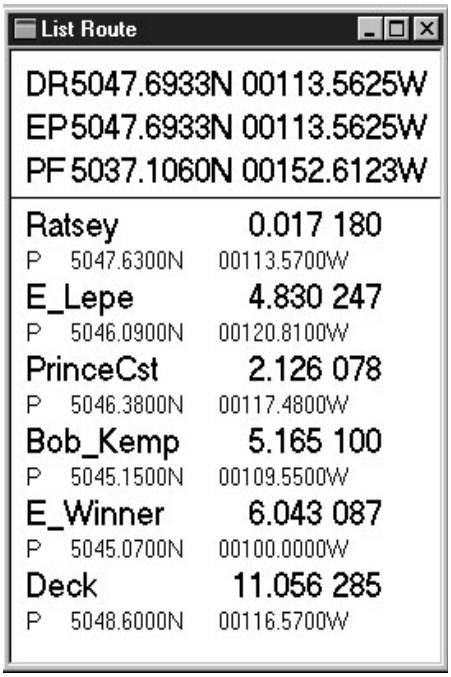


Figure 3.4

Three different positions are shown at the top of the window:

DR	dead reckoning—calculated from the speed and bearing received from the instruments
EP	estimated position—DR position adjusted for whichever current is selected in **Use Current** in the **Navigation options** window (see page 3.21).
PF	position as read from the position fixer, usually GPS.

Beneath this is a list of the marks showing on the first line of each entry the range and bearing from either the boat if it is the first waypoint, or from the previous mark. The second line has a letter (either P or S) indicating the direction of rounding, followed by the latitude and longitude of the mark from the waypoint file.

What If?

This displays all the information you might need for any of the legs of the course, using either the present information from the instrument system, or any other data you enter. This is what is meant by 'What If?'—you can introduce any wind direction, speed, tidal component, etc. that you like to see what impact it would have on any leg of the course. Choose **what if** from the icon bar to bring up the window—an example is shown in Figure 3.5.

The boxes on the left of the window allow you to move between legs of the course:

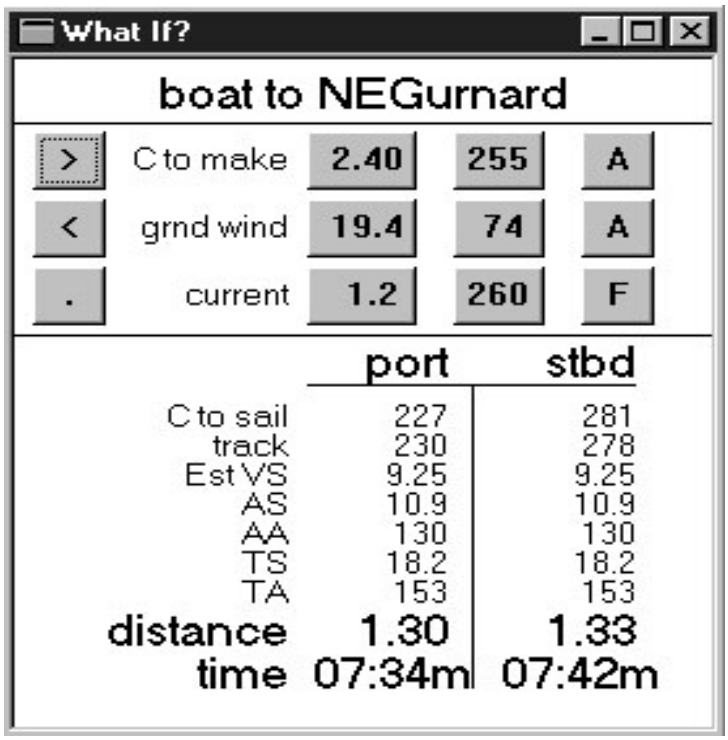


Figure 3.5

>	next leg
<	Previous leg
.	Present leg

There are three rows of boxes to allow you to control the information used in the What If? calculations (values in the example in brackets):

C to make	Course to make to the mark	
	Left	Distance to the mark (2.40)
	Middle	Bearing to the mark (255°)
	Right	Automatic update or fixed (A)
grnd wind	Ground wind	
	Left	Ground wind speed (19.4)
	Middle	Ground wind direction (74°)
	Right	Automatic update or fixed (A)
current	Water current flow	
	Left	Water current speed (1.2)
	Middle	Water current direction (260)
	Right	Automatic update or fixed (F)

Click on any box to input a value you wish to try. The right hand column of boxes read either F or A and show whether the value has been fixed (F) by your entering a value or is being automatically updated (A) by the instruments. Initially, all will read A but will switch to F if a value is entered. Clicking on the A/F box allows you to switch between your values and those from the instruments.

Note. Any changes made here affect only the What If? function; they do not affect the Navigation display.

The bottom part of the display contains the calculated leg information for each tack, or for one tack if it is a free leg:

C to sail	Course to Sail: the course to sail for the indicated leg of the race, allowing for the current. If the leg is not a free leg then optimum or target values are used to calculate the courses for each tack or gybe.
Track	direction of the track which the boat makes over the ground if sailed on the above course.

Est VS	Estimated Boat Speed; this is a speed through the water.
AS	Estimated Apparent Wind Speed.
AA	Estimated Apparent Wind Angle.
TS	Estimated True Wind Speed.
TA	Estimated True Wind Angle.
Dist	Distance to the laylines if the leg is not free; else blank.
Time	Time to the mark, or to the laylines if the leg is not free.

Planning

This is Deckman's optimum route finding program. Planning will give you the quickest route between the two selected marks, given any wind and tide information–see Figure 3.6 in which the optimum route is shown in heavy black, along with arrows representing the current at each point.

Note. Deckman will route around any land that lies in the way. Deckman uses the background chart colour to determine where the land is, so before you choose the **do isochrones** command, you must zoom so that all of the legs of the course for which you want to plan are visible.

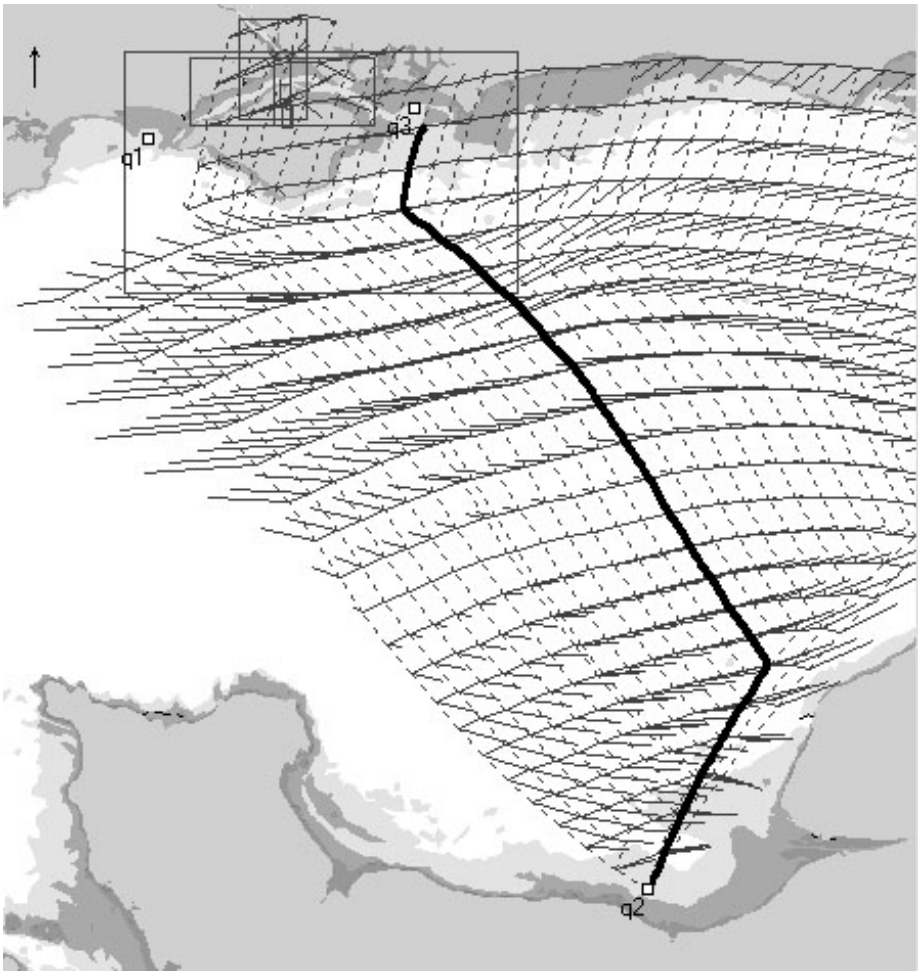


Figure 3.6

Selecting **menu> planning>setup plan** allows you to prepare the variables for the Planning calculation, i.e. select the leg of the course, the start time, wind information and so on (see Figure 3.7 below).

At the top of the window is a box where you can select the leg of the

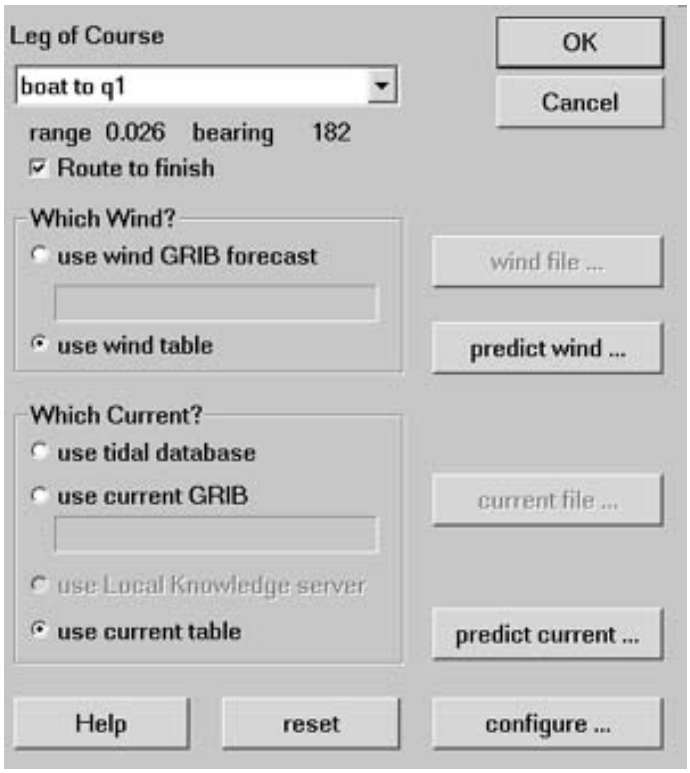


Figure 3.7

course on which you wish to run the plan—click on the arrow to the right of the presently selected leg to be given a list to choose from (as Deckman assumes all routes to start and finish in the same place, the last option may not be relevant). Click on **reset** to calculate from boat to mark for the present leg. The **Route to finish** check box makes Deckman run through the routing calculations for all the legs of the present course.

In **Which Wind?** you can choose between GRIB wind forecasts (where you will be prompted to select the correct file; see Chapter 11 for more

information on these) or a wind table in which you must **predict wind**—direction and strength at particular times, as shown in Figure 3.8.

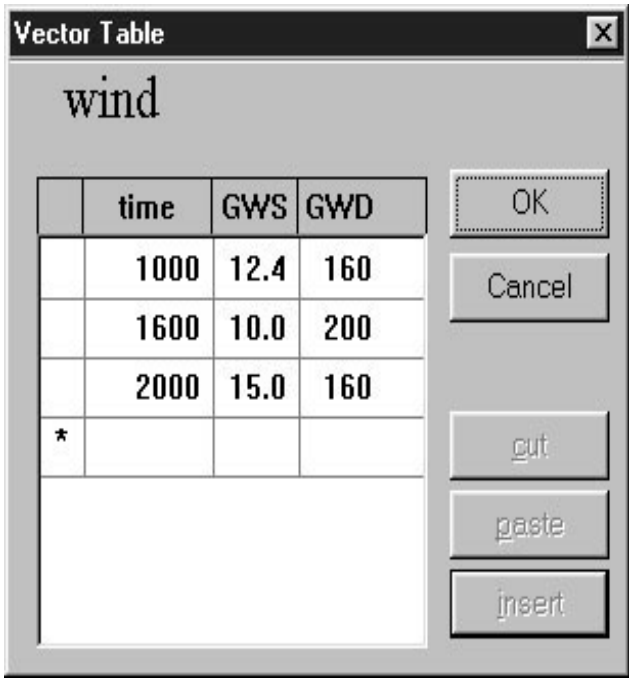


Figure 3.8

Similarly, in **Which Current?** choose what source of current data you wish to use: Deckman's own tidal database, current GRIBs or your own predictions. An additional option will appear if the Local Knowledge server is enabled.

When entering information in the wind or current tables, the following applies: times of predictions should be entered in hours and minutes. If a prediction is 24 hours or more after the previous one, the time must be preceded by a number equal to the number of complete 24 hour periods that have passed since the last entry. Clicking on a value allows you to change it; clicking in the left hand column followed by insert allows you to add new entries. Note that if these tables contain only one entry then the values will be used at all times; if two or more entries exist, Deckman will interpolate between the values, and the times must cover the whole range of time for which you are planning.

Note If using Deckman tidal database this then please see Tides on page 3.21). If using GRIB forecasts, please see Part 2, Chapter 9.

Selecting **configure** from the bottom of the window allows you to set further variables—see Figure 3.9. In **initial course fan** you can adjust the limits, frequency and number of possible initial course headings to be tried. The left hand side of the fan is automatically set to fifteen degrees left of the bearing between the two marks but can be changed (for example to include possible tidal benefits outside this range) by clicking over the value bringing up the numeric keypad. If the leg is likely to involve tacking or gybing, then the left hand edge should be set to a value at least half your tacking or gybing angle to the left of the course. Starting from this course bearing Planning will calculate the route for all the bearings at intervals equal to the value set in **angle between steps in fan** and will do the number of calculations set in

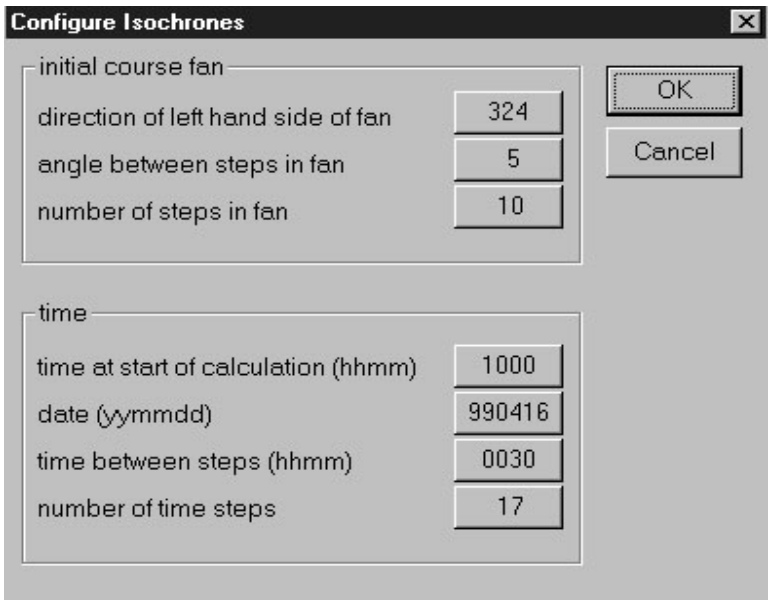


Figure 3.9

number of steps in fan. This should be set so that the Planning calculation goes to a bearing that is at least as far to the right of the course to the mark as the start of the fan is to the left.

Below this you are given the option of setting the date and time of the start of the Planning calculations. You can also select the time interval between steps of the plan and the number of these time steps. Make sure

that the time interval between steps multiplied by the number of steps gives a time that is at least what you expect the leg to take. Obviously, for longer races the time between steps should be greater; trying to see too many different options at once merely makes things more confusing, not less so!

Once you have setup your plan choose **menu>planning>do isochrones**. You will then see Deckman draw all possible routes, with the optimum shown in red (heavy black line in Figure 3.6). You can then choose to view any or all of wind, current and isochrones by clicking on the following icons on the tool bar.


Show wind—lines point into the wind


Show current


Show isochrones


Show animation— see **Animation** below


edit GRIBs


setup—returns you to the Setup menu to change variables

Once you have a plan in place **menu>planning>optimum details** allows you to view conditions at each time interval during the leg (note that the **time** column here shows you both the day of the month and the time).

Any number of plans can, and should, be tried to see how the optimum route would change in various different conditions. Then a decision can be made as to the most likely and a route chosen to match.

Animation

Clicking the **animation** icon on the tool bar allows you to move along the route and view how the wind or current will change with time. In Figure 3.10, you can see that in the bottom left corner, the date and time the display is illustrating can be seen. The two buttons to the right of this

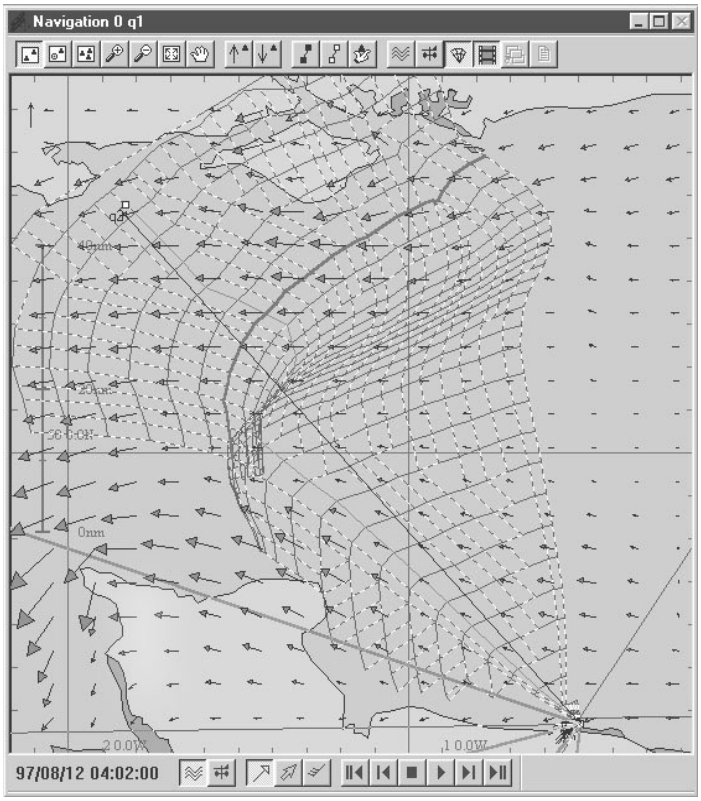


Figure 3.10

give you the option of viewing either current or wind (usual symbols, see above). Three further buttons allow you a choice of what types of vectors are used: always the arrows point in the direction of flow. For the two arrows (left and middle), the size of the tip is proportional to the speed; for the feathered pointers the number of feathers indicates the rate—for wind one is equivalent to five knots, for tide one equals 1 knot. For each, half feathers represent half the value.

Edit Marks

The facilities for entering new waypoint sectors and waypoints described in this section are general purpose facilities intended for race or passage preparation. To make changes or additions to the waypoint list choose **menu>waypoints>edit waypoints**; you will see the Edit Marks window appear, as shown in Figure 3.11. The commands in the top right of this window are for editing waypoint areas; those at the bottom left refer to the actual waypoints.

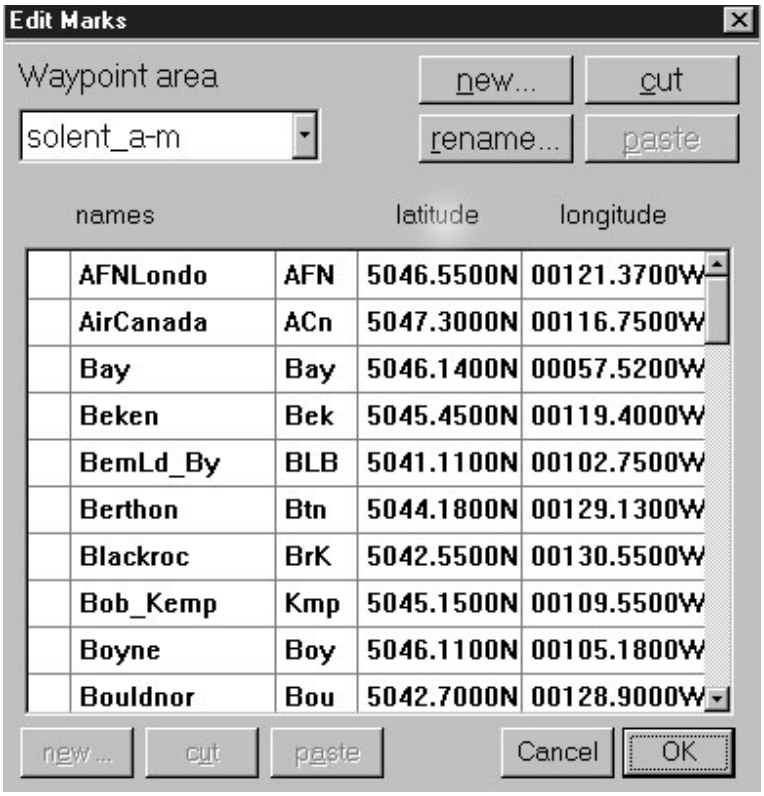


Figure 3.11

To change the name of an area choose **rename** when it is selected; you will then be prompted to enter a new sector name. Similarly, to add a new sector choose **new** and then enter the name.

If you have used the quick route method to create a set of waypoints you may **rename** the *qkroute* area to your own area name. Deckman will automatically create a new *qkroute* area next time the quick route facility is used.

To edit a waypoint—either name, short name, latitude or longitude—simply click in the box where you wish to make the change and then use the computer's keyboard. To enter a new waypoint click in the left hand column (the cursor will change to an arrow) on the row where you want to insert the new waypoint and then click **new** from the bottom left of the window. A new waypoint with the name 't' will be created; edit name or position as above. Names and positions can also be cut and pasted in the same way.

Note. Positions are in the form: degrees, minutes and decimals of minutes. As always, positive values are North and East; negative are South and West.

Tides

To use the tidal facility in an area that Deckman's tidal information covers, you have to enter the high water times and heights for the ports near to the area you are sailing in.
Select **menu>planning>edit HW** and the dialog shown in Figure 3.12 will appear.

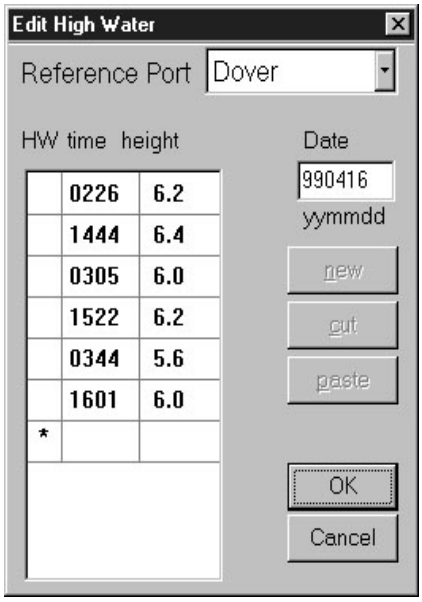


Figure 3.12

Put the date of the first high water you enter in the **date** box. To enter times and heights click over the value you wish to change and use the computer's keyboard (not the numeric keypad here). To insert additional entries, either between or after those already there, click in the left hand column (headed **HW ,** where you will see the cursor change to an arrow) at the position you wish to make the entry and then choose **new**. You can also cut and paste the entries by selecting them in the LH column.

SHOM tidal information

The SHOM data is split into nine different areas; you will need to obtain the relevant files and release codes from your agent or B&G Ltd before use. The SHOM areas and relevant HW ports are as follows:

Name	Areas covered	HW ports
BaieDe Seine	49 29 - 49 48 N / 1 46 - 1 03W	Cherbourg
	49 38.5 – 49 40.8 N / 1 41.25 - 1 34 W	Cherbourg
	49 16 - 49 47.7 N / 0 19 W - 0 14 E	Le Havre
Bretagne Nord	48 36 - 49 09 N / 4 20 - 3 03 W	Roscoff
	48 35 - 48 58 N / 3 44 - 3 21 W	Roscoff
	48 48 - 48 51.5 N / 3 29 - 3 22.5 W	Roscoff
	48 45.7 - 48 46.6 N / 3 36.4 - 3 34.5 W	Roscoff
	48 37 - 48 46 N / 3 59 - 3 50 W	Roscoff
	48 42.5 - 48 46.5 N / 4 05 - 3 56 W	Roscoff
	48 43.4 - 48 43.9 N / 3 59 - 3 58 W	Roscoff
	48 43 - 48 43.6 N / 3 58.1 - 3 57.01 W	Roscoff
Bretagne Sud	46 43 - 47 52 N / 4 30 - 1 53 W	Concarneau
	47 15 - 47 34.5 N / 3 21 - 2 38 W	Port Navalo
	47 31 - 47 46 N / 3 36 - 3 18 W	Port Tudy
	47 38 - 47 54.2 N / 4 11 - 3 49 W	Concarneau
Gascogne	42 49 - 48 30 N / 7 30 - 0 45 W	Concarneau
Iroise	47 45 - 48 46 N / 5 18 - 4 16 W	Brest
	48 16 - 48 34 N / 5 09 - 4 38 W	Brest
	48 00 - 48 50 N / 4 53 - 4 39 W	Brest
	48 16 - 48 24 N / 4 39 - 4 14 W	Brest
LaManche	48 00 - 51 53 N / 7 00 W - 3 00 E	Cherbourg
	49 14 - 50 10.7 N / 1 45 W - 0 24 E	Cherbourg
Normand	48 30 - 50 18 N / 3 10 - 1 20 W	St Malo

Breton	49 32 - 49 47 N / 2 20.14 - 1 44 W	St Malo
	49 21 - 49 30.4 N / 2 34 - 2 14.12 W	St Malo
	49 05 - 49 14 N / 2 13 - 1 54 W	St Malo
	48 47 - 49 28.5 N / 2 01 - 1 32 W	St Malo
	48 37.2 - 48 45.2 N / 2 19.5 - 1 45 W	St Malo
	48 31.4 - 48 42 N / 2 51 - 2 25.3 W	St Malo
	48 45.5 - 49 06.5 N / 3 06 - 2 46.3 W	Paimpol
PasDeCalais	50 37 - 51 12 N / 1 00 - 2 25 E	Calais
	50 43 - 50 49 N / 1 29 - 1 40 E	Calais
	50 56 - 51 01 N / 1 43 - 1 54 E	Calais
	51 01 - 51 06 N / 2 05 - 2 26 E	Calais
Vendee Gironde	45 15 - 47 20 N / 3 00 - 1 00 W	Les Sables d'Olonne
	45 25 - 46 26.74 N / 1 42 - 1 02 W	La Rochelle
	46 04.73 - 46 10.8 N/ 1 19.21 - 1 06.4W	La Rochelle
	46 52 - 47 20 N / 2 52.67 - 1 58 W	Saint Nazaire
	45 25 - 45 45 N / 1 38 - 1 00 W	Pointe De Grave

Ensuring Deckman is not running, place the relevant file in **c:\program files\BandG\deckman\data** directory (where c:\program files\BandG\deckman\) is where you installed the program. The file will be called **SHOM** followed by the name of the area. Start Deckman and you will be prompted for a 16-digit code.

You can then use the data for the SHOM areas which you have enabled in your planning calculations and so on by entering the times and heights of high water for the relevant ports.

Tidal currents layer

This allows you to view the predicted tidal currents for a particular area and time on your chart. To use this function, first enter the times and heights of high water in the **Edit High Water** dialog; now click **menu>layers>general** then click the **Dn** button to scroll to the bottom of the list where you will find **tidal currents** – click on this to select followed by **OK**. A number of buttons will appear at the bottom of the screen and possibly some arrows on the navigation display.

The large button in the middle shows the date and time – click in this and enter a new date and time (in the form yymmdd for date and hhmmss for time) on the keypad. You will now see arrows representing tidal current overlaid on the navigation display. You have a choice of arrow types, which is controlled by the three buttons on the bottom left corner. For the two arrows (left and middle), the size of the tip is proportional to the speed; for the feathered pointers the number of feathers indicates the rate— one equals 1 knot.

This tidal currents layer can be animated from the start time, and there are a number of buttons to allow you to control this to the left of the box where you entered the start time.

The box immediately to the right of the date/time box shows you the tidal current rate/direction at the position of the cursor. Note that this does not operate when the animation is running.

The **Options** button brings up a dialog which gives you some additional controls and information about the tidal currents layer. At the top of this dialog, the **Choose** button allows you to control the colours used on the display. The colours defined in **Custom Colors** are used by Deckman to show changes in current rate, with each colour representing 0.5 of a knot of current. The **Scale** box allows you to control the size of the arrows/tufts. The **density** box allows you control how many arrows you have across your display in each direction (i.e. entering 20 here will give you a 20 by 20 grid of arrow representing the tidal current).

At the bottom of the **Options** dialogue there is also a drop down list showing the reference ports used by the area of the chart currently being

displayed. This is an easy way to check you have entered tidal information for all the reference ports you might need.

Navigation options

You have a number of options as to the sources of data you use for your navigation functions in Deckman, such as variation, current/tide, boat position and so on. Hit **menu>view>options** and you will be presented with the dialog shown in Figure 3.13.

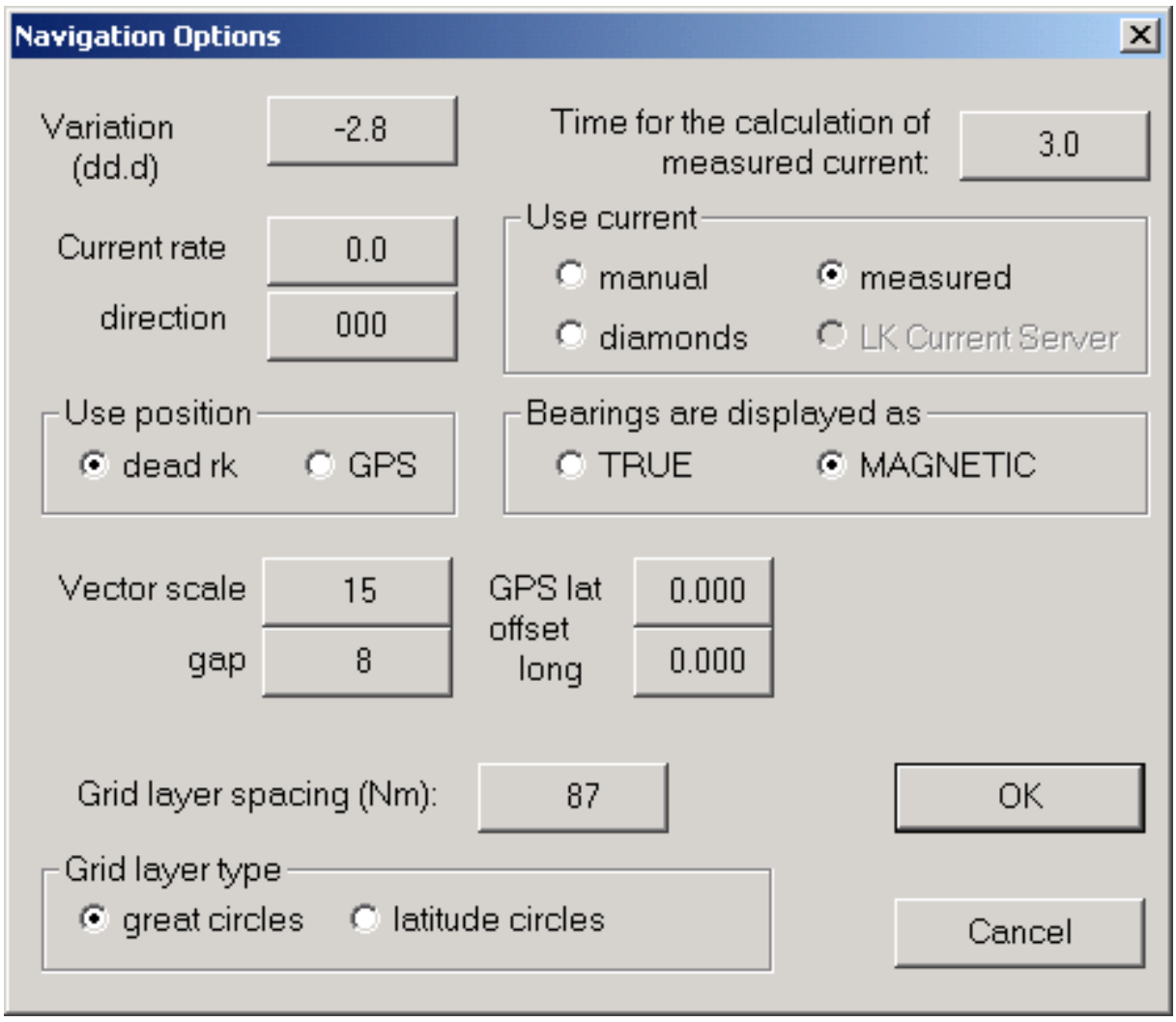


Figure 3.13

Variation is the magnetic variation for your area in the form dd.d. Preceding the number with a minus sign will set it to West, a positive

number is variation to the East. Deckman will automatically calculate variation based on your time and position based upon the world magnetic model so you should never really need to change this.

Bearings can be set to *TRUE* or *MAGNETIC* so that all bearings, laylines etc are displayed accordingly. This can be extremely useful in areas of the globe where variation changes rapidly such as the Southern Ocean.

Tide

You have a choice of different sources of tidal information in Deckman:

Manual

This is simply a manually entered current rate and direction – these are set in the **current rate** and **direction** boxes at the top of the Navigation options window. This might be a particularly useful if you have just noticed the current on a buoy as you sailed by.

Measured

Every 2 seconds, Deckman compares the GPS position with the dead reckoned (DR) position, with the difference being due to current effects (and, possibly, calibration errors). The difference is then termed the measured current. This value is then averaged over a time period set in the **Current update time** box.

Diamond

Another current which Deckman is constantly updating is referred to as the diamond current: this is calculated every 10 seconds from the tidal database — if the database doesn't cover your area then the calculated values are zero. All the information is controlled by entering times and heights of high water for ports near to where you are sailing, as described in Edit High Water (see page 3.14).

These values may be more steady than the measured current, but it is possible that they are also wrong because of the conditions at any particular time.

Deckman has the possibility of using tidal information from SHOM, the French Hydrographic office. For this you require additional files and release codes.

If you have the SHOM files, then it is possible that Deckman will have to choose between this and its own database. This is done on the basis of the area covered by the tidal chart with smaller areas preferred as they are assumed to be more accurate.

One thing you need to be aware of if using the SHOM files is that Deckman makes the selection described above regardless of whether there are any high water times entered meaning that, if no HW times are entered for the smallest area at a particular location, then no tidal information will be seen for this area (it will always show 0 for both rate and direction). You must therefore either ensure that HW times are fully entered or you can remove the files – please see Tide files on page 12.7.

If neither of these sources of tidal data cover your patch then B&G can create a personal database if you have the necessary information.

LKCS

The Local Knowledge Current Server covers particular areas, mainly in North America.

Position

The **Use Position** option gives you a choice of the source of the yacht's present latitude and longitude which is used in all the navigational calculations.

dead rk	actually uses the estimated position, which is the dead reckoning position adjusted for current.
GPS	position fixer—usually GPS.

When you switch between Simulation mode and normal use, this will automatically toggle between dead reckoning and GPS. The only time you should have to change the setting here is if your GPS fails, in which case you will want to switch to using Deckman in dead reckoning mode.

Display options

The following affect only the look of the Navigation window:

Vector scale	adjusts the length of the wind vectors
Vector gap	sets the gap between the tufts of wind vectors so that you can see them more clearly.

If your boat does not appear to be in the right position on the chart, entering a **GPS offset** here (in minutes and decimal minutes) should help. A positive value will offset North or East; negative moves position South or West.

Grid layer spacing allows you to set the distance between lines on an overlaid grid. **Grid layer type** gives you the following options:

great circles	a great circle is drawn from your present position to the mark, along with lines parallel and perpendicular to this in great circle terms.
Latitude circles	grid lines follow latitude in one direction, with equidistant points along these connected in the other direction

Display time

Choosing **menu>view>display time** allows you to set the track time, e.g. if set to 15 minutes the boat's track (and associated information) is displayed for the previous 15 minutes.

General Layers

Choosing **menu>layers>general** allows you to determine what information is displayed on the screen. Any of the following can be selected:

mark laylines	shows the laylines from the selected mark
boat laylines	displays the yacht's present laylines varying

	with wind, tide and tacking angle.
shoreline	Deckman can provide a simple shoreline if chart coverage for a particular area is poor.
digital chart	allows you to see present position against a chart—almost always left on.
North	displays a north arrow in the top left hand corner of the screen.
Wind	shows a tuft of wind arrows at intervals along the boat's track. The direction of the arrows indicates the true wind direction and their lengths indicate true wind speed. Note that the lines point into the wind.
DR track	shows the track of the boat calculated from Dead Reckoning, not including the current.
PF track	shows the track of the boat given by the position fixing system, usually GPS.
Course marks	displays the waypoints that are a part of the course that fall within the geographical boundaries of the window.
other marks	displays in the window every mark in the waypoint file that comes within the geographical boundaries of the window's display.
GRIB view	ignore this setting (it should remain turned on). Please see page 9.1 for details of operation of the GRIB viewer feature.
boat	shows the present position of the boat.
join waypoints	connects waypoints for present route by a great circle
isochrones	gives you the option of having the toolbar icons for Planning displayed at the top of the Navigation screen. Most useful if left on, but turn off to remove isochrones when you have finished using Planning.

grid layers	displays grid layers.
course line	two lines will be displayed when this is turned on: the solid line shows the course over ground as read from the GPS; the dashed line is the course through the water (i.e. heading plus leeway, without the effects of current).
limits laylines	lets you see the extent of variation in the mark laylines for the last fifteen minutes. The appearance and time interval can be changed as per page 12.6
Competitors	shows the positions of your competitors, if this feature has been setup as described in Chapter 10.

Chart options

Though Deckman will work with a wide range of both raster and vector charts, you are only able to select from one of the following columns:

C-MAP Version	Euronav Version
C-Map vector charts	Livechart vector charts
Maptech (BSB), PCX, Reml raster charts	ARCS raster charts
	Maptech (BSB), PCX, Reml raster charts

These two options work slightly differently in Deckman, so please make sure you refer to the correct section below.

The Deckman display will normally switch between the different loaded charts automatically depending on the scale and the extent to which you are zoomed in. However, you may wish to override this automatic switching and are able to specify Maptech charts to be used in preference to others. Select **menu>charts>use Maptech charts** and then check the **Use Maptech charts in preference to others.** To turn this feature off again, repeat the above and clear the box. The **Show Maptech chart outlines** function allows you to view the positions of the loaded Maptech charts without actually using them.

Chart Layers

This is where you can control which layers are turned on or off on your vector charts. The procedures for C-Map charts and Livecharts are slightly different, so make sure you refer to the correct section below.

C-Map

Select **menu>charts>chart settings** and you will be presented with a dialog (see Figure 3.14) which allows you to choose which layers you wish to see shown on your display.

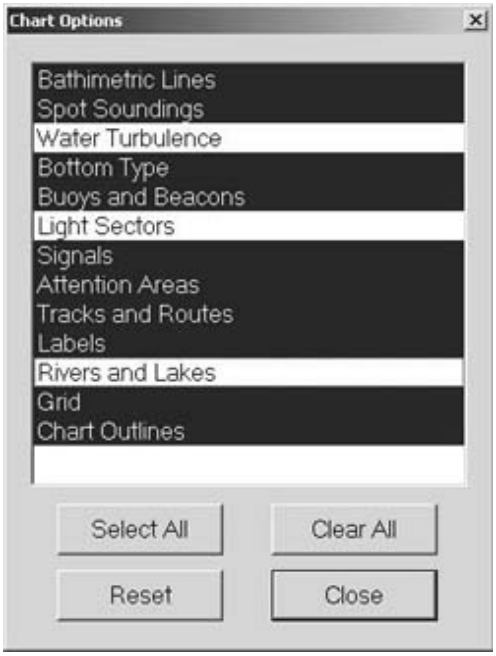


Figure 3.14

Livecharts

Note. The way you turn layers on and off here will depend on your dongle type.

For an old style, Livechart-only dongle (serial number beginning 1071) choose **menu>layers** and then one of the following options:

Hydrographic	shows a dialog with standard hydrographic layers. Once selected, these remain selected across all the Livecharts as the charts scale and positions change.
Livechart	shows all of the layers which are available on the currently loaded Livechart. The layers will vary from chart to chart. Select layers here for fine control of layer visibility for a particular chart.

With the new style dongle (S/N beginning 2071), all chart layers are turned on or off by choosing **menu>charts>chart settings**. Layers selected here apply across all charts.

The **menu>charts>colour** option gives you additional controls over the appearance of you charts.

Chart interaction

Note. This function applies only to the new style dongle (serial number beginning 2071). Chart interaction works by turning off the Deckman navigational layers and giving you access to the additional features of the charting kit. It is best used by turning it on for a specific reason (for example to select a particular chart to use) and then turned straight off again.

Click **menu>charts>chart interaction** to turn on this feature which gives you additional controls over your charts. If you now select **menu>charts** you will see the option **select chart**. Choosing this will present you with a 'tree list' allowing you to select any installed chart to view. With chart interaction turned on you can use the left mouse button to zoom in on a particular chart (by clicking in the coloured box outlining it) or zoom out by a scale factor using the right mouse button.

For further information on the functions here choose **gmenu>Help>Chart System Help.**

Zoom

Selecting any of the following from the icon bar—or choosing **menu>zoom** and then the required option— allows you to alter the scale of the display:

 this leg	displays the whole leg from the previous waypoint to current waypoint.
 from boat to mark	displays the remaining distance from the yacht's position to the buoy.
 on boat	allows you to view a specified range around the boat with the boat in the centre of the display. The boat will automatically be re-centred when it has moved 20% of the distance towards the edge of the display.
 whole route	zooms to allow you to see all the waypoints in the current route
 Chart zoom in	click and drag to select the area to zoom in on.
 Chart zoom out	click and drag: the present view will be shrunk into the position of the rectangle.
 zoom full chart/ zoom out	Euronav: zooms to the full extent of the loaded chart. C-Map: click to zoom out.
 Last zoom	zooms to the previous scale/area
 Next zoom	zooms to the next scale/area; will only work if the **last zoom** button has been used.
 Pan	allows you to 'move' the chart keeping it at the same scale.
Chart zoom 1:1	when using raster charts (ARCS, BSB, PCX) this function allows you to zoom to the scale at which the chart was scanned.

Note. Whilst the zoom in, zoom out and pan functions are turned on, the display will not update (e.g. the yacht's position). However, these functions will automatically turn themselves off if left inactive for 15 seconds.

Special chart views

Images as charts

It is possible to use any .jpg or .gif image instead of a chart as your 'background' in the Navigation window of Deckman. There are a number of reasons why this might be useful, for example if you do not have appropriate digital charts for your area or, and especially in long ocean races, you wish to use specialist weather or tidal charts.

Select **menu>charts>use image as chart** and then browse to the correct file, followed by **Open**. You will then be presented with a dialog reminding you that you must geo-reference your image up to three times. Geo-referencing is simply telling Deckman which positions on the image refer to which geographical positions; see below for details on the process in Deckman. Click **OK** and the next dialog you see allows you to choose the type of projection of your image:

Equidistant	meridians are vertical and lines of latitude are equally spaced
Mercator	vertical meridians but lines of latitude space more widely towards the poles
Polar stereographic	meridians are straight lines from poles – usually used for geostationary satellite images

Pick the correct one, followed by **OK**.

The geo-referencing process then involves entering the latitude and longitude of known positions on the image. After you have selected the type of projection above, the cursor will appear as a cross with the number '1' beside it – click at a known position on the image and enter the lat/long in the dialog (as always in Deckman, North/East are

positive, South/West as negative) followed by **OK**. The number beside the cursor changes to a '2' and you repeat the above process (possibly twice more).

Note. You are still able to use the zoom in/out tools to increase accuracy.

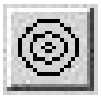
Once you have completed geo-referencing (a dialog will pop up telling you when this is the case), Deckman operates as normal, except that the only 'chart' you use is the image you have chosen.

To exit this feature and return to normal charting, select **menu>charts>use image as chart** followed by **Cancel**.

Warp image

This function allows you to manipulate your chart so that a great circle route is changed from being curved (as usual in Deckman) to being a straight line. This is particularly useful in a long race (and especially with the 'Competitors' feature – see page Chapter 10), as it allows you to get a proper idea of who is ahead/behind with respect to a certain waypoint or the finish.

For example, you could convert the image shown in Figure 6.15 to that in Figure 6.16, in which the great circle route from Land's End to New York is shown straight.



Select **menu>chart>warp image** and you will be presented with a dialog reminding you how this feature operates; click **OK**. You must then select two points on the display – the first will be shown at the top of the screen and is the centre of the projection while the second will be shown directly below it. Before you select the points, hit the **grid options** button (shown left) at the top of the display to choose what grid lines and spacing you want to have displayed on the warped image: you can choose to have the grid centred on different points with different meridian and parallel spacing:

Off	No grid
North pole	Grid based on the North pole; will be the same as normal lat/long grid

Current waypoint	Meridians from the current waypoint, parallel lines at equal distance from the current waypoint.
Projected centre	Meridians from the projection centre (the first point you select), parallel lines at equal distance from the projection.

Note. The spacing units are in degrees and decimals (ddd.dd).

Hint. For meridian spacing, something like 20° is usually appropriate, since this gives you 18 meridians 20° apart. The parallel spacing depends very much on how far apart the two points you choose are – see below.

You then pick two points and the image is warped so that the great circle route between the two points is represented as straight and the chart is altered to accommodate this. You cannot zoom out beyond what is shown on the chart at the time you select **warp image** so make sure both points you wish to select are visible. You can zoom in to position them, however.

Think carefully about what you are trying to see from your projection, and choose the points and grid options accordingly, since it is possible to get some very useful information from the resulting images. For example, on a long race but with the fleet in a close area you may wish to see who is ahead/behind with respect to the finish. For this you would have the grid based on the current waypoint (assuming this is the finish) but then have close parallel spacing, and pick two points at either end of the fleet.

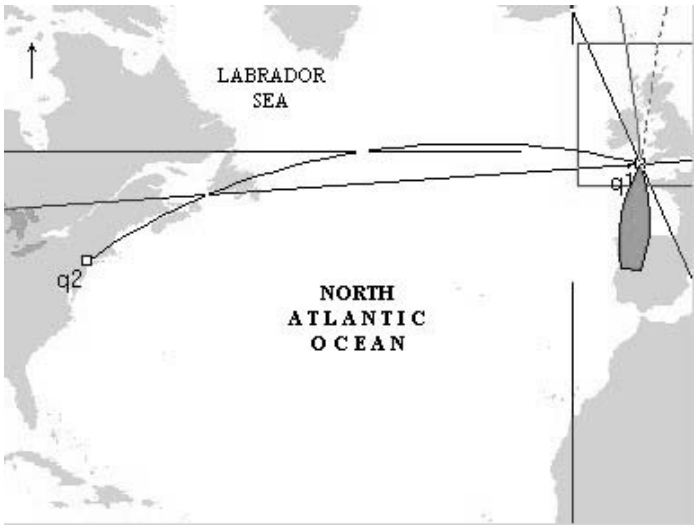


Figure 3.15

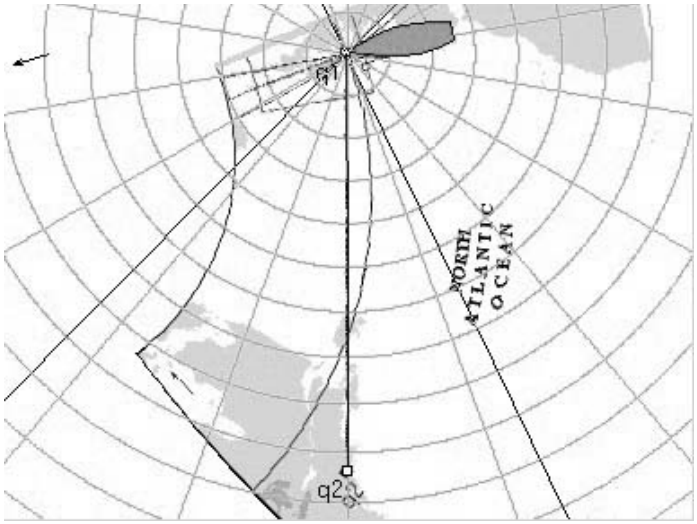


Figure 3.16

Chapter 4 : Start display

Deckman incorporates a display for use specifically when starting a race. With the position of the two ends of the start line entered, Deckman will give you the distance and time to each from the boat's current position, and will also display the current laylines and line bias.

Clicking on **start** on the icon bar will give you a starting display as in Figure 4.1; the direction of start is always from the bottom of the diagram to the top, so that the port or pin end of the line is to the left and the starboard or committee boat end is on the right. The line above the start line indicates the present line bias—it is drawn from whichever end of the line is favoured, the port end in the diagram. The pairs of lines drawn from each end of the line are the laylines.

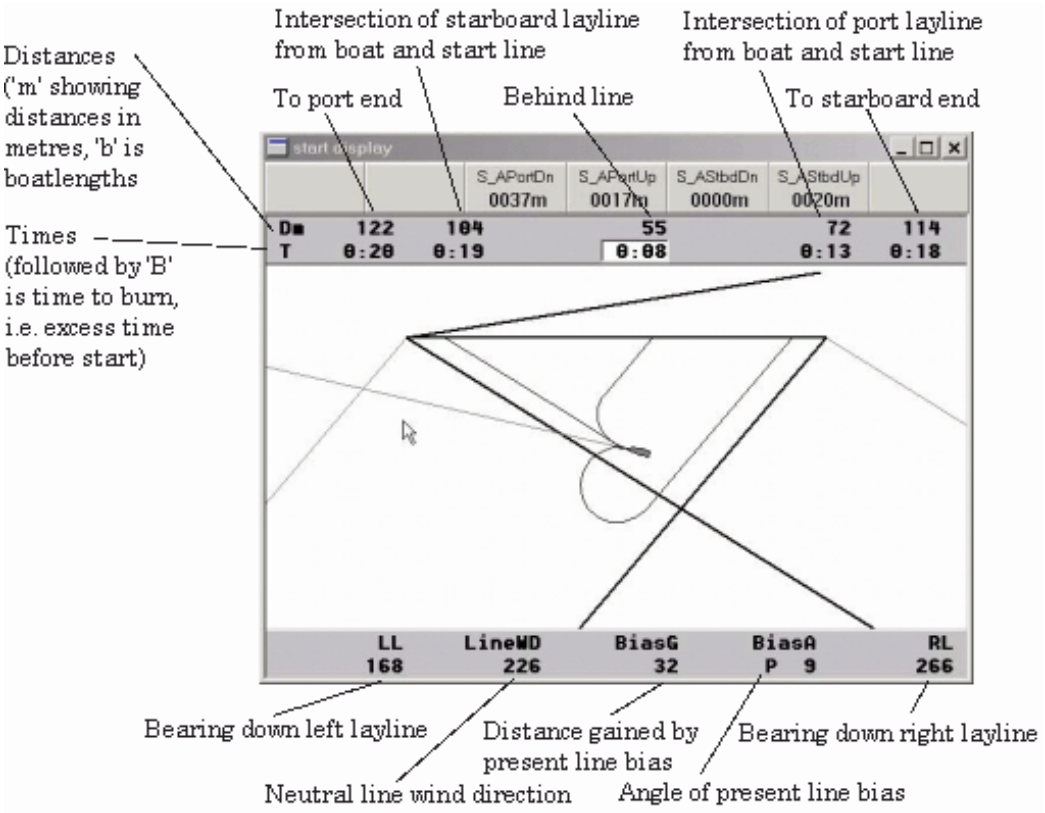


Figure 4.1

Start information

The Start display contains a Data bar similar to that in the main Navigation where you can view any data variables you choose. When the Start display is open, select **menu>Databar** to toggle this on or off. This data bar then operates in exactly the same way as the Navigation data bar (see page 1.1 for details).

At the top of the display in the centre are two numbers: the one on top shows the perpendicular distance from the bow to the line (in the presently selected units, metres or boat lengths, see below) whilst underneath is shown the countdown to the start. The other numbers at the top of the display show (from left to right) distance and time: to the port end of the line, to the intersection of the start line with a starboard tack layline drawn from the boat's present position, to the intersection of the start line with a port tack layline drawn from the boat and to the starboard end of the line.

The figures at the bottom of the display show the following:

LL	Bearing down the left layline, adjusted for current
LineWD	line wind direction, i.e. the wind direction required for the line to be neutral
BiasG	the distance in the presently selected units (see below) which the line bias is worth
BiasA	the angle of line bias, along with the favoured side (P or S)
LR	Bearing down the right layline, adjusted for current

Distances (D) can be given either in metres (in which case an 'm' will be shown after the D, as in the diagram) or boatlengths (which must be set, see Start options on page 4.6). To switch between the two, choose **menu>toggle units.** There are also two possible ways of viewing the time: if a 'B' follows the 'T' then the times are presented as "time to burn", i.e. the difference between the time remaining and the time it will take to cross the line. Obviously, this will only be displayed if the countdown has started. Choose **menu>toggle time** to change between these time formats.

Note. 'Time to burn' will appear as negative if you are late for the start!

Setting the start

Clicking on **menu** allows you to set the position of the line:

Set port end	(see below)
Set port + lee	sets the port end of the line and the leeward mark to the position of the boat
Set starboard end	(see below)
laser port end	sets the port end of the line using a laser range finder
laser port + lee	sets the port end of the line and the leeward mark using a laser range finder
laser starboard end	sets the starboard end of the line using a laser range finder
Set windward/leeward	(see below)

Set port/starboard

When you select either **set port** or **set starboard** you will be given a choice of the following (note that the text assumes you are setting the position of the port end for ease of reading)

PING port	move the buoy to the position of the bow of the boat.
nudge (+upwind, –downwind)	move the buoy a distance specified in metres either upwind (a positive number) or downwind (a negative number). The direction of movement is at right angles to the present line.
line bearing from stbd end	sets the port end of the line by bearing from the starboard end. Line length remains the same and the line is rotated about the starboard end.
line length from the stbd end	specify the line length in metres. Line bearing remains the same and the port end is moved to give the required length.

by lat, long	specify the position by entering latitude and longitude
check port	displays a dialog to show the history of adjustments to this end of the line – see below.

The **check port** option brings up the following dialog shown in Figure 4.2 giving you a history of adjustments to the end of the line, and allows you to undo changes.

The **move m** column shows the distance in metres of each adjustment; the most recent is on the top row. **brg** shows the bearing of each adjustment from the previous buoy position; **length m** is the length of the start line; and **line WD** is the line wind direction i.e. the wind

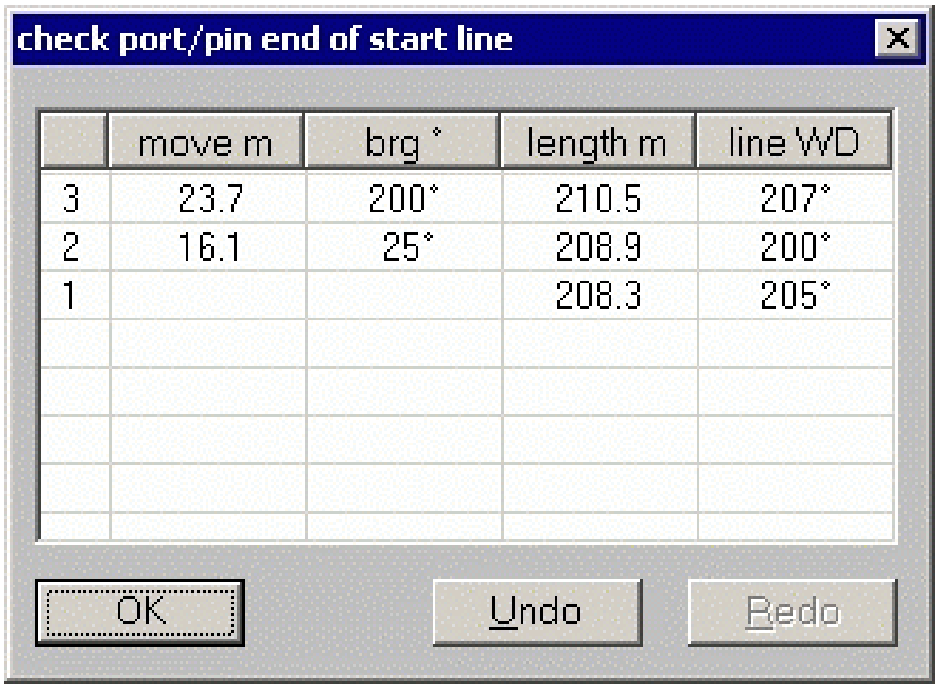


Figure 4.2

direction for the line to be neutral.

Use **Undo** and **Redo** to move the buoy back to a previous position.

Set windward/leeward

The **windward/leeward** option brings up the following dialog:

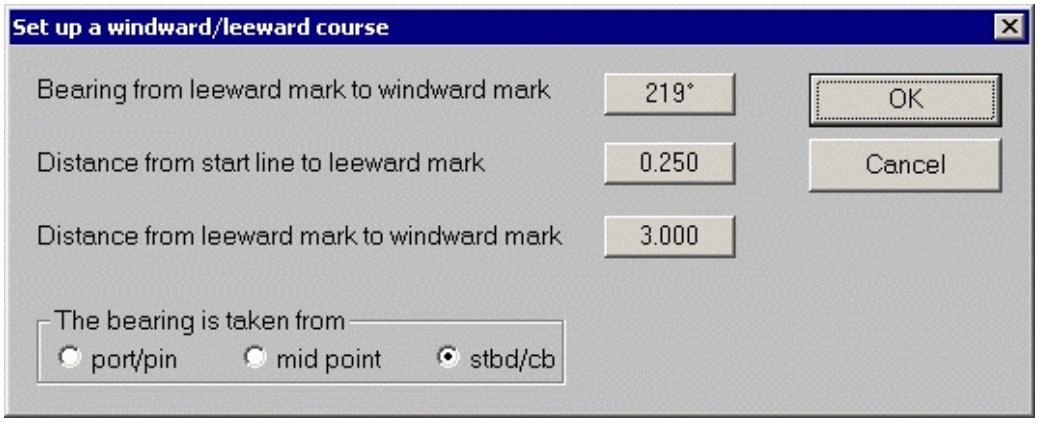


Figure 4.3

This allows you to set up a windward / leeward course and start line (see Figure 4.3). The three boxes allow you to set the bearing of the windward mark from the leeward mark, the distance from the start to the leeward mark and the distance from the leeward mark to the windward mark. At the bottom of the box you must choose where on the start line the bearing is taken from.

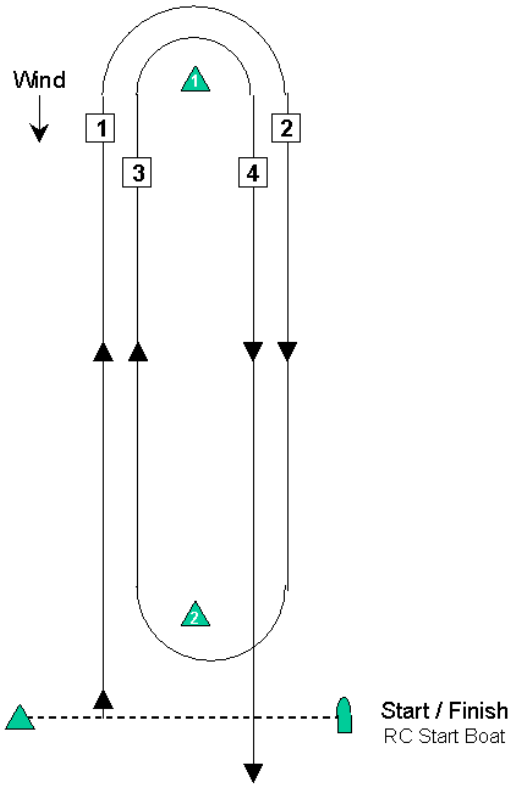


Figure 4.4

Start options

In the Start display, selecting **menu>options** allows you to set the length of the boat in order to show distances in boat lengths and the **Laser to bow** distance, for users with a laser rangefinder version of Deckman. This box also provides a choice of fonts for the start display. **Multihull Beam (ft)** specifies the total beam of the boat in feet, and **GPS to CL (ft)** specifies the distance from the GPS antenna to the centre line of the boat in feet. For monohulls these will generally be zero but if distances are specified then Deckman will shift the position of the boat (and hence all the calculation of times and distances) to the bow of the float or hull which is nearest to the start line (an approximation is made in that it is assumed that the lengths of all hulls are the same).

Start countdown

Hitting **menu>start countdown** brings a dialog controlling the countdown for the start, as shown in Figure 4.5

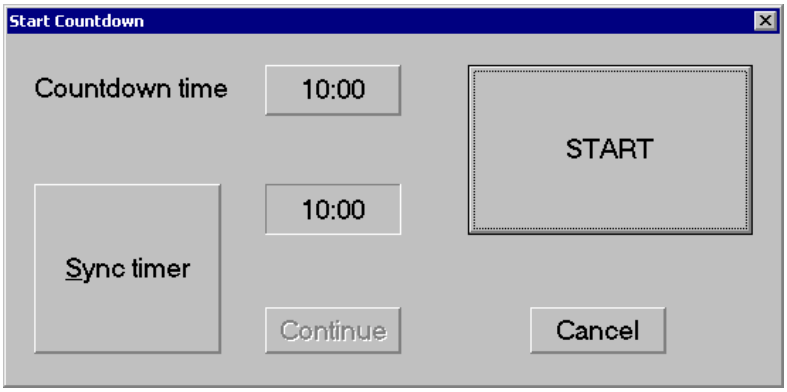


Figure 4.5

Click on the box at the top and enter the time (format mmss), then **START**. The **Sync timer** option allows you to force the time to the nearest minute if you miss the signal slightly initially. Once a countdown has started, the **Continue** button will change to **reset** allowing you to begin the countdown again from the time specified in the **Countdown time** box. Once the countdown reaches zero, Deckman will automatically rollover into a new countdown beginning from the time specified in the **Countdown time** box. After this, if you hit

menu>start countdown, you will see that the **Continue** button is available – this allows you to pick up Deckman's rolling countdown, particularly useful if there is a general recall or for practising starts.

For users with a B&G instrument system, it is possible to show the countdown timer as normal on the displays.

For users of the B&G WTP, the **menu>toggle instruments** option when in the start display allows you to turn the settings for the start on or off on the FFDs and 20/20s. See your WTP manual for further details on this.

Hold wind

This function allows you to temporarily 'hold' or fix the wind speed and direction. This is particularly useful since, during the manoeuvring of a start, the wind information can sometimes become confused. Holding the data allows you to more accurately pick laylines and times to the line.

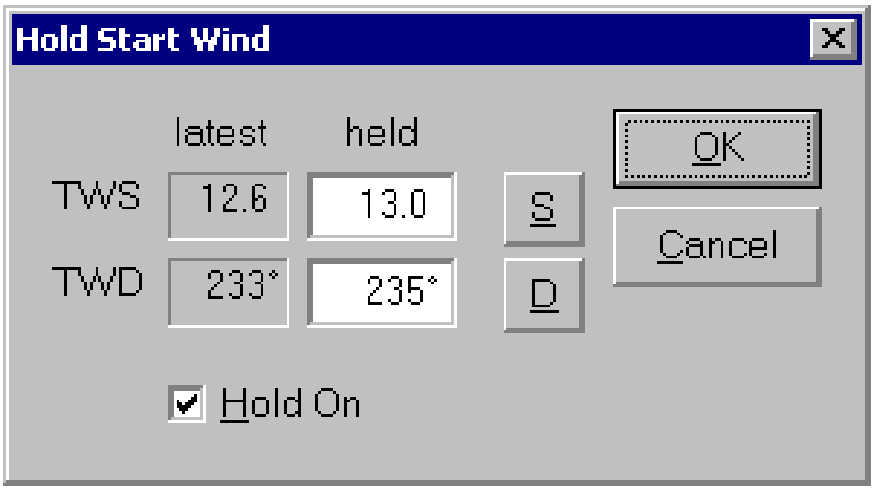


Figure 4.6

In the Start display, select **menu>hold wind** and you will be presented with the dialog shown in Figure 4.5. The present value for TWS and TWD is shown in the **latest** column. You can either check the **Hold On** box when the values are those which you want to hold the wind on (for example when holding the boat head to wind) and/or input your own

values by hitting **S** for TWS or **D** for TWD. To stop holding the wind and revert back to the incoming data, simply hit **menu>toggle start wind** (or hit **menu>hold wind** and uncheck the **Hold on** box).

Wind calibration

During the start, it is likely that you will have different sails up to what you would have usually. In addition, the way you have the boat setup, for example runner tension, may be different. Consequently, the required wind calibrations will be different. When the start display is in use, Deckman therefore uses separate wind calibration tables.

With the Start display open, select **menu** followed by either **start adjust wind angle** or **start adjust wind speed** to access the relevant tables. The operation of these is then exactly the same as the normal calibration tables (see page 8.1).

Note. Because Deckman uses different calibration tables in the start, if you make changes to the normal calibration tables, these will not be reflected in the appropriate start tables.

Advanced options

Often during the start the boat will not be facing in the direction of the start line and also may not be sailing at full speed. Deckman therefore allows you to predict your rate of turn and acceleration times, and then factors these in to predictions about time to the line.

Two additional files must be added to the **data** directory (see the **Deckman files** chapter): **rateofturn.d** specifies the rate of turn and **timetospeed.d** is the acceleration. A sample and explanation of each is below.

Rate of turn

In the **rateofturn.d** file you predict your rate of turn in degrees per second for different boat speeds. Obviously these will never be exactly the same, but some sensible estimate here is likely to make Deckman predictions in the Start display more accurate.

The format of the file is as follows

```
Vs RoT
 2   4
 6  12
10  15
12  20
15  20
```

where Vs is boat speed and RoT is rate of turn.

Acceleration

The **timetospeed.d** file allows you to predict your acceleration. A bit on the theory behind this, though don't worry if you don't want to read it. The acceleration times here are based on the wind angle at which you are sailing, starting from your present TWA, and Deckman calculates the change in the wind angle based on the rate of turn specified in **rateofturn.d**. Deckman uses a logarithmic function to calculate the acceleration, so that the times specified in the file should be those to go from a slow speed to somewhere close to target upwind speeds.

In practice, the times you enter in the **timetospeed.d** file should be the time taken to get from a 'slow' speed for the conditions to somewhere near upwind target speed and, again, some reasonable value here is likely to be better than none.

A sample file:

```
TWA  T
  0  20
 40  40
 80  35
120  30
160  30
180  35
```

where TWA is true wind angle and T is time.

The result

If you have both the **rateofturn.d** and **timetospeed.d** files, Deckman will incorporate the predictions here into the Start display calculations and will draw the relevant curves for these turns on the Start display, as shown in Figure 4.7.

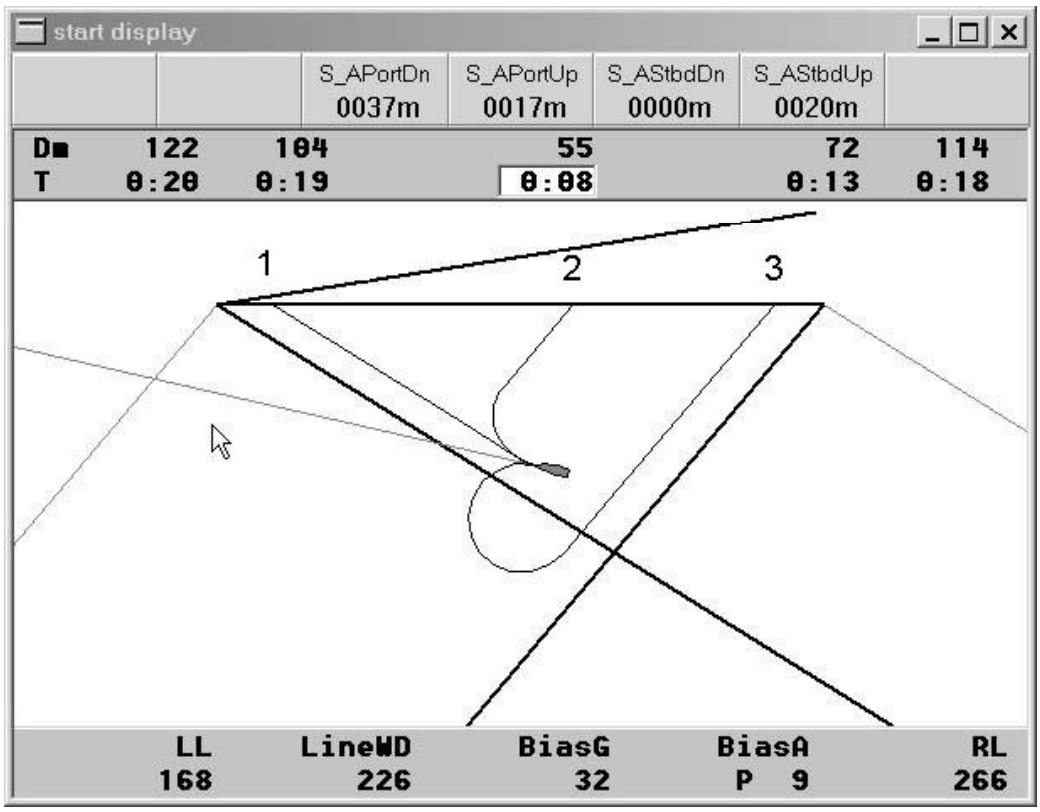


Figure 4.7

You can see the faint straight line from the front of the boat, and three slightly heavier lines, which represent the projected track if the boat turns according to your predictions. You can see that, in the example, there are 3 possibilities for where these lines meet the start line depending on which way the yacht turns.

In the data bar in the example, you can see that there are four variables shown. These are the times to reach the start line on either tack, and turning either up or down wind. The meanings of the four possibilities are:

Variable	Meaning	Position on Figure 4.7	Time in Figure 4.7
S_APortDn	Arriving at the line on port, turning downwind	3	37
S_APortUp	Arriving at the line on port, turning upwind	2	17
S_ASbdDn	Arriving at the line on starboard, turning downwind	(not calculated)	(not calculated)
S_AStbdUp	Arriving at the line on starboard, turning upwind	1	20

Units here are mmss.

Note. As you can see in the example above, some of the advanced start variables may not be calculated depending on your position and heading in relation to the line.

It is interesting to compare the difference between these numbers and those for the times to reach the line without the rate of turn/acceleration tables (i.e. those represented in the **Dm** and **T** rows above the start diagram.

Chapter 5 : Data

There are a number of different facilities in Deckman for viewing and analysing data from the past performance of the boat. All of the data features are based on two separate data storage facilities. The first of these stores data averaged over one second for a week's worth of use of Deckman, which gives 168 hours of use. Secondly, data is averaged over a minute for a year's worth of use, or 8760 hours.

Time plot

At all times while it is running, Deckman saves a selection of data in its own database. The variables it saves are a subset of those in **Show Data** (page 5.4)**.** The data are averaged during a period of 12 seconds before

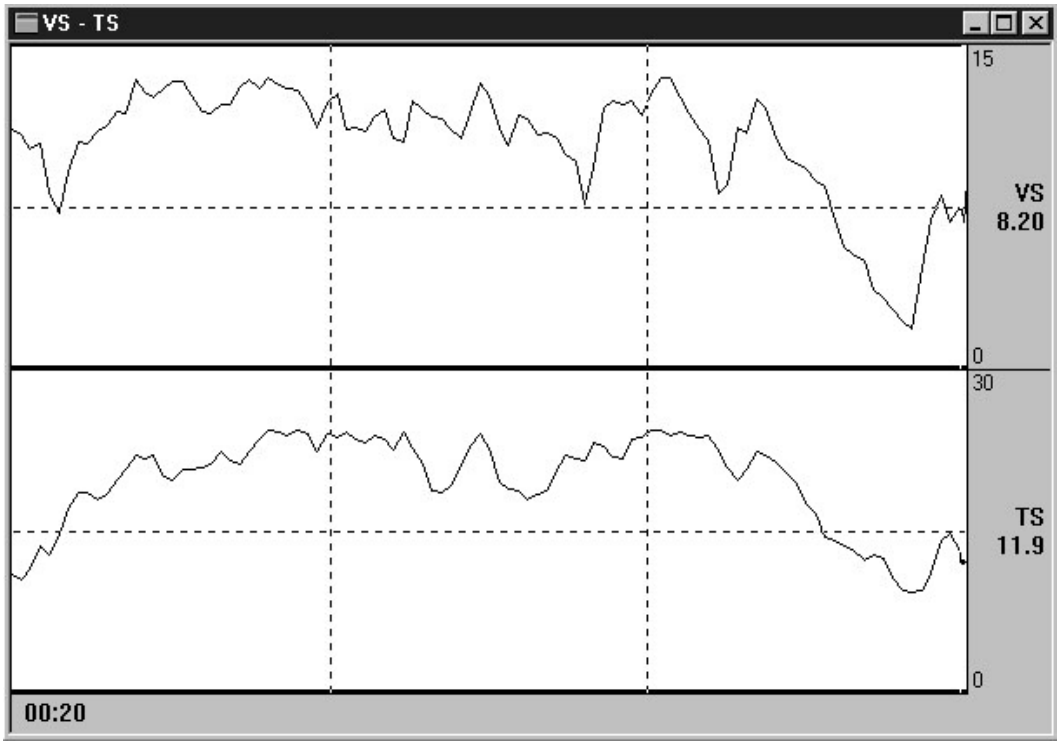


Figure 5.1

saving, and the database has room for 12 hours of information.

Selecting **new time plot** from the **data** menu will display a window which allows you to view any of the stored data as a time series plot. Clicking on a variable in the left hand window sends it to **Selected variables.** Clicking on the right window deselects. When you have selected all the variables you wish to plot, choose OK to draw the graph. Figure 5.1 shows an example *plotting* boat speed (VS) and true wind speed (TS).

Recent data is shown on the right hand side as is customary and the graph will move to the left as time progresses. On the right hand side the short labels for each variable are shown, along with the present value. The ranges of each variable are shown at the top and bottom of each plot and can be altered by clicking on them. This brings up the numeric keypad. The time period—shown in the bottom left—can be changed in the same way; the new time should be entered in minutes. Click and drag on the display to bring up a horizontal measuring line; the corresponding numbers are shown in red beneath the short name in place of the present value. When on starboard tack a thick black line is drawn across the bottom of each plot.

Note. If you are plotting a circular variable such as true wind direction or course then you can specify a lower limit at the top of the plot than at the bottom, so that you can get a sensible plot when the data are varying around North, e.g. you could specify 340° to 20°.

Wind Plot

This display is specifically for monitoring the history of the wind. The graphs are plotted vertically with the most recent information at the top, which is unusual; the advantage given by this kind of plot is that the changes in true wind direction can be related to the yacht's heading—when the wind is in the right the graph is also in the right. The true wind speed is then plotted vertically also so that you can look for correlations between the wind direction and wind speed—does the wind tend to go to the right in the puffs?

Choose **data>wind plot** from the icon bar to see the wind plot—an example is shown in Figure 5.2. The line down the centre of each graph shows you the average or mean value calculated over the time period of the graph. The value of the mean is shown at the top of the display with the *m* appended to it (225° and 10.2 in the example); the other number is the present value (222° and 9.3). As time progresses the graph moves down and across the display so that it stays centred with respect to the mean. So a glance at this display will tell you immediately whether the wind is lifted or headed compared to the longer trend. You will notice that the direction is still displayed correctly even when it is varying around North. When you are on starboard an extra vertical line is drawn against the left hand boundary of the display.

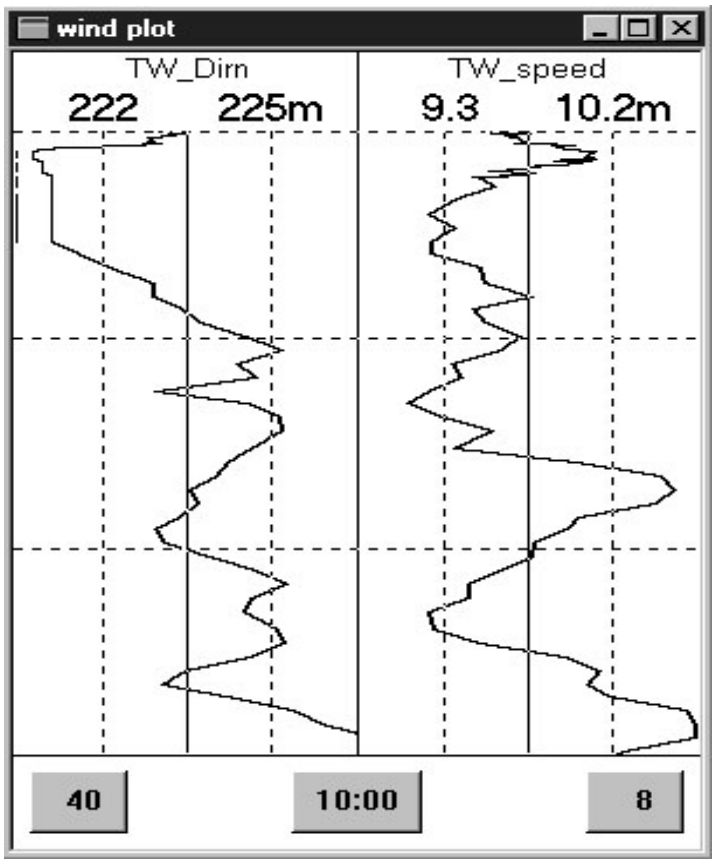


Figure 5.2

The three buttons at the bottom of the display control the appearance of the graph: the button on the left specifies the *range* for the display of the true wind direction across the whole graph (40° in the example, i.e. 20°

each side of the mean); the button on the right specifies the range for true wind speed; and the middle button shows the time for the plot, and therefore the period for the averages. The graphs will be redrawn after changes to these values. When you change the time period for the plot the new time should be specified in minutes.

Data Log

Deckman contains very flexible reporting options. The user can create a number of different logging files and control the output of data to each; for each file, the user can set up different time frames and then specify what variables to be put out into the file at these times (sometimes with a choice of formats). You can individually switch the output to these files on and off.

For example, suppose you were in a long race. You could have one file which acts as a log and on the quarter hour puts out the time, latest position and average wind speed and direction during the quarter; on the hour records average boat performance information; and on the change of day inserts an extra line giving the date. Information would go out to this file continually.

A second file could be used for detailed performance information: it might record average boat speed, VMC speed, course, wind speed and angle during a 15 second period and output would be switched on and off as required.

The logging facilities can be controlled in two ways. By far the simplest is to use the **Edit Logs** facility (see 'Using Edit Logs' below). Alternatively (and this is only recommended for advanced users) it is possible to edit the script file REPORT.D directly (see 'Using the script file' below).

The files for data logging are entered onto the data menu accessed via the icon (shown left). When they have a check mark (tick) beside them then logging is active for that file. Clicking with the left mouse button will toggle the output on or off. When turned on, log files are written out to the Log subdirectory.

Using Edit Logs

Clicking **Data>Edit log report**… allows you to control the outputs to the log files (see Figure 5.3).

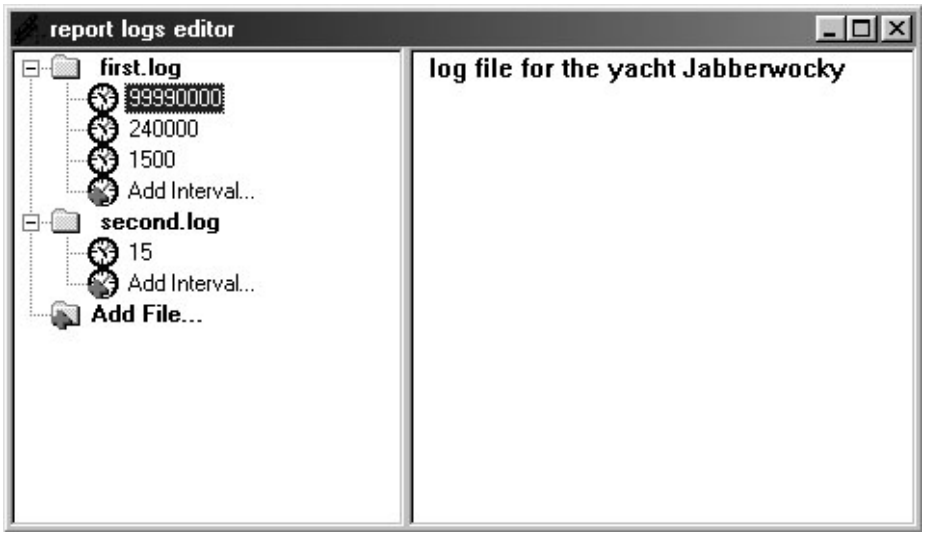


Figure 5.3

The left pane consists of a tree diagram which shows the different log files (**first.log** and **second.log** in the example) and for each log file the different time frames (in the form hhhhmmss, but this need not be complete — see example below). In the example there are three time frames in **first.log** which would operate as follows:

99990000	This long time frame serves to put out information every time the program is started.
240000	This puts out the specified variables every 24 hours (at midnight)
1500	This outputs data every 15 minutes.

New log files can be added by clicking **Add File** when you will be prompted to enter a file name, and then either confirm with **OK** (which creates a new log file with no time frames or outputs specified; you then enter your own information as described below) or click on **Quick Parameter Setup**, which allows you to set up a simple log file. With the Quick option, you will be prompted to enter a time frame. A log file is then created with two time frames: the time frame you specified controls the output of data, and a long time frame is automatically inserted which

causes the variable name to be written out every time you start Deckman.

Note. Creating a Quick log file allows you to establish a simple log file with one time for the output of data, which matches the 'header' created by the long time frame. However, once this file is created, it is possible to edit it as normal (see below) but doing so will mean that the variable names may no longer match with the data.

New time frames are added by clicking on **Add Interval** when you will be prompted to enter the required time frame (in the form hhhhmmss); this sets up a new time frame and returns you to the main window where you add the required information in the right pane, as described below.

Clicking on one of the time frames will bring up information in the right pane which relates to that time frame. The operation of the right pane is then as follows: text contained by chevrons (< and >) indicates variables to be written out (normal text will simply be written out as is). Right clicking in this frame will bring up a list of variables. Right clicking on a variable presents you with a menu: clicking **Change…** allows you change to another variable; the other options here allow you to control whether outputs are as an **Average** value calculated over the whole time. If you have a log file running, you can manually add comments by clicking **File>Add Entry to Log**. In the left pane you then select the file you wish to add the comment to and input the text in the right pane.

Using the script file

The alternative method of controlling output is through the use of a script file. The script file is called REPORT.D and it can be found in the DATA subdirectory. Output files automatically go into the LOG subdirectory. Any text editor such as Notepad can be used to edit °°The script file recognizes single letter codes preceded by a full stop (period) as special fields. All other characters are output as is. The code meanings are:

.F	at the beginning of a line a new file: the following word is taken as a file name, and that can be optionally followed by the word ON to automatically turn on output to this file on program start up. IMPORTANT: the maximum number of files is 16.

.Ihhhhmmss	at the beginning of the line creates a new time frame: the digits immediately following give the time interval for output (the time formatting need not be complete). All lines until the next .I, .F or file end are taken to belong to this time frame. The minimum time interval is 10 seconds.
.P	position in the format: ddmm.mmmN[S] dddmm.mmmE[W]
.C	position in the format: [-]d.ddddddd,[-]d.ddddddd—the first number is latitude and they are comma separated so that position is easier to import into a spreadsheet. Negative is West or South.
.D	date as dd/mm/yy
.N	date as mm/dd/yy
.T	time as hhmmss
.Ann	Average of the nnth variable during the time interval
.Lnn	final value of the nnth variable at the end of the time interval

The variate numbers can be read in the file J_VARS.D (please note that any editing of this file directly should only be undertaken if you are confident you know what you are doing).

Example:

```
F first.log ON
.I99990000
log file for the yacht Jabberwocky
.I240000
date .D
.I1500
position .P at time .T
.F second.log
.I15
.T course .L5 vs .A1 TWS .A9 TWD .A7
```

There are two files in the example: first.log and second.log. First.log has its output turned on immediately on startup because ON follows the filename. It has three time frames: the first is very long and serves to send a title message every time the program is started; the second just puts out the date every 24 hours (at midnight), and every 15 minutes position and time are recorded.

A single line is written to second.log every 15 seconds; the names of the variates are written out along with their values.

Boat parameters

Deckman allows you to keep a record of different parameters which might affect boat performance. Hit **data>setup boat params** and you will be presented with the **Boat Parameters** window, like that shown in Figure 5.4. The first column is the name of all the parameters currently entered in the system, the second column lists the present values and the third shows the last time the value of this parameter was changed.

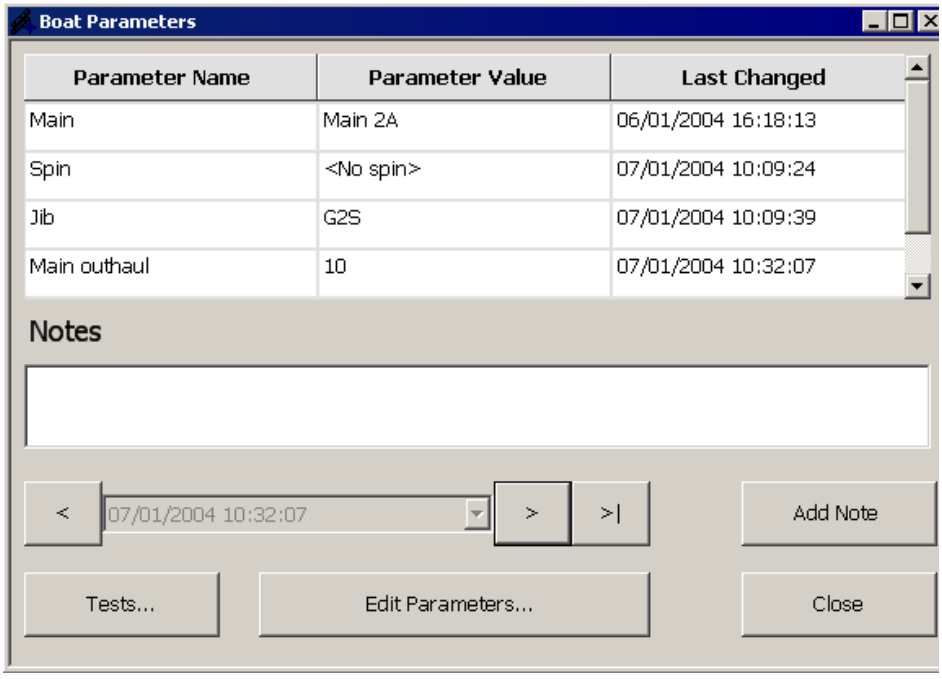


Figure 5.4

The buttons along the bottom of the grid serve the following functions:

<	Takes you to the previous change of parameter value
>	Takes you to the next change of parameter value
>|	Takes you to the present parameter value

Click on the **Add Note** button and you will be presented with a dialog where you can input text to make notes, and change the time if you wish. Note, however, that you can only input a time after the most recent parameter change.

Setup boat params

To add parameters (and parameter values for Named parameters), or to change the value of any parameter click on the **Edit Parameters** button and you will be presented with the **Setup Boat Parameters** dialog, as shown in Figure 5.5

To add a new parameter, click the **New** button. You will be presented with a wizard to enter the new parameter name, type and values (for Named parameters).

To edit an existing parameter, select it in the table and then click on the

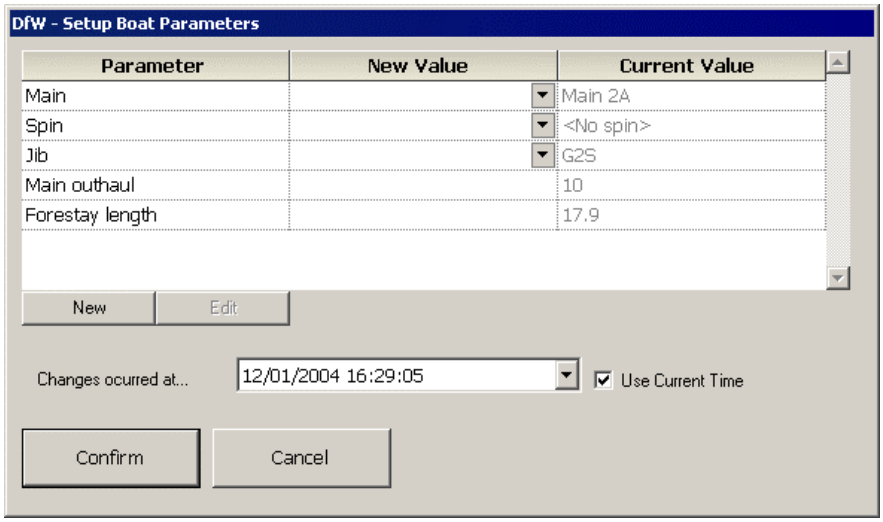


Figure 5.5

Edit button. This allows you to rename an existing parameter or to add values for a Named parameter. Note that you are unable to change the data type, or to rename or delete existing values for Named parameters.

To change the value of an existing parameter use the **New Value** column; for **Named** parameters you simply select the new value from the dropdown list, for **Integer** or **Continuous** parameters you enter the value in the box. You can manually enter the time in the box in the bottom of the window. Note that you can only make changes after the time of the most recent change of parameters.

Once you have made all the changes you wish, click the **Confirm** button and the changes will be see in the main **Boat Parameters** window.

Tests

From the **Boat Parameters** window, click the **Tests…** button and you will be presented with a dialog allowing you to allocate a **Name**, to **Start** and add a **Note** to a test, and then to either **End** or **Abort** a test after it has been started. When you start or end a test here, a note automatically gets added; this is to make it easier to find tests when scrolling in the **Boat Parameters** window.

Extract logged data

This facility allows you to export Deckman's logged data for analysis in another program.

Select **data>extract logged data** and you will be presented with a window like that shown in Figure 5.6:

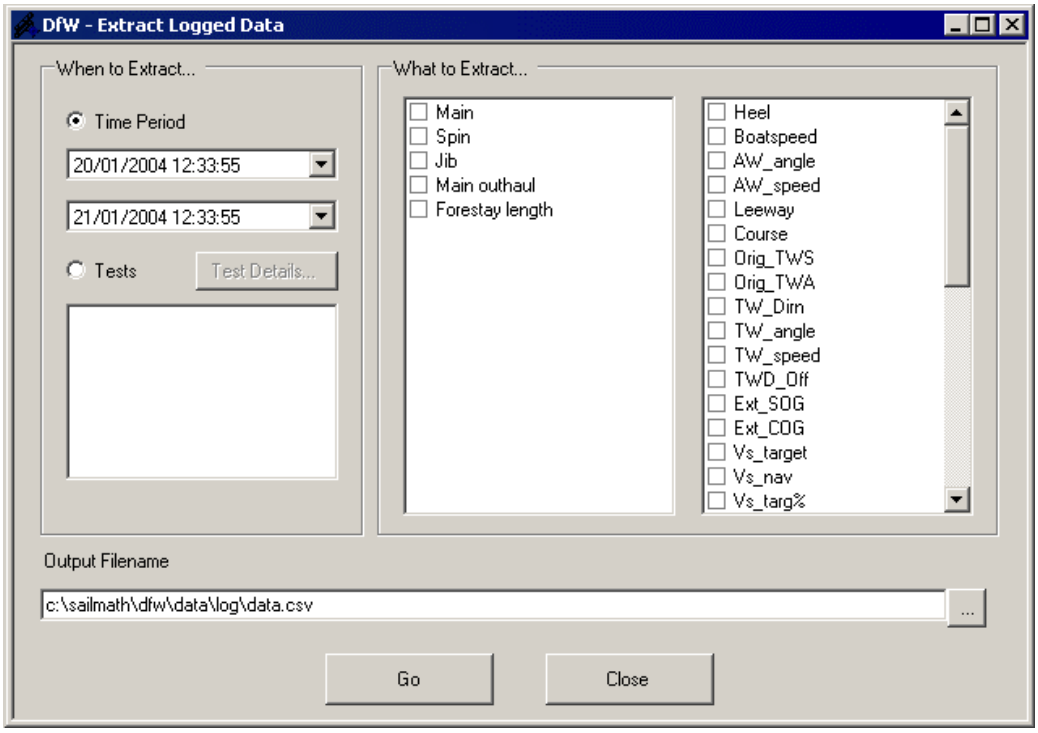


Figure 5.6

In the **When to Extract…** column, you can choose to extract data for either specified time period or certain tests. To specify a **Time Period** select a value and then use the arrow keys to change, or use the drop-down menu for selecting the date. To extract data from certain **Tests**, select this option and then hit the **Test details** button. In the **Choose Test** dialog, select your start and end dates and all the tests in that period will be shown, along with the parameters. Check the ones you want followed by **OK** – the selected tests will be listed with checked boxes in the **Extract Logged Data** window. When you are happy with your selection, hit **Go**. The output file is a *.csv* file by default with numbers

separated by TAB characters, and you can specify the name and the location using the box and/or browse button at the bottom right of the window.

Speed Test

This feature allows you to analyse data from your speed tests.

Select **data>Speed Test**, and you will be presented with a window like that shown in Figure 5.7 (except that there will be no data plotted on the graph). If you know the date of the tests you require, select the date in the **Test 1** or **Test 2** box, and then select the correct test from the drop-down list. If you do not know the exact date of the tests you require, hit the browse button, shown left. In the **Choose Test** dialog, select your start and end dates and all the tests in that period will be shown, along with the parameters. Check the ones you want followed by **OK** – the two tests you select will be shown in the **Test 1** and **Test 2** boxes.

Note If you select more than two tests in the **Choose Test** dialog, then the most recent selections will be used.

Note. Once you have used the **Choose Test** dialog once, then all the tests in the dates you specify are available from the drop-down menus until you specify different dates.

When you have selected the correct tests hit the **Compare** button. Deckman will plot the graph for TWA and TWS, as shown in Figure 5.7.

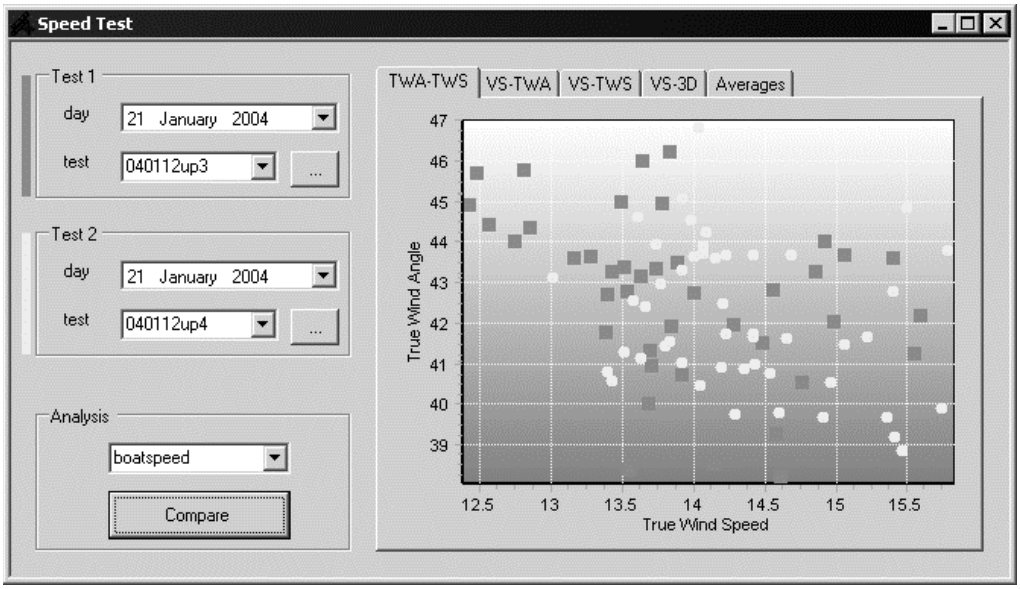


Figure 5.7

Use the TWS-TWA plot to confirm that you have selected the correct tests, or that the data is suitable for comparison. You can then select any of the other tabs at the top of the display to see the other pages, which are all based on the 3-dimensional graph **VS-3D**, an example of which is shown in Figure 5.8. You can click and drag anywhere on the plot to move the 3D graph to assist you in seeing different areas.

The **VS-TWA** tab brings up a plot of boat speed against TWA, as illustrated in Figure 5.9.

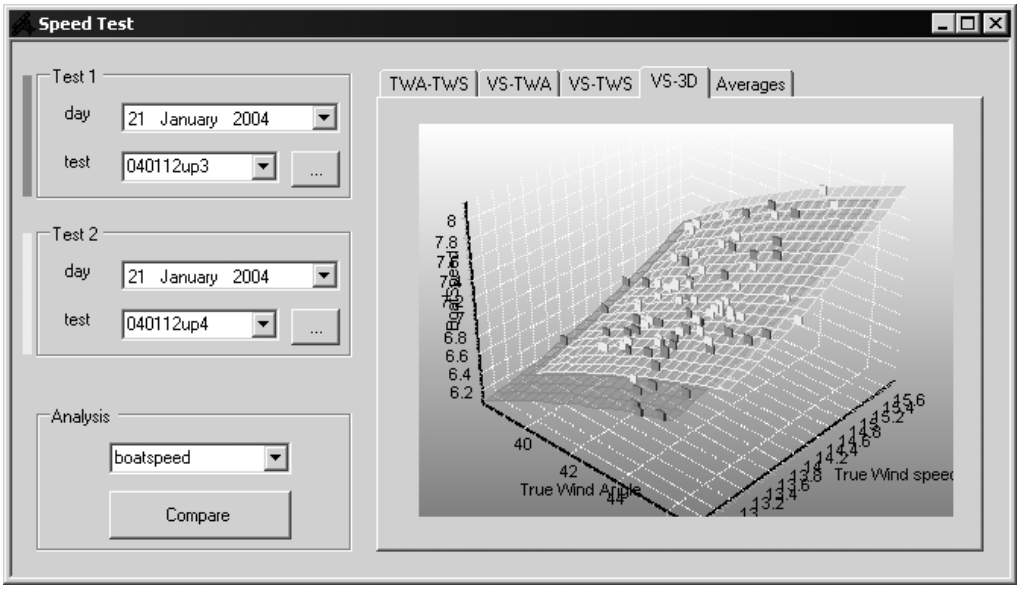


Figure 5.8

Using either the number box or slider to the right of **TWS**, you can alter the true wind speed and Deckman will move the data points along the surface. In the bottom left of the plot, you can choose either **VS** or

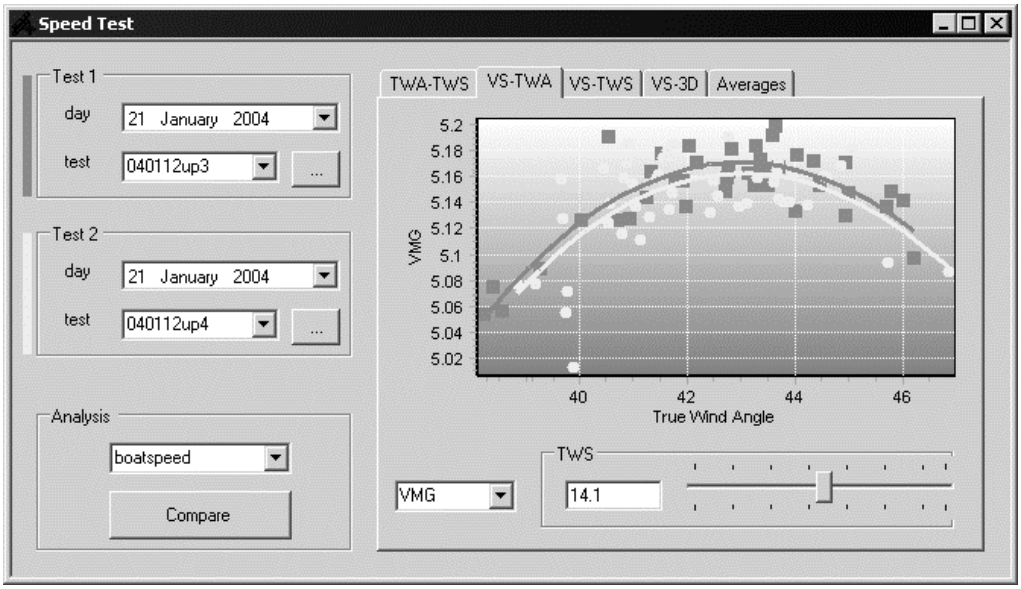


Figure 5.9

VMG, allowing you to view either straight boat speed or VMG plotted against TWA.

The **VS-TWS** page works exactly the same way, except that you are only able to adjust values of TWS.

The **Averages** tab shows you a plot of Deckman's analysis of which test is favoured. There is a vertical bar representing each test, with whichever is highest being favoured. Again here, you can change the value of TWS at the bottom of the display. In addition, you can use the controls to the left of the display to make VMC comparisons – select the **VMC** box and then enter a value or use the slider to set the angle of the course off the wind (0 is upwind, 180 downwind).

Show Data

This button brings up a simple list of all the variables on the system, allowing you to see their present value. The abbreviations are as follows (those in italics are for two boat testing and are therefore not relevant to most users).

Note. Since many of these variables are referred to in more than one place in this manual, please consult the index for an explanation where necessary.

Hl	Heel	Heel
VS	Boatspeed	Boat speed
AA	AW_Angle	Apparent Wind Angle
AS	AW_Speed	Apparent Wind Speed
Le	Leeway	Leeway
Cs	Course	Course (including leeway)
Hd	Heading	Heading
TD	TW_Dirn	True Wind Direction
TA	TW_Angle	True Wind Angle
TS	TW_Speed	True Wind Speed
GWD	GW_Dirn	Ground Wind Direction
GWS	GW_Speed	Ground Wind Speed
Ts	Orig_TWS	Uncorrected True Wind Speed
Ta	Orig_TWA	Uncorrected True Wind Angle
Td	Orig_TWD	Uncorrected True Wind Direction
wdo	TWD_Off	True Wind Direction Offset
VG	VMG	Velocity Made Good
SOG	Ext_SOG	External Speed over the Ground (from the position fixer)
COG	Ext_COG	External Course over the Ground (from the position fixer)

VMC	Ext_VMC	Velocity Made Good to the Course calculated from Ext_SOG and Ext_COG (from the position fixer)
OVC	Opt_VMC	Theoretical boat speed for Optimum Velocity Made Good to the Course
COC	Cse_OVMC	Course to sail for the theoretical Optimum VMC
TS	Vs_target	Boat speed Target from the Performance Polar
T%	Vs_targ%	Percentage of Performance Polar Target Boat speed Achieved
AT	TWA_targ	True Wind Angle Target
PPV	Vs_Perf	Polar Boat speed from the Performance Polar
PP%	Vs_Perf%	Percentage of Performance Polar Boat speed Achieved
PNV	Vs_nav	Polar Boat speed from the Navigation Polar
PN%	Vs_nav%	Percentage of Navigation Polar Boat speed Achieved
BM	Brg_o_Mrk	Bearing of the Mark
DM	Dst_t_Mrk	Distance to the Mark
TM	Tm_t_Mrk	Time to the Mark
CrR	Curr_Rate	Current Rate
CrD	Curr_Dir	Current Direction
MCR	MCur_Rate	Measured Current Rate
MCD	MCur_Dir	Measured Current Direction
DCR	DCur_Rate	Diamond Current Rate
DCD	DCur_Dir	Diamond Current Direction
LCR	LCur_Rate	Local Knowledge Current Rate
LCD	LCur_Dir	Local Knowledge Current Direction

MOB	ManOvrBrg	Man overboard bearing
MOR	ManOvrRng	Man overboard range
OHl	*O_Hl*	*Other boat's heel*
OVS	*O_Boatspd*	*Other boat's speed*
OCs	*O_Course*	*Other boat's course*
OTD	*O_TW_Dirn*	*Other boat's true wind direction*
OTA	*O_TW_angle*	*Other boat's true wind angle*
OTS	*O_TW_speed*	*Other boat's true wind speed*
DHl	*Hl-OHl*	*Difference in heel*
DVS	*VS-OVS*	*Difference in boatspeed*
DCs	Cse-OCse	*Difference in course*
DTD	TWD-OTWD	*Difference in true wind direction*
DTA	TWA-OTWA	*Difference in true wind angle*
DTS	TWS-OTWS	*Difference in true wind speed*
OBR	*OBRnge*	*Range of other boat*
OBB	*OBBrg*	*Bearing of other boat*
ORW	*OBRngW*	*Other boat range, resolved in direction of the wind*
ORM	*OBRngM*	*Other boat range, resolved in direction of the mark*
OGW	*OBRngMW*	*Change in other boat range, resolved in direction of the wind; units metres per minute*
OGM	*OBRngMM*	*Change in other boat range, resolved in direction of the mark; units metres per minute*
ODC	*OBDMC*	*Change in other boat range, resolved in the direction of the course of the boat; units metres*

ODO	*OBDMOC*	*Change in other boat gauge, resolved in the direction perpendicular to the course of the boat; units metres*
Dep	Depth	Depth
DOS	DST_STRB	Distance on left layline from mark
TOS	TM_STRB	Time on left layline from mark
DOP	DST_PORT	Distance on right layline from mark.
TOP	TM_PORT	Time on port layline from mark
UTC	GGAUTC	Time in seconds since midnight (0000 hours) UTC.
SVA	GGASVA	First digit – number of satellites, next three digits – age of GPS fix in seconds.
QHD	GGAQHD	First digit – quality of GPS fix, next three digits – HDOP in metres.
APD	S_APortDn	Advanced start option: arriving at line on port, turning downwind
APU	S_APortUp	Advanced start option: arriving at line on port, turning upwind.
ASD	S_AStbdDn	Advanced start option: arriving at line on starboard, turning downwind
ASU	S_APortUp	Advanced start option: arriving at line on starboard, turning upwind.
Acs	AveCse	Average course
ATD	AveTWD	Average true wind direction
ATS	AveTWS	Average true wind speed
AN%	AveNav%	Average of navigation percentage (see above)
OAA	*O_AWA*	*Other boat apparent wind angle*
OAS	*O_AWS*	*Other boat apparent wind speed*

MWD	MA_TWD	Moving average of true wind direction (see User variables below)
MWS	MA_TWS	Moving average of true wind speed (see User variables below)
MVS	MA_VS	Moving average of boat speed, time period set under gmenu>user vars control
MVP	MA_VSNP	Moving average of boat speed as a percentage of navigation polar, time period set under gmenu>user vars control
DTL	DST_LAYL	Distance to layline on your present tack/gybe. Note. This is the same as either DLL or DRL depending on which tack or gybe you are on.
TTL	TM_LAYL	Time to layline on your present tack/gybe Note. This is the same as either TLL or TRL depending on which tack or gybe you are on
UCS	UP_CSTRB	Course for optimum upwind VMG on starboard tack.
UCP	UP_CPORT	Course for optimum upwind VMG on port tack
DCS	DN_CSTRB	Course for optimum downwind VMG on starboard gybe
DCP	DN_CPORT	Course for optimum downwind VMG on port gybe
ULS	UP_LSTBD	Upwind layline on starboard tack; this is UCS but with current added.
ULP	UP_LPORT	Upwind layline on port tack; this is UCP but with current added.

DLS	DN_LSTBD	Downwind layline on starboard gybe; this is DCS but with current added.
DLP	DN_LPORT	Downwind layline on port gybe; this is DCP but with current added.
DSL	DST_LINE	Distance to start line.
TSL	TM_LINE	Time to start line.
AAT	AWA_TARG	Target apparent wind angle

Data averages

The four averaged variables listed in Show data (AveCse, AveTWD, AveTWS and AveNav% show the average of the respective data over the time since you hit the **Reset Averages** option from the **Data** icon. This is likely to be useful in longer races and also for testing purposes.

User variables

You are able to create your own data variables, taking data from your existing variables and then filter/damp and calibrate them as you wish. There are a number of different facilities for use here, including the possibility of variables being calibrated with respect to another variable. User variables are defined using Deckman's files (see User variables on page 12.13), but once setup can then be controlled from within Deckman as described below. The two 'moving average' variables specified at the bottom of the 'Show Data' list operate in this way, and are included in Deckman by default, so we will use these as an example.

Hit **gmenu>user vars control** which will bring up a dialog like that shown in Figure 5.10. The button at the top of the window allows you to choose either calibration or damping. Since the default user variables only control damping, you will get an error message if you click on the **calibration** tab without having first created the appropriate files, as specified in User variables. However, once the relevant files are there, the operation of the user variables is exactly the same as the damping described here.

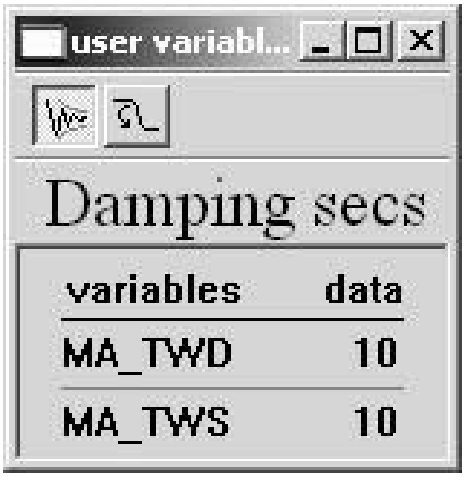


Figure 5.10

In this dialog you can enter a damping period, in seconds, over which the TWS or TWD is averaged.

With the **user variables** window open, select **menu** and you will see the additional options **Advanced damping…** or **Advanced calibration…** Selecting either of these will be presented with a dialog similar to that shown in Figure 5.11. This allows you to access and edit either the calibration or damping files for the user variables (as described in Chapter 12) from within Deckman. Double click on the appropriate file to open, make any changes you wish, then hit **Save File** followed by **OK** to close the window.

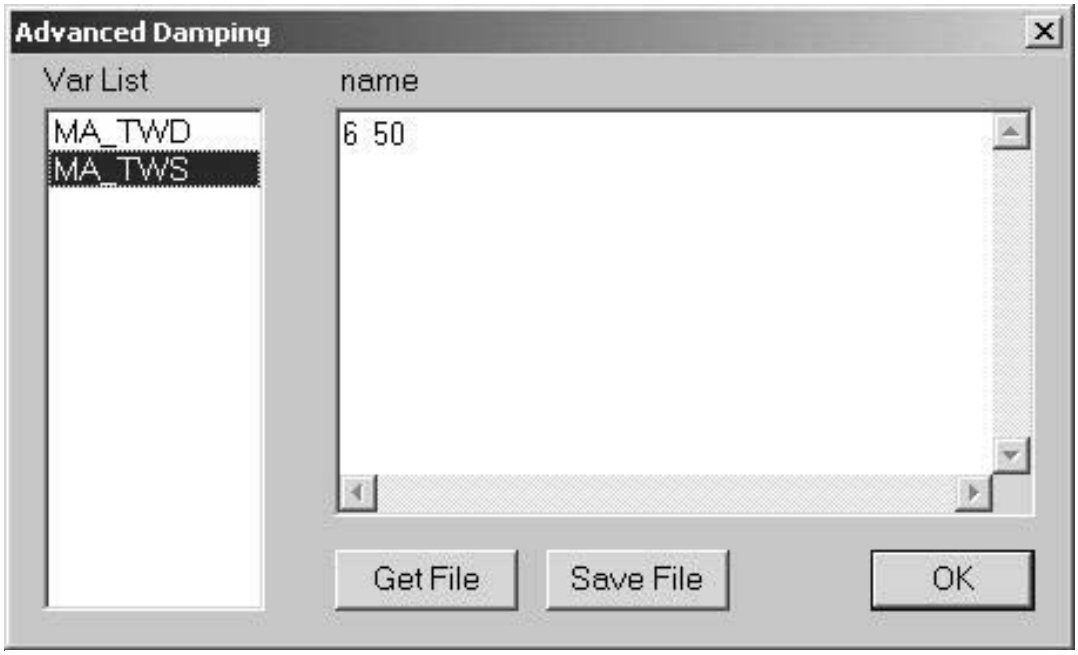


Figure 5.11

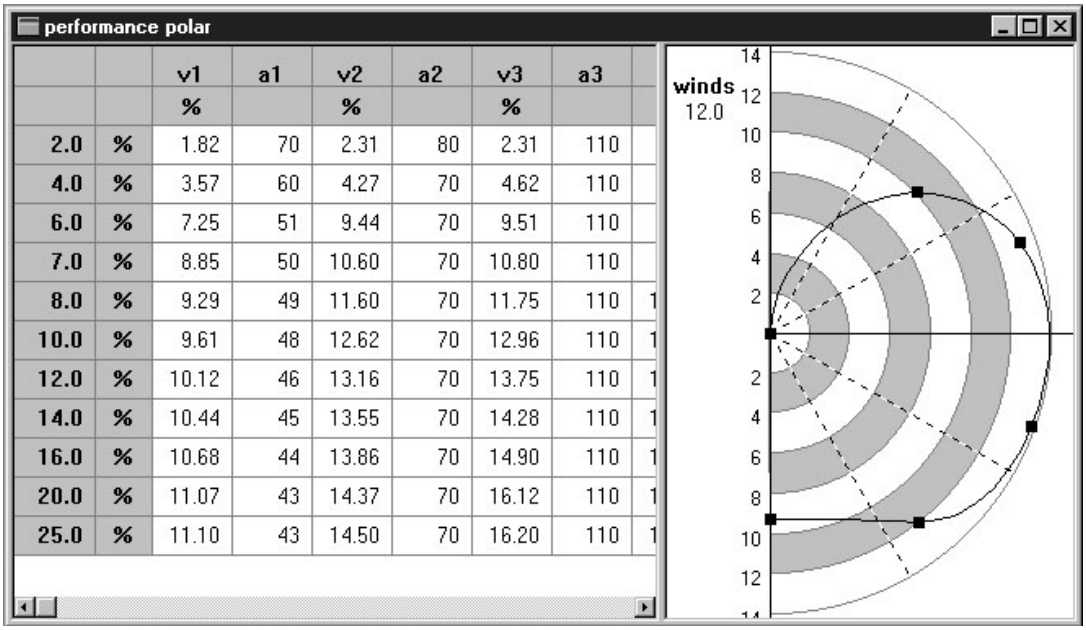
Note. Time periods in the **Advanced** dialogs here are specified in Hz (i.e. seconds multiplied by 5) – see Filtering on page 12.15 for an explanation.

For more information on the operation of the data files, please see User variables on page 12.13.

Chapter 6 : Polars

Understanding Polars

Below is an example of the polars window (Figure 6.1). On the left is the table where the values are entered, on the right is the polar plot—the distance from the centre shows the boat speed at a wind angle specified relative to the vertical. Imagine the wind blowing down from the top of the page—the boat speed in 12 knots of wind for each of the five wind angles is indicated by the small solid squares.



		v1	a1	v2	a2	v3	a3
		%		%		%	
2.0	%	1.82	70	2.31	80	2.31	110
4.0	%	3.57	60	4.27	70	4.62	110
6.0	%	7.25	51	9.44	70	9.51	110
7.0	%	8.85	50	10.60	70	10.80	110
8.0	%	9.29	49	11.60	70	11.75	110
10.0	%	9.61	48	12.62	70	12.96	110
12.0	%	10.12	46	13.16	70	13.75	110
14.0	%	10.44	45	13.55	70	14.28	110
16.0	%	10.68	44	13.86	70	14.90	110
20.0	%	11.07	43	14.37	70	16.12	110
25.0	%	11.10	43	14.50	70	16.20	110

Figure 6.1

Polars in Deckman are described in a special way: at several wind speeds (which are adjustable) the curve of boat speed versus true wind angle is defined by just five points. Although this may be thought to be too few to be accurate the mathematical functions work very well in practice. It is important when sailing that the polars can be adjusted quickly and easily and still remain fair—with so few points this is

certainly the case on Deckman. It is better that the curve is close to the real performance rather than extremely precise in places but wildly wrong in others because it is too difficult and slow to adjust, or can only be adjusted ashore. Moreover, performance curves are a bit of a moveable feast and super precision is not possible. Deckman does allow you to get your target speeds and angles right because these are two of the points which define the curve.

Examples of the polars are available on the B&G website

If you select **Polars** from the icon bar you will be given the choice of **navigation polar, performance polar** or **startpolar** (as discussed in Part 1). Remember that the Navigation polar is used for the calculation of all navigation functions (laylines, leg calculations and so on) and so it is expected that this will be adjusted on a regular basis; the Performance polar is used for the calculation of target values so if the helmsman gets used to a particular set of numbers and doesn't want them changed this will not affect accuracy of the navigational calculations.

Deckman has the facility to store different versions of the three different polars on your computer and then load whichever you choose. There are a number of advantages of this – for example, you may wish to have different polars for choppy and flat water, or want to save a version of your current polars when making amendments to your polar tables. For more information on this, see 'Managing polars' below.

To access the currently loaded polar, select **polars** followed by navigation, performance or start polar (see above), then **show>loaded.** This will bring up the polar: you will be presented with a table which shows wind speeds in a column going down the left of the table, and five pairs of data points going across defined as **v1, a1 ... v5, a5**; where **v1** is the boat speed at point 1 and **a1** is the wind angle. The first point (v1, a1) specifies the upwind target and so the maximum upwind VMG; the fourth point (v4, a4) specifies the downwind target and so the maximum downwind VMG. The second and third points roughly divide the gap between these two, thus the second point is at a reaching true wind angle around 50 to 60 degrees, and the third another reaching point around 100 degrees true wind angle. The final fifth point is dead downwind at 180

degrees true wind angle and is only necessary to make sure that the curve turns up again for the purpose of the optimisation routines.

Note. It is possible to have the polar tables displayed using **seconds per nautical mile** instead of boat speed, as used on IMS rating certificates for instance. When you have a polars window open, select **menu>use seconds/Nm** to turn this feature on or off. When turned on, the numbers that define the upwind and downwind targets are VMG speeds and not boat speeds.

To choose which wind speed values you want to see on the plot, click **File>select wind speeds.** In example on the previous page the points for 12 knots of wind can be seen.

The value in every box in the table is adjustable. This means you can alter the wind speeds in the first column. This is particularly useful if you have a velocity prediction program (VPP) which presents the information at different wind speeds to Deckman's standard. To alter the wind speed click on the value you wish to change.

The second column of percentage symbols allows you to alter all five boat speeds at a single wind speed by a percentage. To increase the speeds by 10% enter 110 on the numeric keypad; to decrease by 10% enter 90. The percentage symbols in the second row of the table similarly adjust all the values in a column: if your target upwind speeds were 10% too low at every wind speed, you could correct this by entering the value 110 after pressing the % button in the v1 column.

Any of the individual values in the polar table, either boat speeds or true wind angles, can be altered individually by clicking on the relevant number. The need to be able to alter the boat speed is obvious. Being able to change the angles means that you can also control the true wind angle used by each of the five points. Again this means that you can adapt the format of Deckman's polar table to any polar table that you might have for the boat.

Note. True wind angles on Deckman are relative to course i.e. they include the effects of leeway. This is necessary for laylines to be calculated correctly.

Note. When entering a new boat speed in the body of the table if you enter a value greater than 60.0 Deckman assumes that it is a percentage. Thus to change 6.0 to 6.6 you could either enter the value 6.6 directly, or else enter 110.

Managing polars

As was mentioned above, Deckman allows you to have different copies of each of the three polars saved on your computer. When you have a polar table open, you can select **menu>save file as**, then input a new name.

You can view saved polars by selecting navigation, performance or start polar from the **polars** menu, followed by **show** and then either one of the recently-used polars or **file…** to browse to the correct polar file. Doing this does not actually change the polars being used in Deckman, but allows you to edit the file through Deckman.

To load a different polar table, select navigation, performance or start polar from the **polars** menu, followed by **load** and then either one of the recently-used polars or **file…** to browse to the correct polar file.

Copying and moving polars

Changes made in either the Performance or Navigation window can be copied from one to the other by choosing **copy to perfpol** or **copy to navpol** from the **File** menu. When closing any of the polars displays you will be given the option of saving changes made.

Note. When copying polars between the navigation and performance polar, these will go into the currently loaded file for each.

In addition, for users with a B&G instrument system, it is also possible to upload or download the polars to or from the Hercules system. With the navigation polar open and while connected to the B&G system

(select **gmenu>change instruments>BandG** if not) choose **menu** and then either **download to Herc…** or **upload from Herc…**.

Note. For users with a WTP instrument system, the polars are automatically sent to the WTP when you close the polars window in Deckman.

Note. Because the B&G system only has 10 rows of data, only the first ten rows will be uploaded or downloaded (i.e. not the figures for 25 knots of wind).

Chapter 7 : Instruments

Selecting **gmenu>change instruments** allows you to choose which type of instrument system you wish to connect to. For each, there are a number of options and settings that you may wish to adjust. The following gives a brief description of the ways in which each instrument system works in conjunction with Deckman. For further details on many of the functions mentioned below, see the appropriate section in your system's manual.

Once you have established a connection to a particular instrument system and set up the communications, selecting **gmenu> instruments control** allows you to set up the system: enter calibration values, specify variables to be shown on the displays and so on. The following notes provide information specific to each instrument system.

Configure comms

When you first connect to an instrument system you will be presented with a Communications dialog like that shown in Figure 7.1. Set up the protocol for your instrument system according to the table and then click **Next.**

	WTP	**Performance Processor**	**h1000 Hydra NMEA**	**Ockam**
Baud	9600	9600	4800	4800
Parity	NONE	EVEN	NONE	NONE
Data	8	7	8	8
Stop	1	2	1	1

After your initial installation, if you want to check or change Communications settings, choose **gmenu>configure comms**.

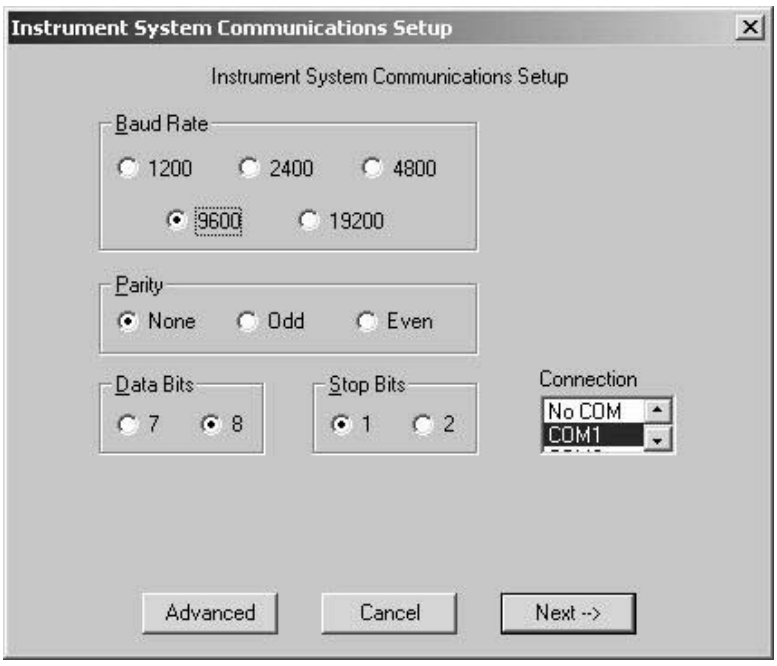


Figure 7.1

WTP system

The **instruments control** functions in Deckman work in a similar way to the h2000 and Ockam systems, despite the fact that there are some essential differences in the way the WTP handles data. The WTP uses a faster processor and more sophisticated calculations than other systems, and you will therefore be able to use much lower damping values—some typical ones are shown in Figure 7.2.

The way the WTP handles wind calculations is the second major difference. Starting from the measured wind speed and angle at the masthead, the WTP incorporates data from sensors for measuring the pitching and rolling of the boat. It is from this corrected wind information that the true wind direction and speed are calculated. The WTP then goes backwards through these calculations, coming up with its own, more accurate, values for both the true and apparent wind speed and angle. All of this may sound somewhat excessive but it is found that calculations done in this way reflect much better the changes that are really taking place.

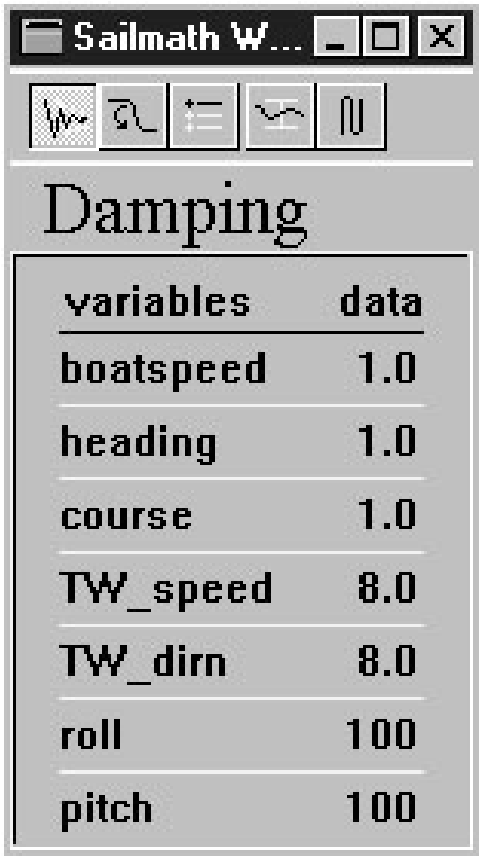


Figure 7.2

Because the wind calculations are all made from the true wind information, it is only this that needs to have damping values entered through Deckman.

Output

This controls the output of Deckman variables to the WTP to be viewed on the displays.

To add a variable, click on the first blank line of the variables column, select the appropriate Deckman variable from the list followed by OK. The variable will be displayed on that line, with the channel column showing –1 and the current data shown in the final column. The –1 indicates that output of this variable is OFF – to turn on, click on the number and assign a channel number.

Calibration

Most of the calibration functions work in exactly the same way as on Hydra and Hercules systems. Those which differ are described below:

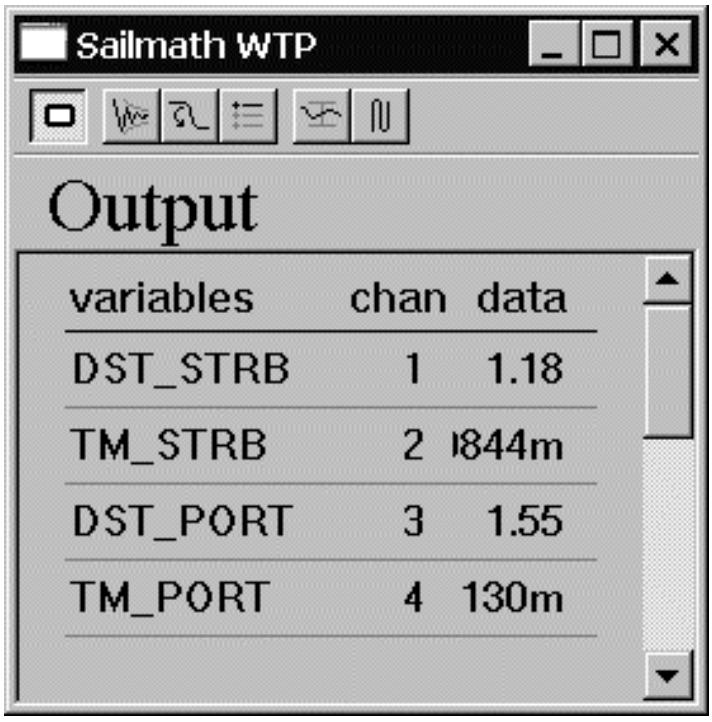


Figure 7.3

heel_off	is the offset value for the heel sensor. If the heel angle doesn't read 0 when the boat is sitting upright in the water, the necessary correction must be entered here.
Heading_o	is the offset value for the compass. A positive heading offset will increase the reading of the compass heading. The best way to calibrate this is to correct the compass bearing being received so that it matches known transits on the shore.
forestay	calibration for the forestay load fitting. Wind up the backstay or runner to a known tension, then enter this value here.

Settings

The **Settings** option is specific to the WTP. The boat length, mast height and variation calibrations are self-explanatory. The **leewaycal** is a leeway calibration value—a figure between 3 and 5 should be appropriate for modern boats. The **use_heel** gives you the option of excluding heel sensor data from the calculations, by entering zero here—if you do not have a heel sensor fitted or it breaks. The two additional settings to be specified control the automatic switching of variables on the displays according to your point of sailing: **updownang** allows you to specify the true wind angle at which the displays will switch from upwind to downwind settings; **osctime** allows you to change the frequency with which the displays switch between the selected variables (units here are $1/10^{ths}$ second).

Bounds

The bounds checking function works in exactly the same way as for h2000 instruments, as described above.

Calibrate Boatspeed

Allowing you to calibrate your boat speed correctly, this function works in exactly the same way as the traditional method of measuring the time taken to cover a known distance. Deckman will automatically calculate the calibration values from the tests you select.

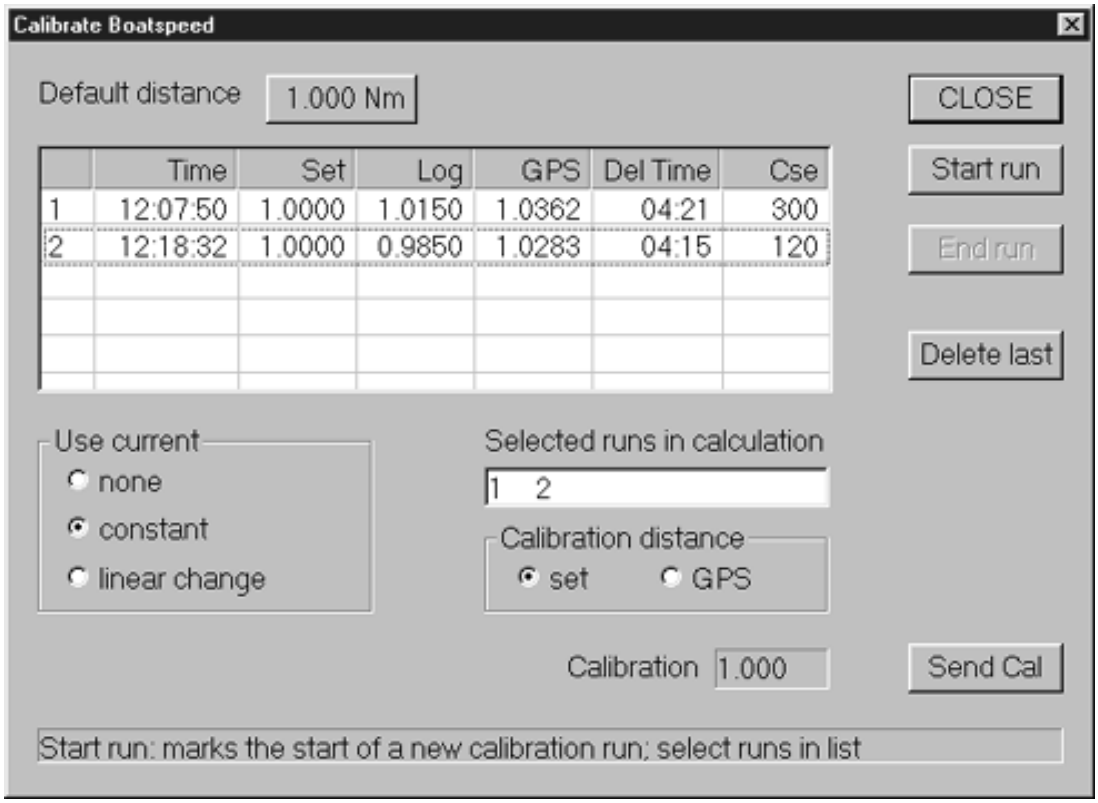


Figure 7.4

Click **Start run** at the beginning of the run, and then **End run** to finish. Details of each run are displayed in the table: the start time of the run, the distances from your input, the log and the GPS are shown, **Del Time** shows the elapsed time for the run, and the course during the run is shown on the extreme right. You can select whether to use the distance entered by you or that received from the GPS in **Calibration distance**. In the **Use current** box, you can choose what type, if any, of current information to factor into the calculations. Input the runs you wish to use in the calibration in the **Selected runs in calculation** box.

When you have selected runs a calibration value is then shown in the Calibration box. Either choose **Send Cal** to accept the value or do more runs and calculations.

Advanced calibration facilities

There are facilities within Deckman for advanced control of a B&G WTP. You are able to access the calibration and damping files directly, and these work as described in Chapter 4 of your WTP manual. When connected to a WTP, click **gmenu>instruments control** to access the standard WTP instrument controls. Now click **menu** followed by either **advanced WTP calibration** or **advanced WTP damping.** For more information on the operation of these files, please consult your WTP manual.

h2000 Performance Unit

When you select **gmenu>change instruments>B and G** you establish communications with a B&G h2000 system (also earlier 690 systems and onwards). You can send information from Deckman back to the instrument system, which can then distribute it throughout the boat's displays. You can also alter any of the calibration values on the B&G system from Deckman as well as, or instead of, from an FFD.

Choose **gmenu>instruments control** to change settings or select variables to display using the external channels.

Output

Here you can select variables and send them to the B&G system where they can be displayed using the external channels.

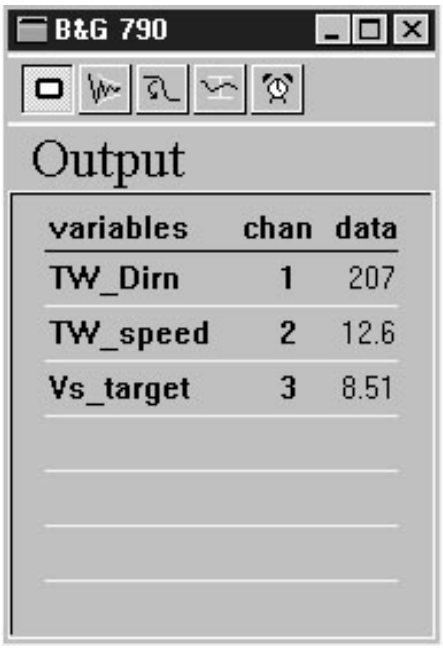


Figure7.5

Clicking in one of the rows beneath **variables** brings up a menu window from which you can select the variable you want to send: choose the one you require and then OK. The **Chan** column allows you to enter the channel number on the B&G system where you wish to send the data. When the number is entered the name of the variate is sent out to the B&G network for display on the FFDs and 20/20s along with the data. Channels are found under the **External** menu on the B&G system. To stop sending a variable enter -1 as the channel number. The **data** column displays the current values.

If you assign more than one variable to the same channel, then these will switch with a frequency of around 3 seconds.

Damping

This allows you to send damping values to the instrument system. The values are stored and are NOT read from the instruments. If you are setting the values so that they are the same as the instrument system the safest thing is to disconnect from the instrument system before making changes. The values are sent to the instrument system as soon as they are entered.

Calibration

This sends calibration values to the instrument system. It works in exactly the same way as damping.

Bounds checking

To prevent errors caused through the loss of characters between the instrument system and the PC, the incoming data are checked against the previous values. This display allows you to change the bounds which are used for each incoming variable; smaller values make errors less likely but increase the possibility that the numbers will stick because of dramatic boat manoeuvres.

Reset bounds checking

The next set of incoming data will overwrite the old, even if it falls outside the error bounds.

h2000 true wind correction table

This function allows you to access and alter the Hydra and Hercules true wind correction tables. These work as described in the h2000 manual in the section entitled "True Wind Correction".

Wake Up

Hydra and Hercules systems are instructed what data to send by the PC each time it is turned on and Deckman requests this automatically. If some of the responses are missing, simply press the Wake Up button to send the instructions again.

NMEA FFD/h1000

Later Hydra and Hercules NMEA FFDs and h1000 Universal Interface Boxes conform to the NMEA standard. However, custom software is incorporated into these systems that allows Deckman to write data back to the displays.

Output 

The default outputs are those illustrated in the example. The **variables** column shows the Deckman variable, the **channel** shows the B&G channel (1 to 11) and the **data** column shows the current data for the variable. The text in the **Name** column is associated with the channel number, and this cannot be altered. In other words, the Deckman name is not written out with the data to the displays. If you wish to output different variables, then you must be careful which channel you assign these to since the label on the display may not identify the variable.

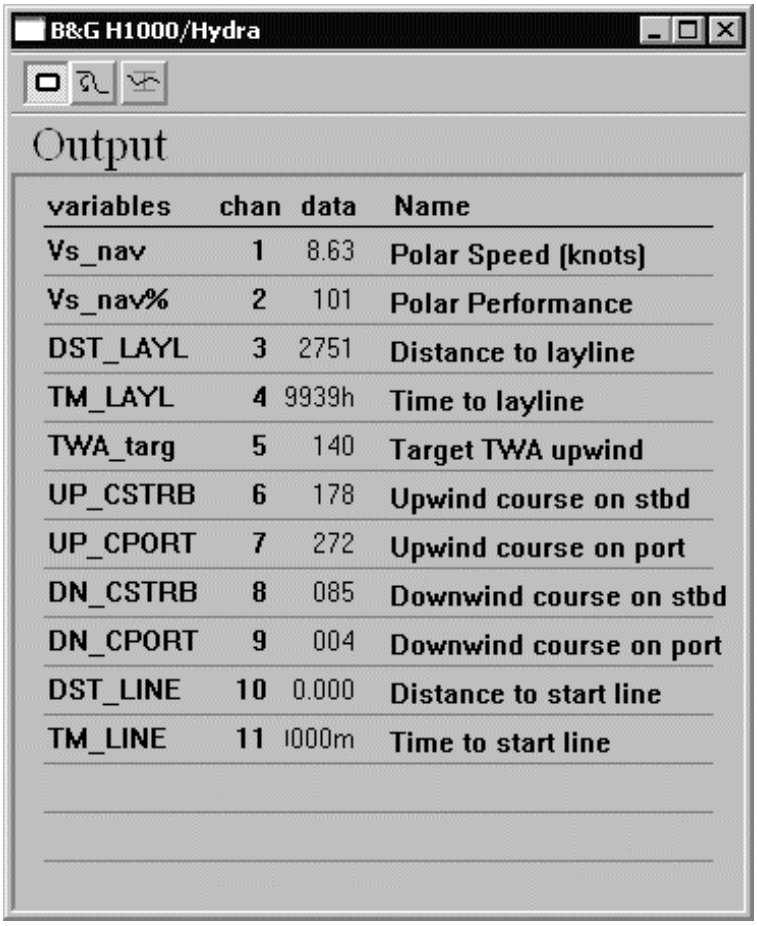


Figure 7.6

To change or add a variable to output, click on a line in the **variables** column (a blank line for adding variables or on a variable to change), select the variable you wish to output and then **OK**. The variable will appear on that line with the **chan** column showing **–1**, which indicates that output is turned off. Click on the **-1** and then select the B&G channel number you wish to use (1 to 11, as in the example).

If you assign more than one variable to the same channel, then these will switch with a frequency of around 3 seconds.

Ockam Instruments

Ockam systems have similar facilities to Hercules: Deckman writes data back out to the system on the **user** channels 0 to 9.

Options

This implements the options function as described in section 4 of the Ockam manual.

Control

This implements the control codes as described in section 4 of the Ockam manual.

Silva NMEA

This operates mainly as a standard NMEA instrument system (see page 7.15) except that you are able to write back Deckman data to the displays.

Output 

The default outputs are those illustrated in the example below. The **variables** column shows the Deckman variable, the **chan** shows the Silva channel (1 to 3) and the **data** column shows the current data for the variable. The text in the **Name** column is associated with the channel number, and this cannot be altered. In other words, the Deckman name is not written out with the data to the displays. If you wish to output different variables, then you must be careful which channel you assign these to since the label on the display may not identify the variable.

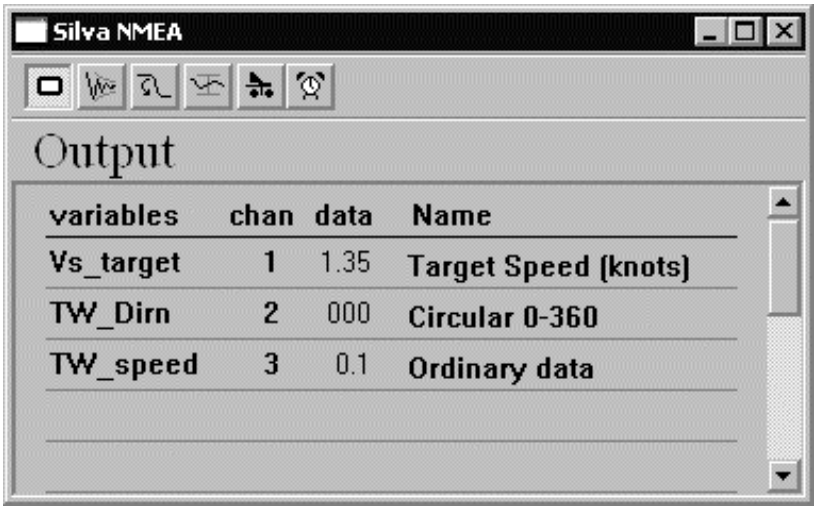


Figure 7.7

To change or add a variable to output, click on a line in the **variables** column (a blank line for adding variables or on a variable to change), select the variable you wish to output and then **OK**. The variable will appear on that line with the **chan** column showing **-1**, which indicates that output is turned off. Click on the **-1** and then select the channel number you wish to use (1 to 3, as in the example). If you assign more than one variable to the same channel, then these will switch with a frequency of around 3 seconds.

NKE NMEA

This operates mainly as a standard NMEA instrument system (see page 7.12) except that you are able to write back Deckman data to the displays.

Output 

The default outputs are those illustrated in the example below. The **variables** column shows the Deckman variable, the **chan** shows the NKE channel (1 to 11) and the **data** column shows the current data for the variable. The text in the **Name** column is associated with the channel number, and this cannot be altered. In other words, the Deckman name is not written out with the data to the displays. If you wish to output variables, then you must be very careful which channel you assign these to since the label on the display may not identify the variable.

To change or add a variable to output, click on a line in the **variables** column (a blank line for adding variables or on a variable to change), select the variable you wish to output and then **OK**. The variable will appear on that line with the **chan** column showing **-1**, which indicates

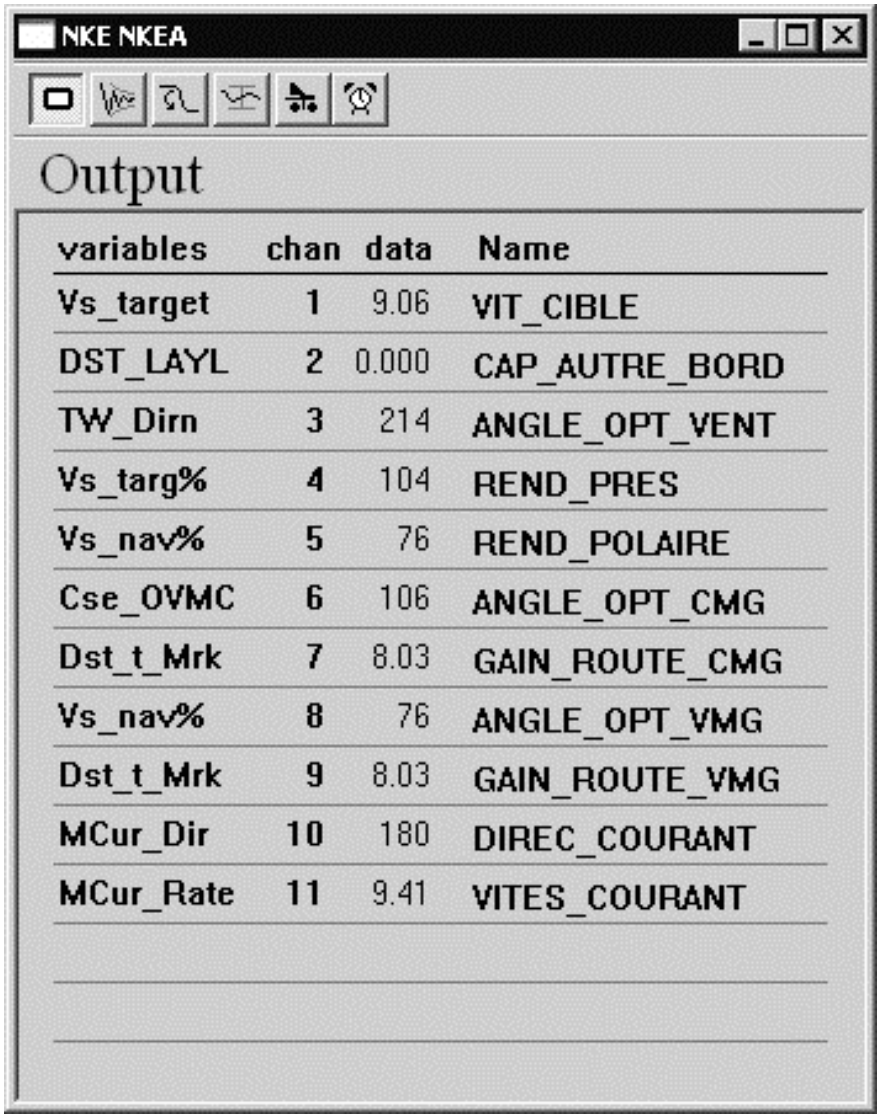


Figure 7.8

that output is turned off. Click on the **-1** and then select the channel number you wish to use (1 to 11, as in the example). If you assign more than one variable to the same channel, then these will switch with a frequency of around 3 seconds.

NMEA Instrument System

The way in which Deckman handles instruments which offer the NMEA interface is different from either the Hercules or the Ockam system. The most important difference for you is that Deckman cannot write back to the instrument system so that Deckman information can be shown on the instrument displays, nor can you calibrate the instrument system from Deckman; these are facilities offered by the B&G and Ockam proprietary interfaces but not the NMEA standard.

The other difference is that Deckman calculates all of the wind information from the basic variables apparent wind angle and speed, boat speed, and heading. To get the best calibration Deckman allows you to specify a maximum angle of heel so that it can calculate an expected angle of heel and an expected leeway, and also correct the apparent wind angle for the heel error.

The two diagrams in Figure 7.9 show how the maximum angle of heel is reduced as a function of the apparent wind speed and apparent wind angle. Although the function will not quite reach zero at 180 degrees the angle is small enough for the effects to be negligible.

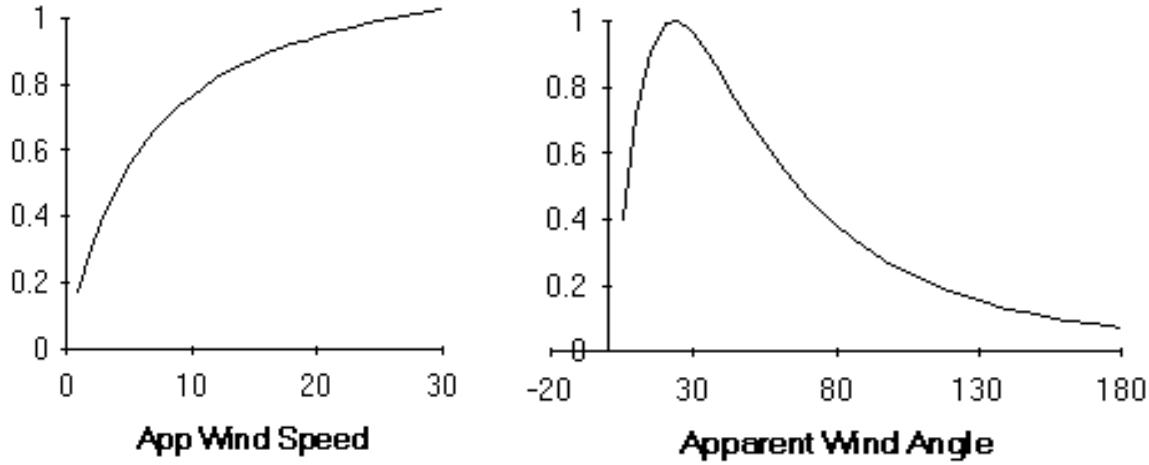


Figure 7.9

The port and starboard boat speed factors shown in the calibration display (Figure 7.10) are used to provide additional calibration to that given on the instruments. In particular if you feel that you are having a

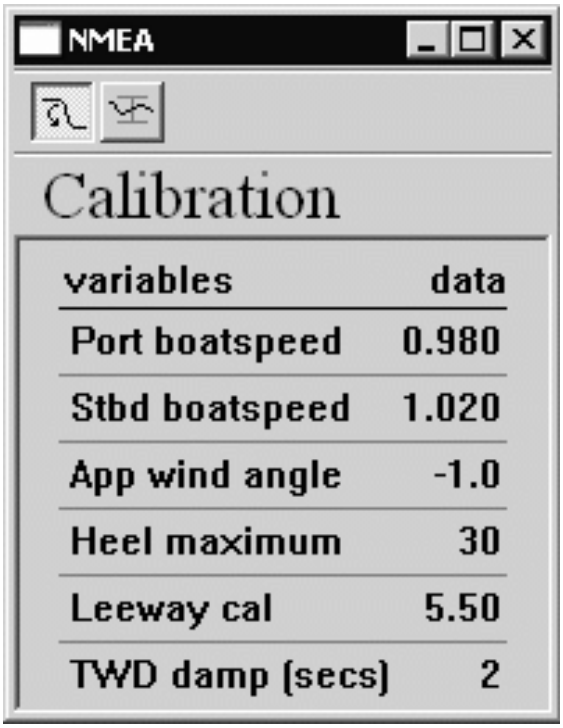


Figure 7.10

problem in getting the boat speed to read the same on each tack—possibly because the paddle wheel is off centre—then each tack can be corrected separately. In the example the boat speed would be reading too high on port tack and so it is reduced by 2%; it is too low on starboard and is being increased by 2%. The actual value of the correction Deckman applies depends on the angle of heel (if it is specified): the maximum correction is used at the maximum angle of heel and it reduces smoothly so that when the boat is upright no correction is applied.

The apparent wind angle calibration is used to correct for errors in mast alignment. This should be corrected on the instrument system itself—the facility is only here for the sake of completeness. A positive correction makes angles larger on starboard and smaller on port.

The heel maximum should be set to a value which is the maximum you would expect to see when sailing.

The leeway calculation is a function of angle of heel and the square of the boat speed: you will have to experiment with it to get the right values for the calibration, but expect a figure between 5 and 7.

The final value is for damping of the true wind direction. You should be able to use a value of one in light weather—no damping—but you may need more in heavy weather.

Note. It is important that the instrument system boat speed is calibrated correctly because Deckman corrections have no effect when the yacht is upright, as when sailing downwind.

Note. Do not expect the calibrations here to give you a perfect true wind direction that is consistent through tacks: you will still probably need to use the special true wind calibration tables which are described in the next chapter.

Chapter 8 : Wind calibration

The additional features for wind calibration in Deckman are very important—with these you can fix the problems of getting a true wind direction which is consistent from tack to tack.

Deckman takes the original data from the instrument system (Orig_TWS, Orig_TWA, Orig_TWD in Show Data on page 5.4), applies offsets to the angles and speeds according to the values in the tables, and generates new variables (TW_Speed, TW_Angle, and TW_Dirn) which are used in all calculations in Deckman and can be sent back to the instrument system. Calibrations need to be entered for the original wind speeds and angles, not the required corrected value. For instance, in Figure 8.1, the required wind angle for optimum upwind VMG in 4 knots is 65°, but the original data was 60°. A +5° correction has therefore been applied at this wind speed and angle.

Wind shear

A consistent offset to the true wind direction to adjust for the effects of wind shear can be entered by choosing **polars>adjust wind shear**. A negative value offsets to the West, a positive to the East.

Wind speed and Wind angle

In the **polars** menu, choosing **adjust wind speed** or **adjust wind angle** allows you to set values for offsets in either of these two things. They have the same format and work in the same way as the polar tables (see Figure 8.1and Figure 8.2 below).

You are also able to have different copies of the wind speed and angle correction tables saved. These also work like the polar tables: to view the currently loaded table, select **polars**, followed by **adjust wind speed** (or **angle**), then **show>loaded**. You then have the option to **save file**

as… from the **menu** button. To view a saved calibration table (i.e. without Deckman applying the values to the wind data), select **polars**, followed by **adjust wind speed** (or **angle**), then **show**, then either click on a recently used table or hit **file…** and browse to the correct file.

Note. Separate wind calibration tables used when the Start display is in use. See the 'Start display' chapter for more information.

To load a saved file, click **polars**, followed by **adjust wind speed** (or **angle**), then **load**, then either click on a recently used table or hit **file…** and browse to the correct file.

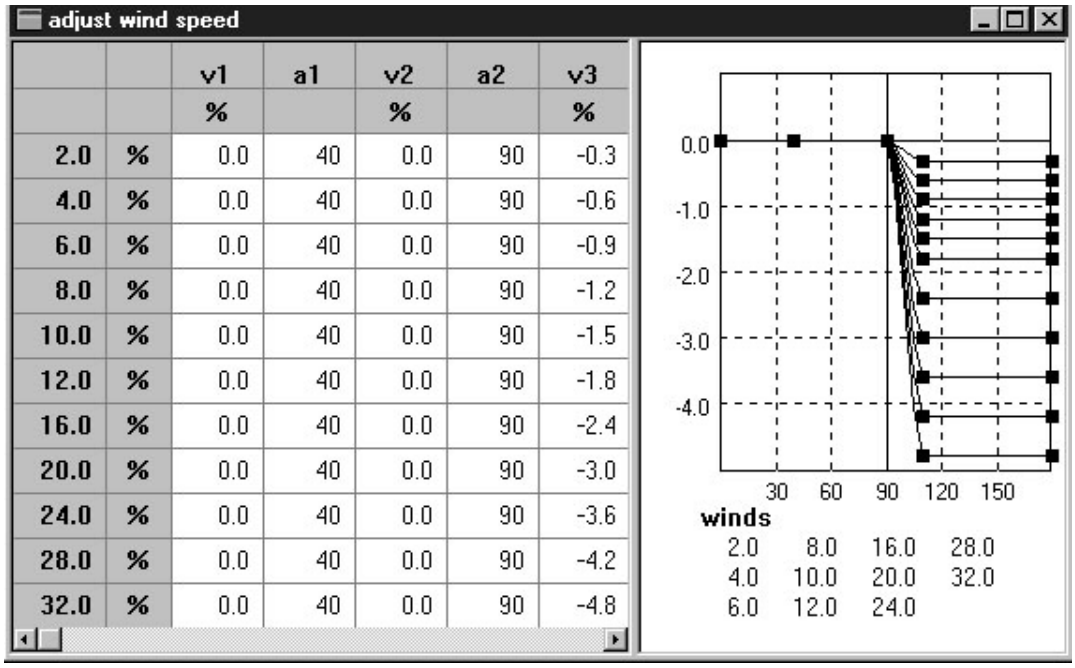


Figure 8.1

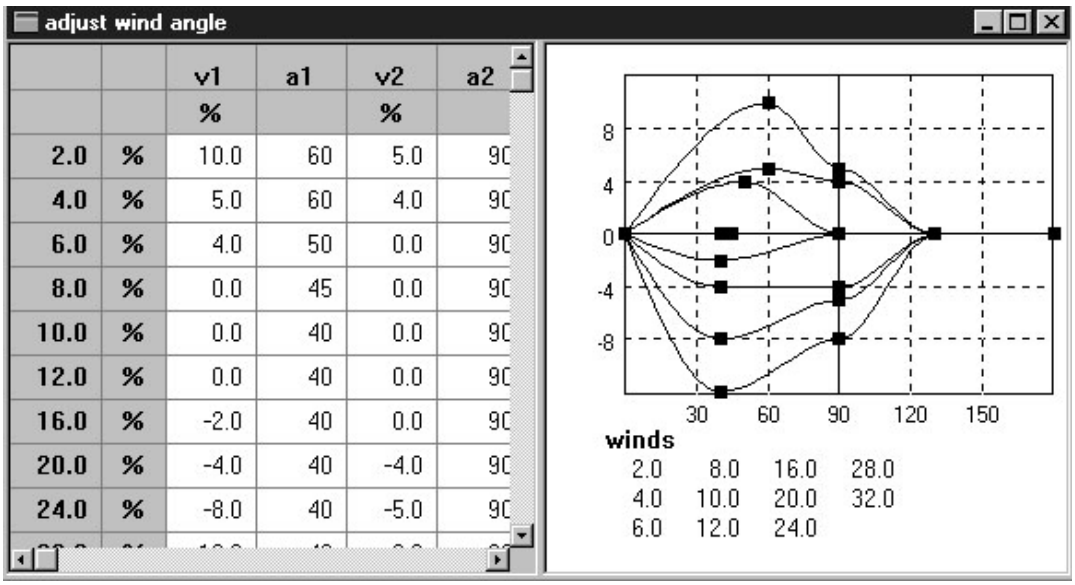


Figure 8.2

For each wind speed there are three points, rather than five, each of which has two values: the **a** column specifies the original true wind angles and the **v** giving the correction to be applied. Positive or negative values can be entered; for wind angles, a negative value offsets to the West, a positive to the East.

Chapter 9 : Wind and current forecasts

This chapter outlines the use of digital weather forecasts in Deckman. Firstly, it discusses GRIB files. As was seen earlier (see page 3.14) these can be used in Deckman's Planning calculations. This chapter will discuss viewing the data from GRIB files in Deckman overlaid on a chart, and also how they can be downloaded from a choice of two sources from within Deckman. There are also notes on a couple of tools which are supplied with Deckman to manipulate GRIB data.

The chapter will then discuss how you are able to 'draw' your own forecasts within Deckman, which can then be used in the routing.

GRIB viewer

The **GRIB viewer** function allows you to import a GRIB file into Deckman, and view the data overlaid onto a chart; there are also very flexible functions to allow you to control the appearance of the GRIB. To enter the **GRIB viewer** function select **menu>view>GRIB view**: you will then be presented with a number of buttons along the bottom of the Navigation screen (see Figure 9.1). To choose which GRIB file you wish to import, click **Select GRIB File** (bottom left, though this may display a file path if the function has been used previously), **Find File** and then browse to the correct GRIB file, followed by **Open**. A series of arrows will then be overlaid on your chart illustrating data from the GRIB file (you may have to zoom to the area covered by the file) and data will appear in some or all of the boxes at the bottom of the display (depending on what data is in the GRIB file). The box to the left of **Select GRIB File** allows you to choose which time you wish to see displayed.

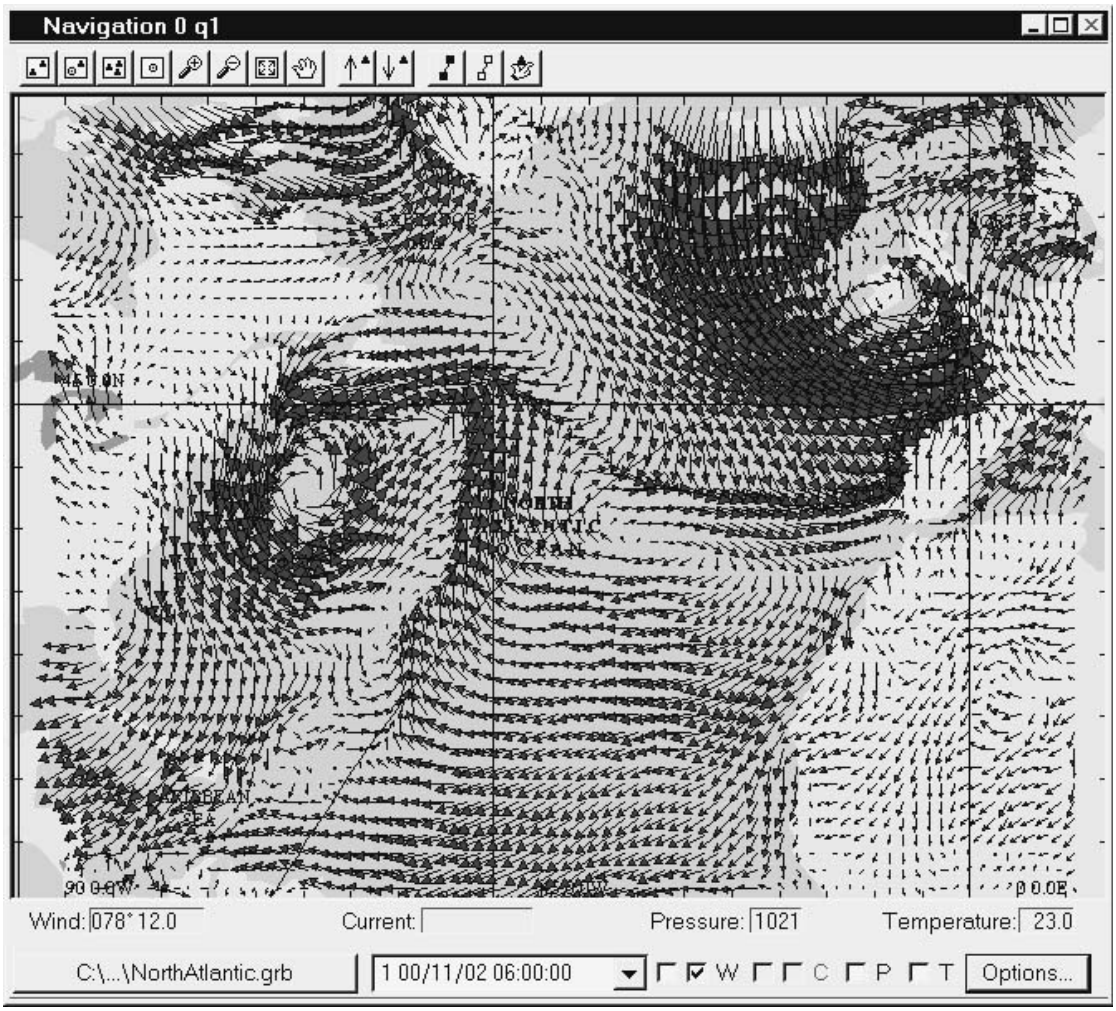


Figure 9.1

You can choose to view wind, current, pressure and temperature by using the check boxes at the bottom of the display; from left to right these are:

Letter		
W	Wind	Contours
W		Arrows
C	Current	Contours
C		Arrows
P	Pressure	Contours
T	Temperature	Contours

Note. Some variables may not be available if the data was not contained in the GRIB file

Also at the bottom of the display are four data boxes which show the value of the data at the present position of the cursor:

Wind	Direction: degrees (from) Speed: Knot
Current	Direction: degrees (to) Speed: Knot
Pressure	Millibars
Temperature	Centigrade

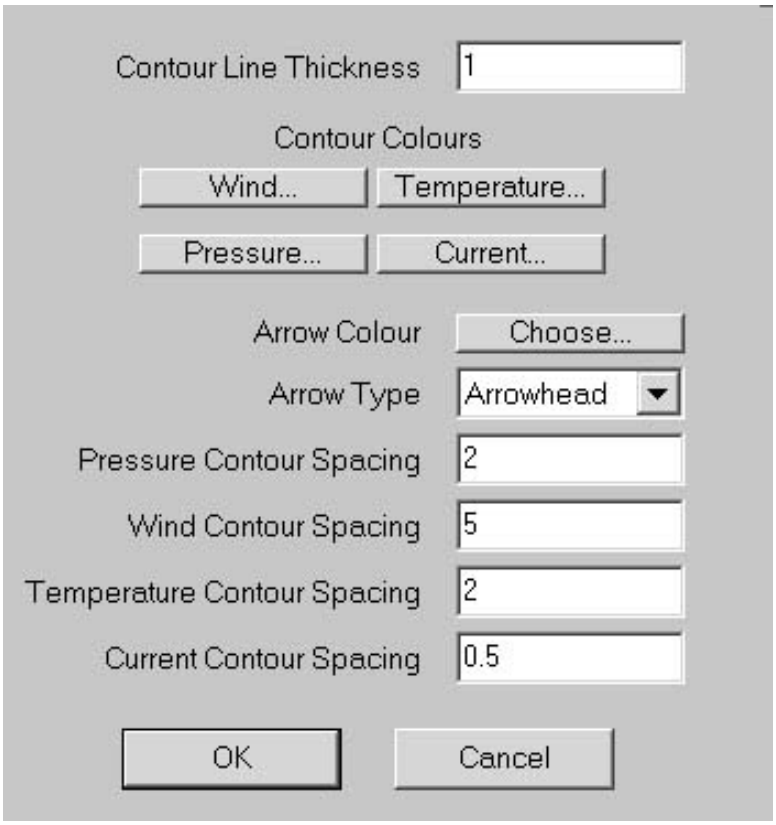


Figure 9.2

The appearance of the whole display can be controlled by hitting the **Options** button which will give you the dialog shown in Figure 9.2.

Contour Line Thickness, the four **Contour Colours** boxes and the **Arrow** Type box are all self-explanatory. **Arrow Colour** allows you to change the colour of the arrow heads as the data change: each successive box in the **Custom colors** section represents either 5 knots of wind speed or 0.5 knots of current. Click in the box you wish to change, select a colour from the rainbow area and then hit **Add to Custom Colors**. The four **Contour Spacing** boxes allow you to change the spacing between the contours; units as above.

Downloading GRIB forecasts

There are two sources of GRIB forecasts which you can access from within Deckman. OCENS WeatherNet is a subscription service with which you must register while Saildocs is a free service*. An easy interface is then provided from within Deckman to download and view these files.

OCENS

Turn on the GRIB viewer and then click on **Select GRIB file** followed by **OCENS WeatherNet**. You will be presented with a display like that shown in Figure 9.3.

* For more information on these please see www.ocens.com and www.saildocs.com

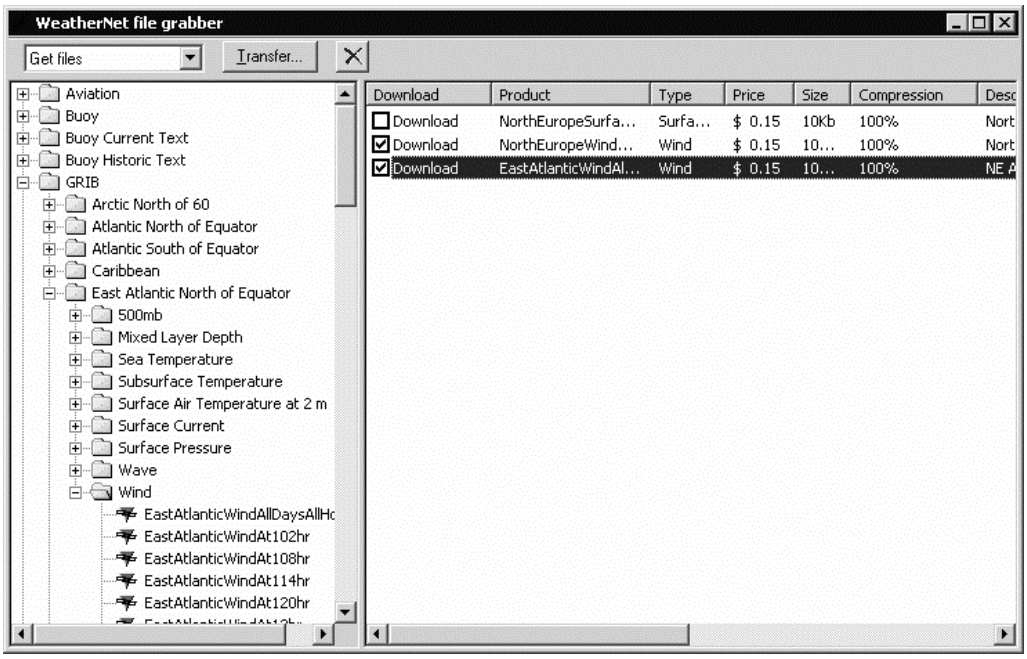


Figure 9.3

The folder tree in the left pane of this display allows you to view the possible files for download. Browse to the correct one and then drag the file(s) to the right hand pane. You can do this for as many files as you think you may want to download.

Once in the right pane, you can see more information about the file, including the estimated cost of the download. You then confirm which files you actually want to download by checking the appropriate boxes. In the example above, 2 files would be downloaded.

To remove files completely from the right pane, highlight them and then hit the delete button shown left.

Get files

Select **Get files** in the dropdown menu at the top of the display and then hit **Transfer**. You will be taken to the display shown in Figure 9.4. If you have not already registered to use the service you will be prompted to do so (for information on how to register, see below).

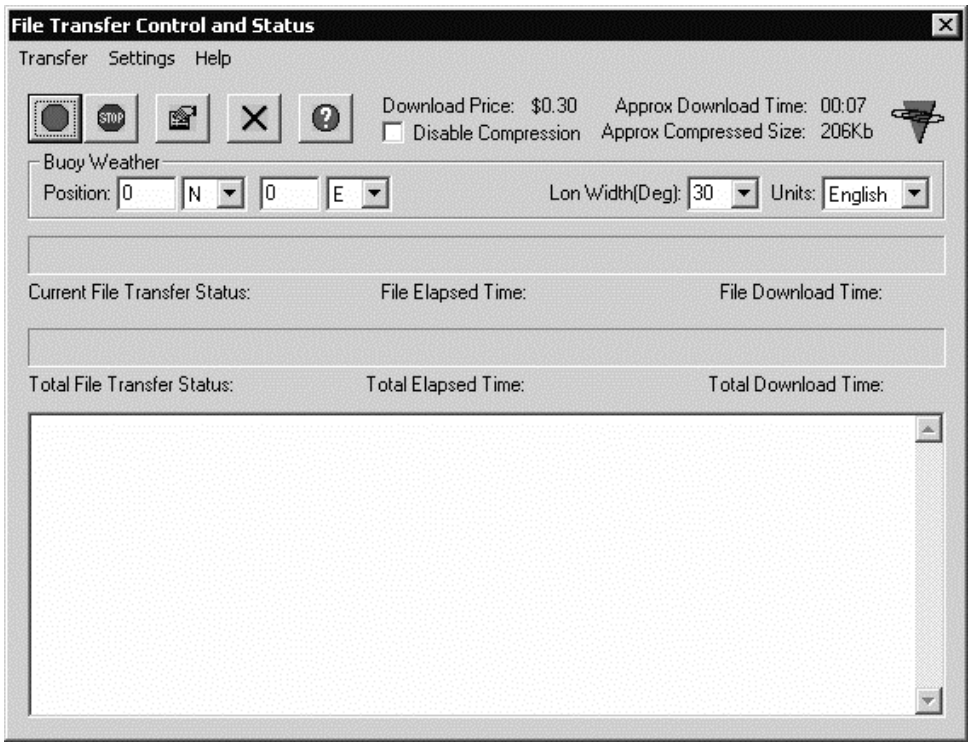


Figure 9.4

To download the files you selected in the previous step, simply click on the green button in the top left of the window. You will then see the status of the transfer – once it is complete, hit the cross button to exit. You will then be taken to the open file dialog where you can select the GRIB file you wish to view.

Note. All files downloaded from the OCENS WeatherNet service are stored in the **c:\program files\BandG\deckman\ocens\data** directory (where c:\program files\BandG\deckman is where you installed the software)

Update File list

OCENS frequently update the list of files on their server. To update your list of files to match, select **Update file list** from the drop down menu followed by **Transfer**. After this is complete you must restart the OCENS WeatherNet window before continuing.

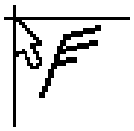
Register

From the same dialog, select **Register for Service** from the drop down menu, followed by **Register** (the **Transfer** button changes to this). Follow the prompts on screen to complete your registration for the OCENS WeatherNet service.

Connection settings

Select **Register for Service** from the drop down menu, followed by **Show**. Enter your OCENS WeatherNet username, password and other connection settings in the dialog.

Saildocs



Turn on the GRIB viewer and then click on **Select GRIB file** followed by **zoom Saildocs area**. The cursor will change to that show left. Click and drag an area for which you want to receive GRIB data; you will then be presented with the dialog shown in Figure 9.5.

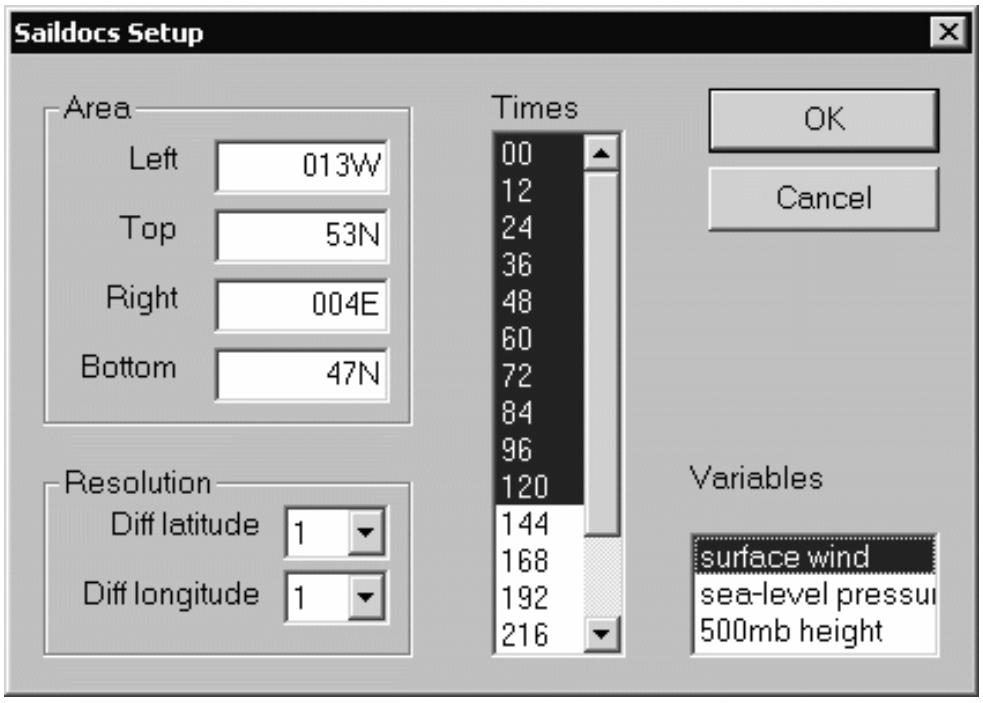


Figure 9.5

The **area** boxes define the edges of your requested area, **resolution** is the gap between data points measured in degrees, **times** allows you to

specify the times of the forecast schedules you wish to receive while **variables** allows you to specify which variables you wish to receive. Make the appropriate selections here and then hit **OK** and an email will be created with the correct GRIB request. You must then send this email, wait for the GRIB to be sent (only takes a few minutes), save the GRIB and then use it in the normal way.

GRIB tools

As well as being able to view GRIBs, Deckman also comes with a couple of tools which allow you to manipulate GRIB files.

CutGRIB.exe

This program allows you to extract information from a GRIB file: cut out a certain area, reduce the density of the data and so on.

Run **CutGRIB.exe** from **c:\program files\BandG\deckman\GRIB** directory (where 'C' is the program where Deckman is installed) and you will be presented with the following dialog:

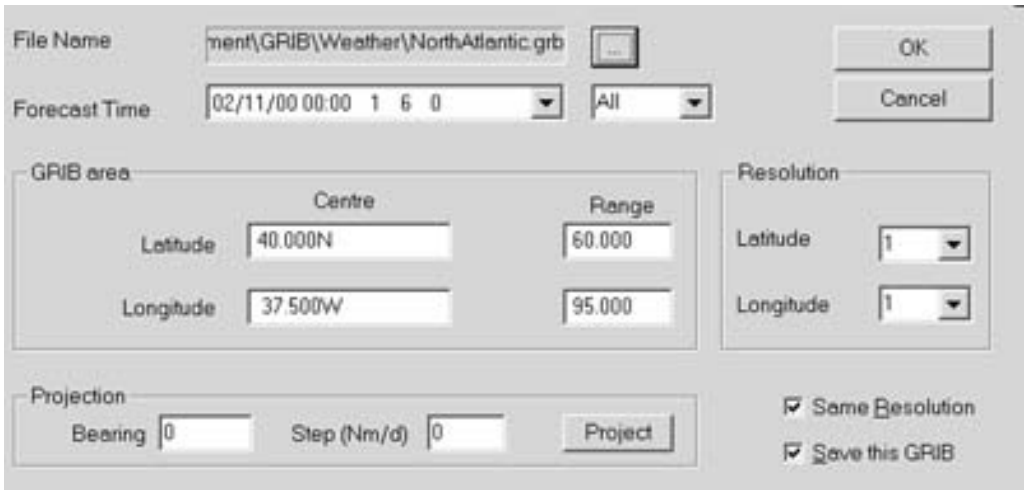


Figure 9.6

Hit the button following the **File Name** label (with three dots) and then browse to the GRIB file you wish to use. The boxes then allow you to control what information you wish to extract. The **Forecast Time** box

allows you to select the time you wish to use, and the small box beside this controls the type of data (wind, pressure, current, temperature).

The **GRIB area** section allows you to specify the latitude and longitude of the centre of the area you wish to cut (in degrees: positive is North and East, negative South and West) and the total range across the area. **Projection** allows you to cut a different area of the GRIB at different times: enter a **Bearing** for the direction in which you want to move and a **Step** (units nautical miles per day).

If a particular file contains too much detail (for instance, if the files are too large), the **Resolution** boxes allow you to skip some of the data (include all, or one out of 2, 3 or 4 data points). If the **Same Resolution** check box is ticked when you change the resolution for a particular forecast time, this resolution also applies for all times in the forecast. The **Save this GRIB** check box allows you to specify which forecast times you wish to include: step through the forecast times and clear the check box for those times you do not want included.

When you are happy with your selections, select OK and you will be prompted for a file name and directory to save the new file.

GRIB.exe

This program allows you to view the raw data from a GRIB file (which may be useful for diagnostic purposes) and also allows you to convert GRIBs to a format readable by Deckman (see **GRIB routing** below).

Run the program **GRIB.exe** from the **c:\program files\BandG\deckman\GRIB** directory (where 'C' is the program where Deckman is installed). In this program, select **File>Open** and then select the GRIB file you wish to use—you may have to specify the directory. The GRIB file will look very confusing in the format in which it first comes up—not much more than a jumble of numbers. However, the brief explanation below should help you to make some sense of things.

The first things to understand are a few of the code numbers used in GRIB files:

002 Pressure reduced to mean sea level

031 Wind direction in true degrees

032 Wind speed in metres per second

033 u-component of wind—east/west component of the wind. Positive indicates wind is going towards the east, i.e. a westerly wind, and vice versa

034 v-component of wind—north/south component of the wind. Positive indicates wind is going towards the north, i.e. a southerly wind, and vice versa

Essentially, 031 together with 032 give the same information as 033 and 034 but in a different form. You are unlikely to come across both of these in the same GRIB file.

The first column shows the forecast type according to the codes mentioned above. The third row of figures for each forecast section shows the date and time the forecast was issued, and the time in hours between the forecast and the present data (the middle number of the three after the date and time). The rest of numbers give details such as positions, but are difficult to interpret in this form.

To see the data in a more user-friendly form, select **View>Select Data**. Select the data you wish to view by clicking on the arrow beside the **Forecast** box (which shows the forecast type according to the codes along with the issue date/time).

You will now see a set of figures in a table. At the top is the code for the type of data selected followed by the date and time of issue and the elapsed time since the issue. (Note that the data shown will be for the forecast time only if this is 0, see below). The figures down the left hand side of the display give the latitude and those along the top show the longitude. The data is then shown in the grid. For instance Figure 9.7 shows data for 12:00 on 11th August '97 (twelve hours after the forecast was issued at 00:00). At a position 70.008N, 27.500W (both underlined) the expected u-component (east/west) of the wind is 5.59 metres per second (circled)—or about 12 knots.

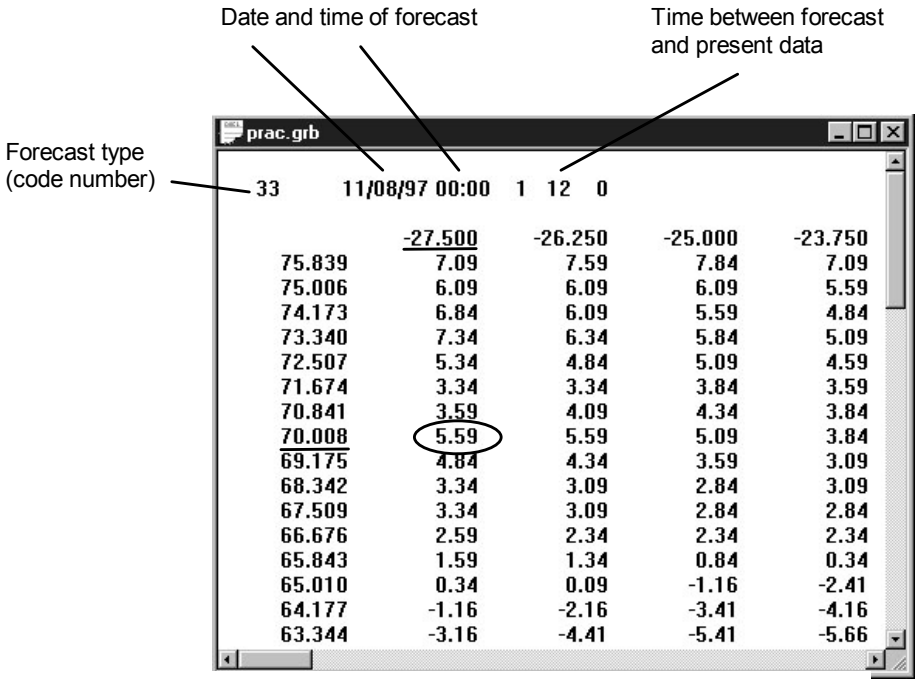


Figure 9.7

Note. As usual, a positive number indicates North or East; a negative South or West. In GRIB files, however, positions are in the form degrees and decimals of a degree, **not** degrees and minutes.

Selecting **File>Save** in Grib.exe automatically saves the data in a format readable by Deckman (indicated by the file extension **.cgf**, see **GRIB routing** below). You will be prompted to select which data from the GRIB you wish to save (wind, current or everything else). If you wish to save more than one type of data, you must select **Save As** after the first time.

Making wind or current Grids

This function gives you very flexible facilities for entering your own wind or current forecasts for use in Deckman's routing calculations. You essentially 'create' your own weather map specifying data for different positions on the chart, and Deckman then interpolates between these by triangulation. The principles of using the function are outlined below, followed by some tips as to how the function is best used and a few examples of what is possible.

Basic operation

To use this feature select **menu>view>make Grid** and then select whether you wish to create a **wind** or **current** forecast. You will then get some extra boxes along the bottom of the Navigation display. It is easiest to begin by using the zoom tools so that the whole area you wish to forecast for is visible on the screen. You then enter data within this area as described below.

If you enter data into the **Speed** and **Dirn** boxes (for wind these are 'from', for current 'to') at the bottom of the display and then click on the chart itself, a point ('node') will be created with the characteristics specified. It is also possible to click and drag: points will be put down with the speed specified in the box, with the direction determined by the movement of the cursor. Note that for currents, you draw in the direction of the current (i.e. 'to'); for wind you must draw into the wind (i.e. the direction the wind is coming 'from'). This is necessary to keep with the conventions of how wind and current directions are generally labelled.

The **Arrows** box turns the arrows associated with each point on or off, and the **Preview** box allows you to see Deckman's interpolation between the points you enter. The **Grid Res** box allows you to specify how 'dense' you wish the interpolated mesh to be; units are degrees, with smaller numbers therefore giving more detail. Selecting an individual node (clicking on it – it will turn green when cursor is in the correct position) allows you to make changes to the individual node: change speed or direction, or delete.

The **Actions** menu gives the following options:

Load Nodes	Opens a previously saved node file (as saved using Save Nodes below)
Save Nodes	Saves the present data from the nodes; file extension is .nod. See below for more information.
Save to Grid	Saves the present data from the nodes in a format that can be used by Deckman in Planning; file extension is .cgf. See below for more information.

Group	Allows you to draw a rough circle around a number of nodes (start and finish of the line are assumed to connect). This selects all the nodes contained within this area (they turn yellow). Clicking on any of these nodes then allows you to scale speeds by a factor, input a rotation or delete all the selected nodes (see examples below).

It is advised that you use **Save Nodes** frequently when developing forecasts so that you can easily revert to a previous version if later changes do not work. The main purpose of the **make Grid** feature is to enable you to input your own predictions in a format that Deckman can use in its routing facilities. To do this, you develop a forecast for a certain time. When you are happy with your forecast map, click **Actions>Save to Grid**. Enter a file name followed by **Save**. You will then be prompted to enter a date (format yymmdd) and time (hhmm) to be associated with this forecast. You then develop further forecast maps for later times, click **Actions>Save to Grid**. This time, select your previously saved file followed by **Save**. This time, as well as entering the date and time to be associated with the new data, you will also be asked to select **Overwrite** (which replaces the existing data in the selected file with your new data) or **Append** (which adds your new data after the existing).

Note. Once you have chosen the **Save to Grid** option, you are unable to manipulate the data in the forecasts directly. However, if you use GRIBs in routing (see **GRIB routing** below) then there are a few additional controls.

At all times when using the **make Grid** feature a box in the top left corner of the navigation display shows the conditions at the present position of the cursor.

As can be seen in the examples below, the distance between the positions of the nodes is as important as the speed/direction at the nodes themselves. This is because of the way Deckman triangulates between the nodes for interpolation. As a general rule, it is best to have a closer gap between successive nodes within 'lines' (when drawing a line, as in

the 'click and drag' method outlined above) than the distance between lines.

Wind forecasts

When creating wind forecasts, you will generally be working from some conception of where you are expecting high and low pressure systems to be situated, with differing strengths of wind relative to the positions of these. In the **Speed** box, enter the wind speed which you expect at a certain position and then draw a line connecting these positions. Note that, following the rule outlined above, it is necessary to draw your line into the wind. Figure9.9 might represent the beginning of 'creating' a low pressure system in the northern hemisphere; a clockwise circle was drawn to establish this pattern.

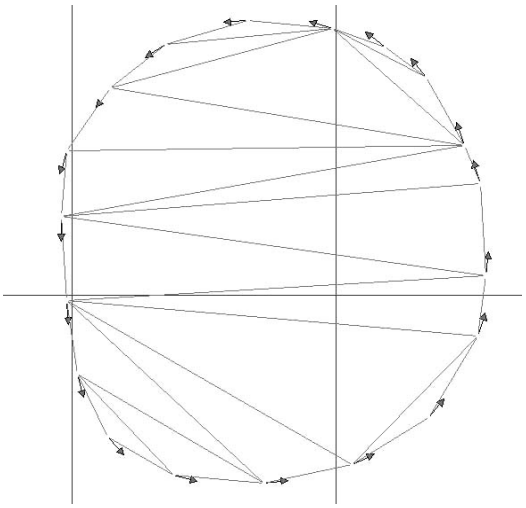


Figure9.9

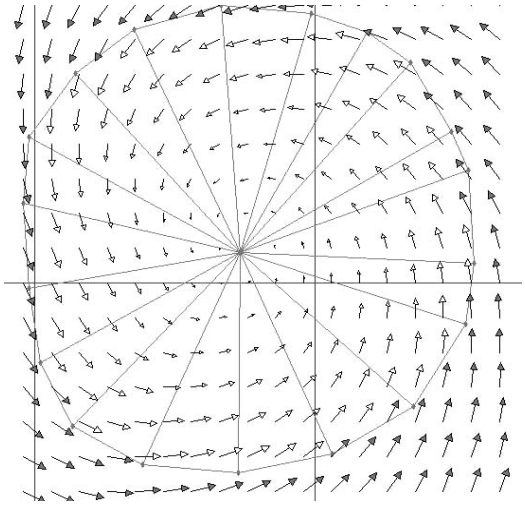


Figure 9.8

Here you can see Deckman automatically triangulating between the points entered. As this stands, however, this would not give an accurate wind forecast. Firstly, the wind arrows need to point in slightly towards the centre of the low. To do this, select **Actions>Group**, click and drag to draw around the complete section and then enter an offset (say –20°) into the **Rotate** box. Secondly, the wind speed will decrease towards the centre of the low. To simulate this, enter 0 into the **Speed** box at the bottom of the display and click in the middle of the low to place a node here. Turning the **Preview** on would show the wind forecast we have

created so far (Figure 9.8). Here the interpolation between the nodes can be clearly seen, with the wind speeds gradually reducing towards the centre.

Applying the same principles to further pressure systems and wind bands we can achieve fairly complex weather maps very quickly (Figure 9.10).

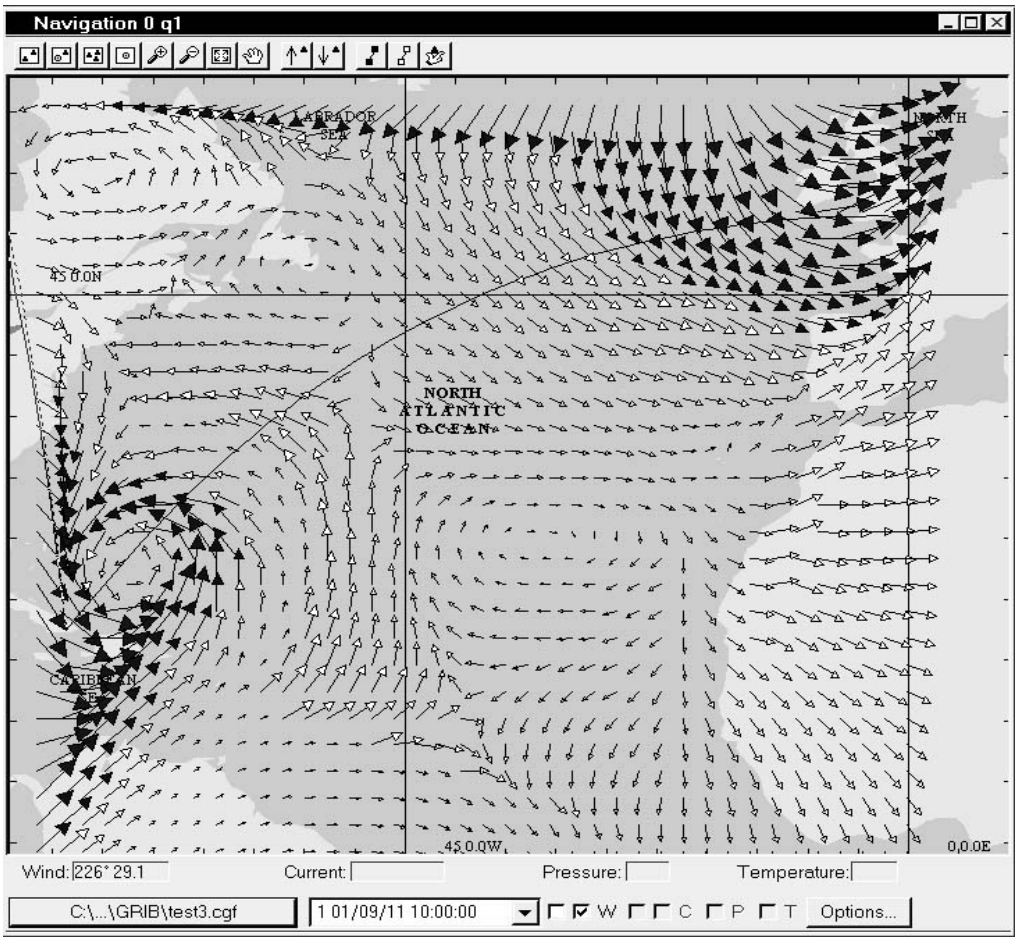


Figure 9.10

Because of the simplicity of positioning nodes, it is generally quickest to enter more rather than fewer. An alternative method is to minimise the number of nodes, so that they can be more quickly manipulated using the **Actions>Group** command and then scaling/rotating/deleting.

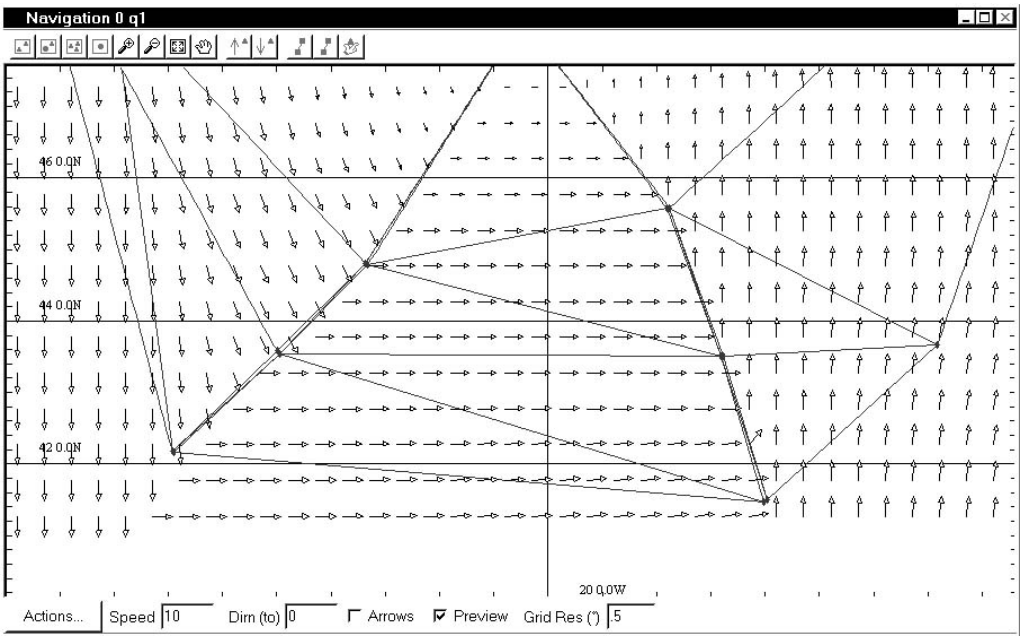


Figure 9.11

It is also possible, for example, to create a low pressure area and frontal systems associated with it. Starting from a position such as that illustrated in Figure9.9, position two nodes close together either side of where we expect the fronts to be, with a distinct change in wind direction either side (if necessary, use the zoom in tool for accurate positioning). It is important here to look at Deckman's triangulation and move nodes slightly or add/delete nodes to get the picture you want. Figure 9.10 shows a simple example of what is possible.

Current

The same principles apply to creating current models. One further technique will be outlined here. The aim is to create a strong current stream, reducing very quickly to little flow in nearby areas, for example in the Gulf Stream. To do this, first draw a line of nodes representing the strong current. Next, enter 0 in the **Speed** box, and then draw lines close to each side of the strong current in the positions where you expect the current to have reduced to 0 (here it is important again to consider the triangulation – make sure the nodes are close enough together within the rows of the same value). Figure 9.12 shows detail about the construction of this current, while Figure 9.13 shows the overall outcome. Note that the **Grid Res** box is set at 0.3 (degrees) in Figure 9.13 and therefore less detail can be seen than in Figure 9.12.

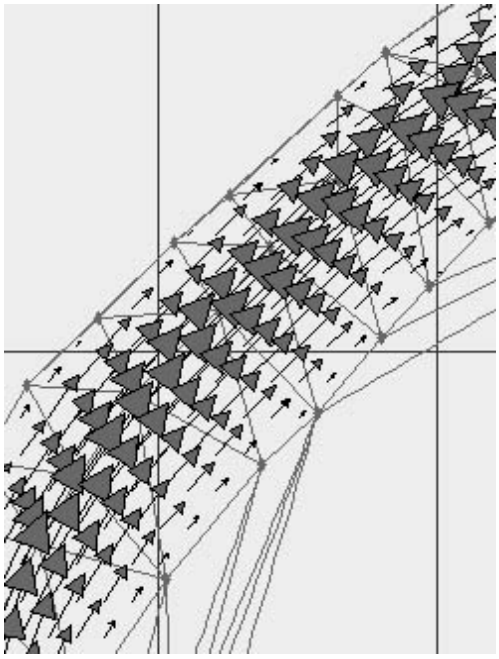


Figure 9.12

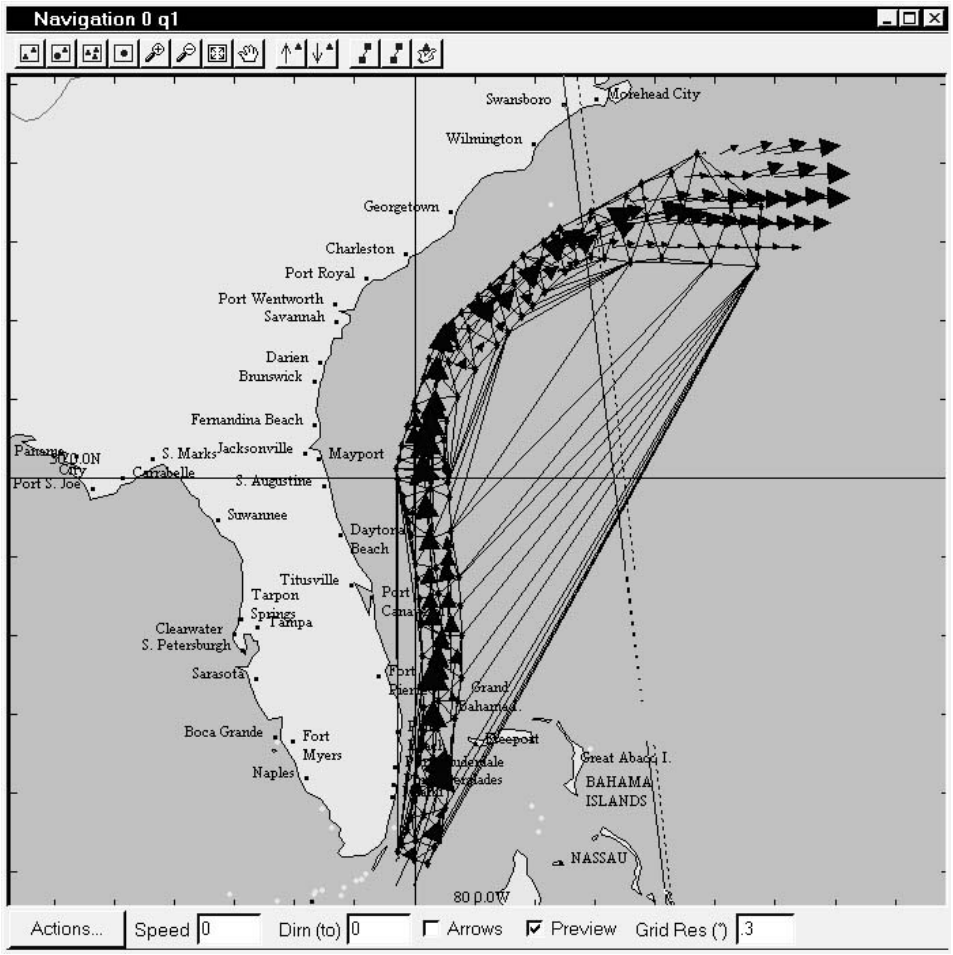


Figure 9.13

GRIB routing

Note. This feature will only work if you have obtained the correct unlock code; if you attempt to use this feature without the code, you will be prompted to enter it. If you already have the code enter it here, or contact your agent or B&G for further information.

GRIB conversion

In order to be used in Deckman, GRIBs must be in a special format (which is indicated by the file extension **.cgf**). There are three ways in which you may create or convert files into the **.cgf** format.

Firstly, this is the format in which files are saved when you create your own forecasts using the **make Grid** function (see above).

Secondly, GRIBs will be automatically converted to this format if they have been viewed in the **GRIB viewer**, in which case the file will have been split up into sections of different data:

Current	filename_c.cgf
Wave height	filename_h.cgf
Temperature	filename_t.cgf
Pressure	filename_p.cgf
Wind	filename_w.cgf

Thirdly, files are automatically converted to this format if you open and then save them in the **GRIB.exe** program (see above).

GRIBS in Planning

Run Deckman in the normal way. Select **menu>planning>setup plan** and then **use GRIB wind forecast** and/or **use current GRIB**. Click on **wind file** or **current file** button and choose which GRIB file to use and confirm by choosing **Open**. Remember the file must be in the form readable by Deckman with the .cgf extension. Set up the rest of the plan as you would normally—if necessary see page 3.14 for a reminder.

In the same way as it is advisable to input various different scenarios into **What If?** and Planning, it is also possible to change the GRIB forecasts as necessary. On longer passages, especially, this is a useful function; for instance if you hear new weather information but can't access updated GRIB files.

Editing GRIB data

By choosing the **edit GRIBs** icon (shown left) you can make some changes to the GRIB files: offsetting the forecasts or changing the timings for example. For any changes made here Deckman will automatically update the Planning function, immediately showing you the new set of isochrones.

In the **Edit GRIBs** box, an example of which is shown in Figure 9.14, you first specify which forecast you wish to change. You then have the following options available:

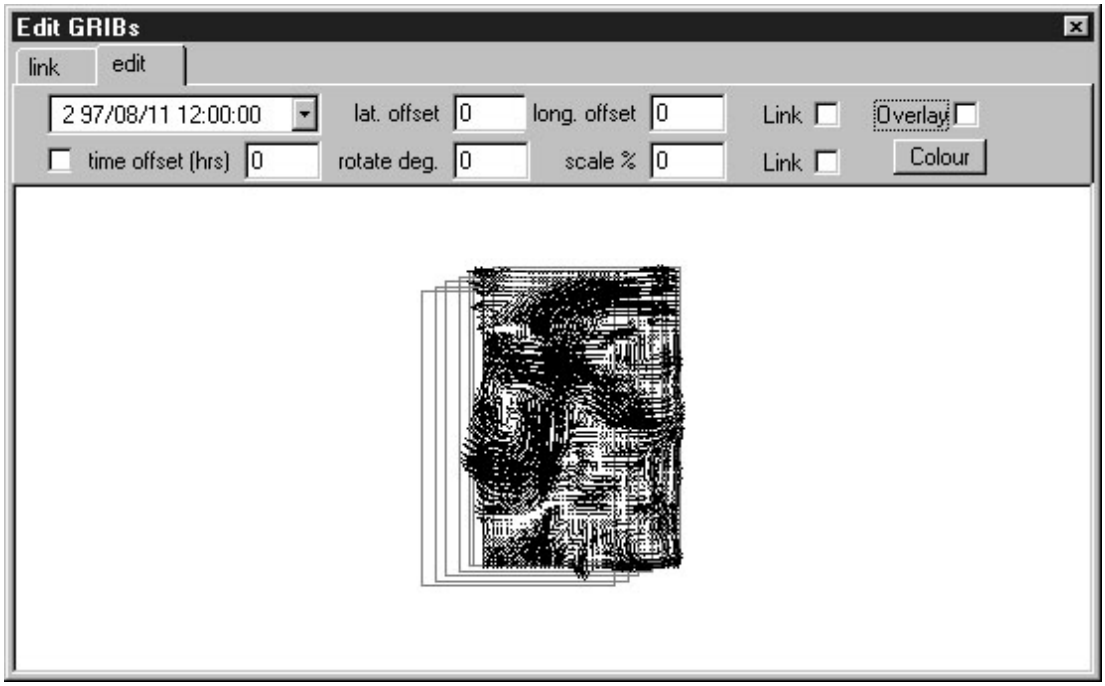


Figure 9.15

lat. offset and **long. offset** allow you to specify offsets for the forecast map; units as before: lat/long in degrees and decimals of a degree, positive being East and North.

time offset allows you to see the effects of the weather systems moving more quickly or slowly than in the original forecast. Units are hours here.

rotate degrees input a rotation angle for the entire forecast map in degrees, with positive being clockwise.

scale allows you to change the winds by a percentage— for example, to increase the winds by 20%, input 120 into this box.

The **Link** boxes here allow you to make the specified changes to all of the forecasts, not just the one where you input the changes initially.

Checking **Overlay** allows you to view the wind forecast over the top of a chart, as shown in Figure 9.15. When this is on, figures showing the direction and strength of the wind at the position of the cursor will be shown in the Status bar.

Note. If you wish to view the overlay without the Edit GRIBs window, click outside the window. If you close the window, the GRIB overlay will no longer be displayed.

However, to make changes in **setup plan** the Edit GRIBs window must be closed first.

Note. To change the type of wind arrows used to represent the wind, you must enter the **Animation** mode and select an arrow style – see page 3.19.

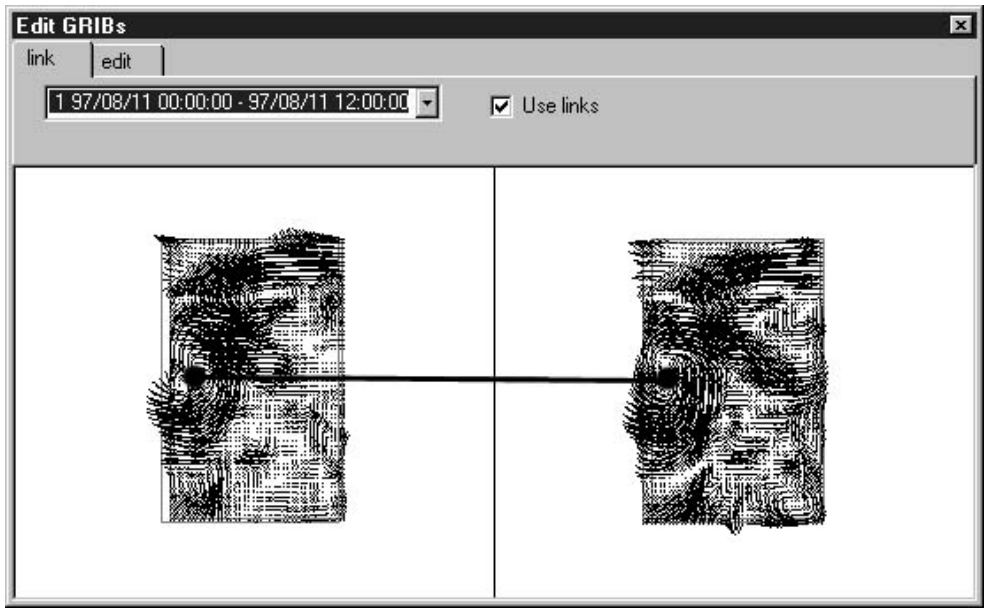
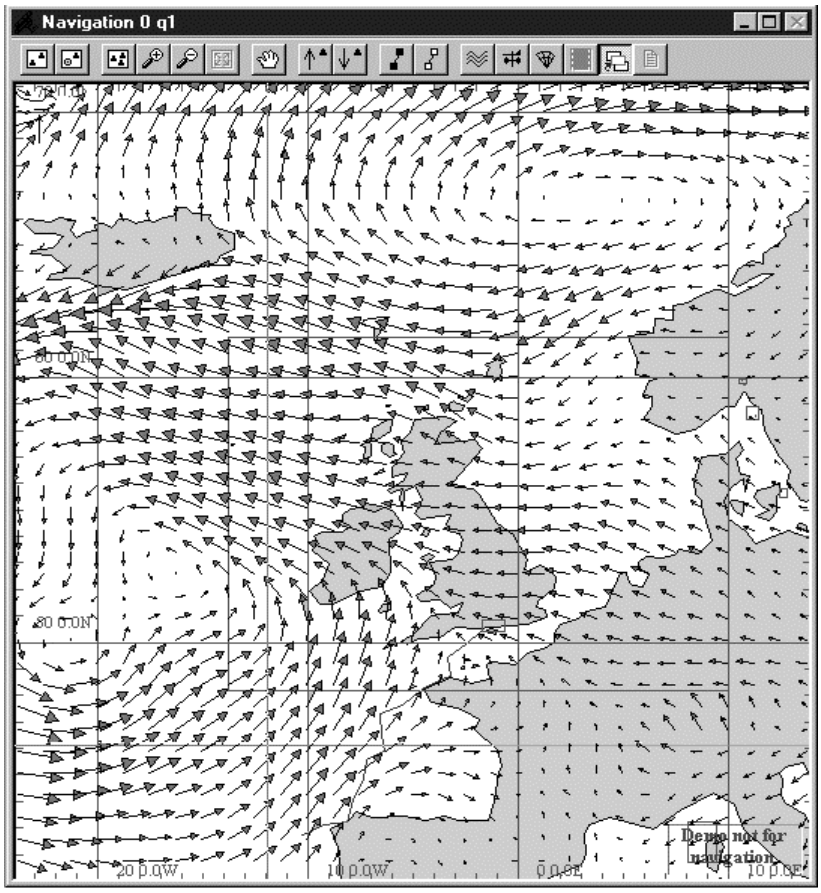


Figure 9.16



By clicking on the **link** tab at the top of the Edit GRIBs window, you can make Deckman's interpolation of the forecasts more accurate. What you do here is to link a weather feature at two different forecast times by moving each end of the red line (shown heavy black in Figure 9.16), making it easier for Deckman to interpolate for any time in between. In the example, a link has been placed between the centre of the low pressure system on each forecast map, thus telling Deckman something of the expected movement.

Chapter 10 : Competitors

Time-on-time handicap

This feature tells you the time owed to/due from other boats for handicap racing.

Select **gmenu>time on time** and you will be presented with the following dialog. If you have not used the feature before then the table will be blank.

Figure 10.1

First, you must specify your own rating. Select **Add** and then enter the **Boat name** and **Rating** by clicking on the appropriate boxes. To set this boat as your own, check the **Us** box. Click on **OK** to confirm. Note that if you select the line containing your boat and then hit **Edit** the **Us** box does not appear as ticked, but Deckman will still be referencing this boat unless you specify another boat as **Us**.

To enter your competitors' ratings, click **Add** and then enter the **Boat name** and **Rating** by clicking on the appropriate boxes. Make sure that the **Us** box is not checked and confirm with **OK**.

The time of the **Start** should be picked up automatically by Deckman if you are using the Start display. If this is incorrect, however, you can set the start time/date by clicking on the box. Format for the time is *hhmmss* for time and *yymmdd* for date.

Once you have a start time and some competitors entered, you will see numbers in the **time owed** column. Deckman will recalculate these every 10 seconds, as long as the **Update** box is checked. Positive values here indicate that you owe the boat time (i.e. you are faster), negative values mean that boat owes you time (you are slower). You can sort the rows (alphabetically or by rating) by clicking on the title of the appropriate column. Note that the time in the row which refers to your boat should always show as 00:00:00.

To see how much time you owe/are owed at a particular time (for example, your estimated finishing time), click in the time box below **Update** and enter the required time. This will hold the times in the table. To calculate time owed to slower opponents after you have finished, enter your finish time here (or, if you remember, clear the **Update** box as you cross the finish line). To switch to using 'live' times again, simply check the **Update** box.

Note. The time is picked up from the clock on your computer so make sure the time you specify relates to the time on your computer.

Note. If you are in a long race crossing time zones and changing the time on your computer to the current time zone the start time will appear

to change, since it will always be shown in relation to the time you have set on your computer. The simplest thing, therefore, is to leave the computer clock on the same time for the duration of the race.

Plotting competitors' positions

This feature allows you to plot the positions of competitors in your race. This can be done either from files provided by the race organizers (in which case, the format may change—contact B&G for more information) or by manually inputting the positions.

Setting up

On first use of this feature, you will have to enter the details of the competitors you wish to track. Select **gmenu>competitors** and then **OK** to the message telling you no files exist. You will then be presented with a **Make the competitor list dialog**.

Click on **New** and a new row will be created in the table. Click in the **Boat name column** and enter the name of your own boat (this is necessary to calculate the relative positions of all the boats). In the **File Name** column enter a file name to be associated with this boat (**boatname.b** is recommended). The **Red**, **Green** and **Blue** columns then allow you to control the colour in which this boat will be plotted: in each, enter a number between 0 and 255 to control the amount of each of the three colours used; 0,0,0 is black and 255,255,255 is white. Tick the box in the **Own** column to confirm that this is your own boat; all calculations as to the relative positions of the other boats will then be made with respect to this.

Repeat the above process for all of your competitors, except obviously do not tick the **Own** column for these. It is highly recommended that you enter all competitors that you may wish to track as, at present, it is hard to add new ones at a later date. Once all competitors have been entered, click **OK** and you will be presented with the **Competitor Information** dialog; for use of this see below.

Entering Competitor Positions

Once the details of competitors are entered (as above), control of the Competitors feature is through the **Competitor Information** dialog. This will be presented to you when you select **OK** in the **Make the competitor list dialog** on first use of the Competitors feature; alternatively, it appears when you select **gmenu>competitors** if the feature has been used previously.

There are two ways in which the positions of competitors can be entered, either automatically from position files (for instance, from the race organizers) or manually. To use the automatic option, select **File Data** and then browse to the correct file. (**Note**: with this option, the format used may vary between races; contact B&G for more information.) To enter positions manually, click **Manual Data** and you will be presented with the **Enter positions** dialog. The operation of this is pretty self-explanatory: enter the date and time that the positions refer to, and latitude and longitude of each boat (as always, positive indicates North and East, Negative is South and West).

Note. If you enter the positions manually, a text file will appear automatically in the **boats** subdirectory of **data**. This allows you to go back to previous data and compare how the relative positions have changed.

The Competitor Information dialog

Whichever method you use to input the positions of competitors, when you return to the **Competitor Information** dialog, the columns will show the following:

Rnk	Rank
Boats	Boat name
day/time	Day and time of entry
Lat	Latitude

Long	Longitude	
Drun	Distance run since the last entry	
Cse	Course between the last entry and the new one	
Speed	Speed made good between the last entry and the new one	
Wind	Wind	From the race organizers
dtoF	Distance to finish	From the race organizers, but will be same as dtoM if no other data is present (for instance, if you are entering positions manually).
dtoM	Distance to mark	This will be either the active waypoint in Deckman or the position you enter in the bottom right of the Competitor information dialog (see below for more information on this)
Lead	Lead	Relative to your boat; you should show as 0, with boats behind positive and those ahead negative.
brg	Bearing	From your position.
rng	Range	From your position.

The **Mark Lat** and **Mark Long** boxes in the **Competitor Information** dialog allow you to manually set the position of the waypoint that **dtoM** refers to.

Note: at present, you are unable to use this function on first opening the dialog; you therefore need to enter some positions, or hit **File Data** and re-select the most recent file in the **boats** subdirectory.

Displaying Competitor Positions

The positions of the competitors form an additional layer in Deckman called **competitors** and is turned on or off in the normal way by selecting **menu>layers>general** when in the Navigation display (see page 3.28)

Removing the competitors list and re-starting plotting

Once the competitors list is entered it is hard to change. At present, if you do wish to change a list of competitors, it is necessary to remove the list completely (see below) and then re-enter the competitors' details (as described above). To remove the competitors list, close Deckman, go to the **data** directory and delete the files **competitors.txt** and **competitorgrid.d**, go to the **boats** subdirectory and delete all the files. Run Deckman and re-enter the competitors details as described above in 'Setting Up'.

To re-start the plotting of positions (for instance, at the beginning of a new leg of a race), close Deckman, go to the **boats** subdirectory and delete all the files. Run Deckman and enter the positions of your competitors as described above in 'Entering Competitor Positions'.

Chapter 11 : Networking

You are able to network together multiple computers running Deckman, and all will receive data from the connection to the instruments. There are obvious advantages, such as the fact that more of the crew can be informed about the progress of the boat. This chapter describes the use of a networked version, and also describes how to setup and control how it is used.

Only one computer (the server) is connected to the instrument system. Variables are then broadcast from there to client machines on the network. The output of data from Deckman to the instrument system can only be controlled from the server machine; this applies to Output in the Instrument Control display and also (advanced) use of the DLL to write data to the instruments.

Note. If using a Livechart version, you may wish to obtain a network dongle so that you can share charts. Contact your agent or B&G for more information.

Using the networked version

There is very little actual difference in the operation of a networked version of Deckman. The main issue is that calibrations can only be accessed from one machine at a time. Therefore if one person is using the Instruments control dialog, this will prevent another user from accessing this feature, and also from sending calibrations, polars and so on to the instrument system. The locks that these dialogs enable will timeout after the period set in TCPTimeout (see below).

The main thing to realise when using a networked version is that it is possible for changes to be made from any computer on the network. For instance, wind calibrations or polars can be changed via one computer, and another user may not know anything about it (the values seen on the

screen of one computer will *not* change when alterations are made from another machine). If security is an issue set the **fullserver** option to 0 (see below), meaning that only the server machine can talk back to the instruments; other users then only get broadcast data and cannot access calibrations, polar files and so on.

Setup

Setting up the server

It is generally best to setup your server machine first, so from the machine which you wish to establish as the server click **gmenu>configure comms** followed by the **Advanced** button and you will be presented with a dialog like that shown in Figure 11.1 (though note that if you are using a laser and/or two boat telemetry across the network then there may be more rows)

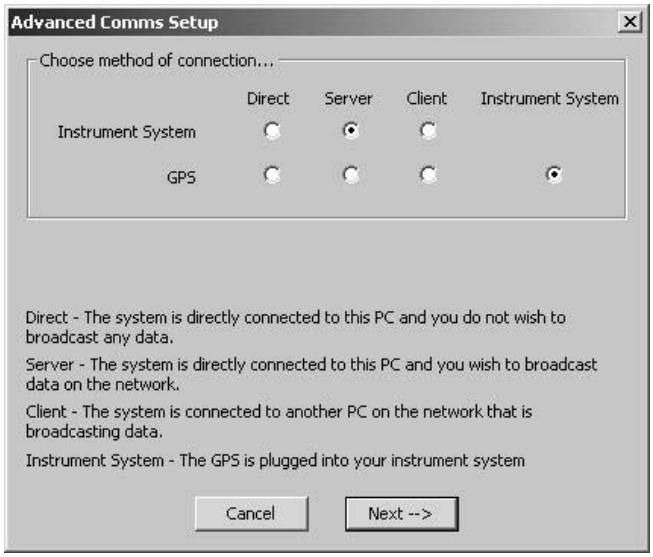


Figure 11.1

In this dialog, specify that the **Instrument System** is connected to this machine as a **Server.** Also specify whether your GPS is connected via the instrument system or direct to the server machine, followed by **Next**. You will then be presented with a dialog similar to that shown in 'Configure comms' on page 7.1 except that there are two additional boxes at the bottom. The **Full Server** box controls whether all other computers on the network can access all the facilities in Deckman: a check in this box means this is the case, leave blank to limit access to simply viewing the displays. The **Timeout** box controls how long the lock on certain windows in Deckman remains active when opened by a machine on the network.

Setting up clients

Once your server is running, you can run the networked version of Deckman on any number of different machines on the network. Again, click **gmenu>configure comms** followed by the advanced button, and specify connection of the **Instrument system** to this machine as a **Client**, followed by **Next**.

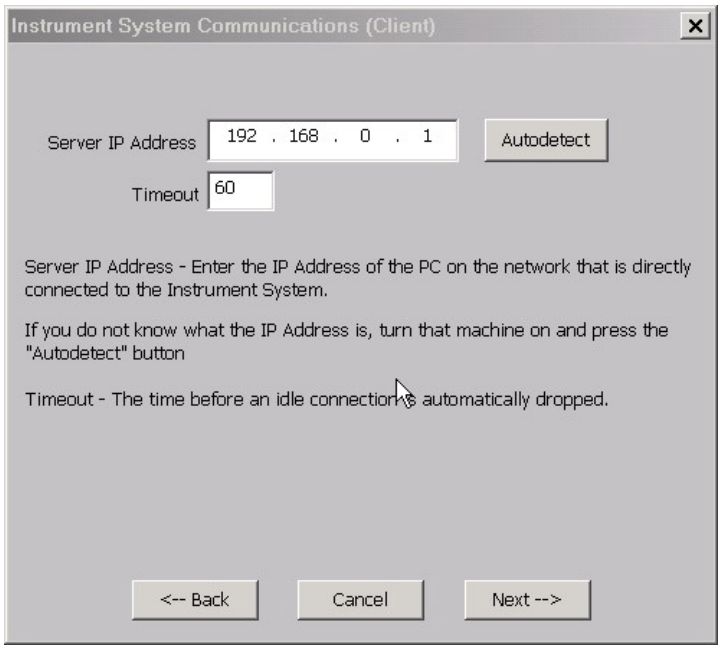


Figure 11.2

Note. Because the GPS is connected via the instrument system, you must still specify the **Instrument system** column here.

Here you must specify the IP address of the server machine on the network. If you do not know this, then the **Autodetect** button should enable you to find it. If you get 0.0.0.0 even though you have a server running Deckman on the network then finish the wizard, close Deckman, restart Deckman and use **configure comms** again.

Two-boat telemetry across a network

This function allows you to receive two-boat data across a network. If you are running a two-boat, networked version of Deckman then you should have seen an extra line in dialog shown in Figure 11.1 above and, after hitting **Next** when setting up the network, will be presented with the dialog shown in Figure 11.3.

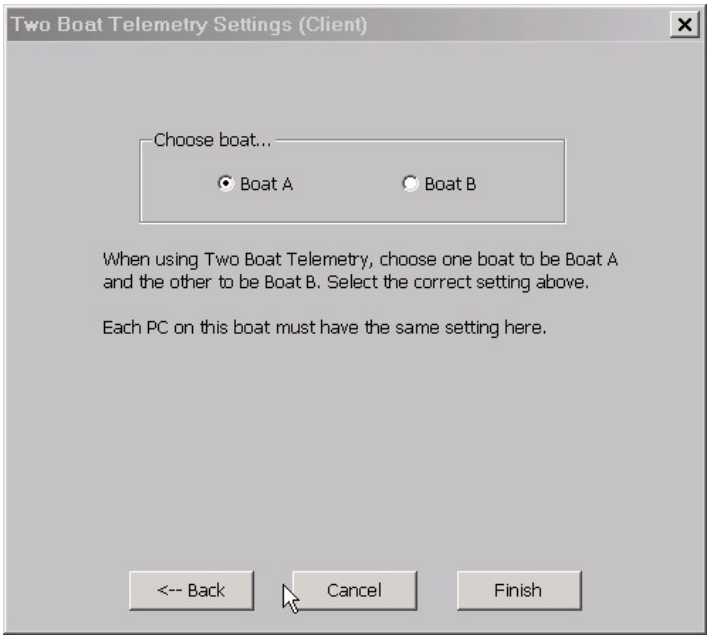


Figure 11.3

All PCs on one boat must be specified as Boat A, with all those on another boat as Boat B.

Chapter 12 : Deckman files

deckman.ini

This file is the main control file for Deckman and is in the **c:\program files\BandG\deckman** folder; most of the options outlined below can be controlled from within Deckman, but it is sometimes useful to check the current settings in the **deckman.ini** file. Because this file is not really designed to be edited directly, the formatting may not be the most accessible. Unless you are confident, it is recommended that you do not make changes here.

`[Data Files]`	
`Path`	The location of the Deckman files (see below)
`Logdir`	The location of any log files
`[comms]`	
`Port`	The port number and settings for connection to instruments.
`Comgps`	The port and settings for a GPS connected directly to Deckman. (for the meanings of the remainder of this section, see 'Networking Files' below)
`[Livechart]`	
`Path`	Location of Livecharts
`Dongleloaded`	Whether a Livechart dongle is loaded; 0=no dongle, 1=dongle loaded.

`Localknowledge`	Whether the Local Knowledge Current Server is enabled.
`Verscode`	Your unique Deckman identification number and security code.
`Usemaptech`	Whether the **Use Maptech** facility is turned on; 1=yes, 0=no.
`[dongle]`	Dongle type; 0=(reserved), 1=Euronav 1071/XXX, 2=Euronav 2071/XXXX, 3=C-Map
`[euronav]`	Defines the mode for a Euronav version of the software. 0=normal working version, 2=demo mode.
`[polars]`	This provides a history of which polars have been used in Deckman
`LastlocalIP`	This is the IP address for the computer if using a networked version of Deckman.

Networking

The following lines in the [comms] section of **Deckman.ini** control the networking options of Deckman. They can be manually added, but it is advised to do it using the wizard, as outlined in the Networking chapter:

```
comnettype=1
TCPTimeout=120
servername=10.0.0.3
svrudpport=5678
fullserver=1
svrgroup=234.5.6.7
verbose=0
```

The meanings of these lines are as follows:

Line	Meaning	Options/ data	Meaning
comnettype	Whether this is a networked version or not, and the status of the machine on the network	0	Networked, server.
		1	Networked, client.
		2	Standalone: no networking.
TCPTimeout	Time in seconds. Closes certain dialogs in Deckman if left inactive for this length of time to prevent the network remaining locked (see below).		
Servername	The TCP address of the server machine on the network.		
svrudpport	An arbitrary number between 1024 and 32768. This must be the same on all	5678	Default

	machines on the network and there should be no reason to change this.		
Fullserver	Whether or not client machines have full access.	0 1	Locked Full access for all users
Svrgroup	IP address between 224.0.0.0 and 239.255.255.255. Doesn't matter too much what this is, but must be the same on all machines on the network and there should be no reason to change this.	234.5.6.7	Default
Verbose	Option to display 'descriptive' error messages.	0 1	Displays standard error messages. Verbose mode (see below)

Verbose mode

This is mainly a diagnostic tool. Contact B&G for further details on using this function.

Two-boat networking

For a two-boat version of Deckman, more variables are present in the **[comms]** section of the deckman.ini file:

```
obTx=5680
obRx=5681
```

The meanings of these lines and the possible options are:

Line	Meaning	Options/ Data	Meaning
obTx	The port number for transmission from the other boat	(empty)	Deckman will try and find the other boat data on the RS232 connection specified in **obport**.
		5680	Default
obRx	The port number for transmission from the other boat	(empty)	Deckman will try and find the other boat data on the RS232 connection specified in **obport**.
		5681	Default

Note. Both obTx and obRx should be empty if one is; or remove the lines completely for an RS232 connection. The obTx and obRx numbers should be inverted on the other boat; the Tx of one boat becomes the Rx of the other.

Data files

The following notes provide details on some of the data files which Deckman uses. It is possible to make many of the changes outlined below from inside Deckman, and editing these files directly is only

recommended for advanced users. However, some changes can only be done through editing the files directly, and sometimes it is just simpler to make changes using the data files; details of these are below. Some of the files should not be edited directly, and some contain information that is easiest entered from inside Deckman, so information on these is not provided.

All the following files are contained in the **data** subdirectory, which is in the location specified in `[path]` section of **Deckman.ini**:

File name	**Function**	See page/ chapter
Adjvt Adjwa	The true wind speed and wind angle calibration tables. Data is separated by at least one space. Maximum length of line is 500 characters, though you are strongly advised to stick with the existing format.	Chapter 8
J_varsXX	(see below)	
J_way	Waypoints file. First line of each section is section name. Columns of other lines are then: identification number (1, 2…), long name, short name, latitude, longitude.	Page 3.20
limlayln	Controls the layline limits. The first number in the first line controls the line thickness, while the other three control colour (amount of red, green and blue). Second line is how long back the variation is shown (minutes) and the third line is the averaging period for data (seconds).	"limits laylines", Page 3.28
navpol	The navigation polar. Data separated by at least one space. Max line length is 500 characters, though you are strongly advised to stick with the existing format.	Chapter 6

perfpol	Performance polar. Format as for navigation polar.	Chapter 6
report	The script file controlling the data logging. See manual pages.	Page 5.5
startpol	Start polar. Format as for navigation polar.	Chapter 6
Tides	Times/heights of high water. First line is: port number (0, 1…), MHWS, MHWN, date of first entry (yymmdd). Second line: times of consecutive high tides. Third line: heights of consecutive high tides. Data separated by at least one space. Max line length is 500 characters.	Page 3.14

Tide files

As explained in Tides on page 3.21, Deckman sometimes has to choose between SHOM tidal information and its own database. However, if you want to ensure that Deckman is using a particular one of these then please follow the instructions below.

As we saw, the SHOM tidal information is contained in a number of files with the prefix **SHOM** which are in the **data** directory. To ensure that Deckman's own database is used and SHOM tidal data is NOT used, you must move the SHOM files to a different directory.

Deckman's normal tidal database is contained in the file **diamonds.d**; move this file to another location to force Deckman to use the SHOM data.

j_varsXX.d

Note. XX represents a number, for example 01.

This file controls the way the data variables operate in Deckman. There are a number of different sections, which may not be relevant depending on your instrument system; there are also some sections that it is not

recommended that you edit directly and these are therefore not discussed in detail in this document.

Below are examples as to how to read in additional variables from your instruments, control the averaging of variables, control the time series plots and add your own variables.

Note. Throughout, columns in the file are separated by at least one space.

[Variables]

This section defines what variables exist in Deckman. The columns are:

1. Unique identification number for the variable.
2. Long name, which is seen in most places inside the program (for example, on the data bar and Show Data).
3. Short name, which is used as label on the times series plots.
4. Number of decimal places for the variable.
5. Whether the value should be an absolute value when plotted on a time series plot (number 1) or normal data (0).
6. Data type (0=normal, 1= -180 to 180, 2 = 0 to 360, 3=time, 4=distance).

For example, the line:

```
0 Heel   Hl   1 1 0
```

is a variable with Deckman identification number `0`, is called `Heel`, has short name `Hl`, has one decimal place, is an absolute value and is normal data.

A number of the variables listed in this section will not have data in them by default and will therefore always read 0. If you want to view data for these variables, therefore, it is necessary to configure the `j_varsXX.d` file to read in the correct values from your instruments system (see *Reading in a new variable* below).

[UserVariables]

You can use this section to define your own variables based upon ones that are already declared (see User variables below)

[newvars]

This section lists the variable numbers for new variables that have been added to Deckman as part of upgrades. You should not alter this section unless you have created a large number of new variables in a previous version of Deckman yourself, in which case re-assigning variable numbers in this section can save you having to renumber your own after an upgrade

[2boattelem]

This section controls the two boat telemetry functionality and should not be edited

[Averages]

This section controls the averaging for the four averaged variables in Deckman. The first column is the Deckman identification number for an averaged value and the second column is the Deckman identification number for the variable which is being averaged. For example, the line

```
74   5
```

specifies that the data for variable 74 (average course) is coming from variable 5 (course).

[Datalog]

This section controls the variables for time series plots in Deckman. The columns are:

1. Sequential list of numbers.
2. Deckman identification number for the variable to be plotted.
3. Default upper bound for the plot.
4. Default lower bound for the plot.

Therefore, to allow you to plot VMG in Deckman once it has been successfully been read in, you must add the line:

38 16 0.0 12.0

[Performance Processor]

This section defines what variables are read in from the Performance Processor to Deckman (note that the NMEA FFD/h1000 connection work via the NMEA interface, see below). The columns are:

1. B&G identification number (or channel number). See Table 5.8 of the Hercules 200 manual for the standard B&G identification numbers; to use the remote functions (Table 5.9), 32 must be added to the channel number. If the tables above do not contain the variable you require, the B&G identifier can be in the form nnn.fff, where nnn denotes the node number and fff the B&G function number for the B&G network; see Table 5.15 of the Hercules 2000 manual and/or contact your B&G agent for more information.
2. Deckman identification number, as listed in the `[variables]` section above.
3. B&G symbol indicating port tack.
4. Indicator to switch the sign, since all variables should be positive on starboard (1=switch; otherwise 0).

For example, the line:

```
   0    0   H    0
```

means that B&G variable number 0 is read in to the variable with Deckman identification number 0, with the sign for port tack being H and no switch of sign.

[Ockam],[ockgps],[magnum]

This section controls the input of variables from an Ockam instrument system. The columns are:

1. Ockam tag, with the full stop/period symbol (.) replacing the prime (') on the Ockam system.
2. Deckman identification number.
3. The third column is no longer used by the software and is ignored; any value can therefore be entered when adding new variables.

For example, the line:

```
  H    0    30.0
```

means that Ockam variable H is read into the variable with Deckman identification number 0 with the final column being ignored.

The `[ockgps]` section controls the GPS input on an Ockam instrument system. X. is latitude, X is longitude. The figures in the middle column are for error checking, with the data not being updated if the difference between the new and old values is greater than this value.

The `[magnum]` section controls the output of data to Ockam Magnum displays. The columns are:

1. Display label
2. Ockam identifier.

If there is a third column, then this text is sent as the label along with the data.

For example, the line:

```
heel          H
```

will write out the variable with Ockam tag H (which is Heel) to the Magnum with label `heel`.

[NMEA]

This section controls the input of data from an NMEA instrument system. Note that this includes the B&G Hydra/h1000, Silva, NKE and standard NMEA connections. The columns are:

1. NMEA string
2. Field number within that string of the data you require.
3. The third column effectively specifies whether certain NMEA strings are being used. Enter a 1 here for VWR or VWT, or any other string in which an L or R determines the wind angle relative to the bow. Enter a 2 here when using the MWV string, or any other where the wind angle is specified 0-360 relative to the boat.
4. Deckman identification number.

For example, the line:

```
VHW 5 0 1
```

will reference the NMEA string VHW, using data from field number 5. You will find that this is boat speed through the water. The third column shows that this is normal data. The final column shows that this value is read in to the variable with Deckman identification number 1, which is boat speed.

For details of NMEA strings and field numbers, please consult the manual for your instrument system.

[WTP]

This section controls the input of variables from a B&G WTP. The columns are:

1. WTP function number (from bg_vars.d).
2. Deckman identification number.

For example, the line:

```
13      6
```

will read data from WTP function number 13 (which you will find is heading) into the variable with Deckman identification number 6 (heading).

[instruments]

This section records the settings for connecting to the current instruments and should not be edited directly.

Reading in a new variable from the instruments

As was mentioned above, not all variables in the `[variables]` list will have data in them by default, so it is necessary to configure the file as appropriate for your instrument system. By default, the variable **VMG** is not read in from any instrument system so we will use this as an example of what is necessary to read in a new variable. Looking at the `[variables]` section in the sample file at the end of this section, we can see that VMG has Deckman identification number 16.

B&G

Looking at Table 5.8 of the Hercules 2000 manual, we can see that VMG has B&G channel number 19. In the `[b&g]` section, the line

```
19   16   -   0
```

will read in this value to the variable VMG in Deckman. Note that in this case, the **D** or **U** character representing down- or upwind on the B&G system will ignored by Deckman.

Ockam

Looking at section 4 of the Ockam manual, we can see that VMG has Ockam tag **b**. In the `[ockam]` section of the file, the line:

```
b      16     1.0
```

will mean that VMG is read from the Ockam system to the variable VMG in Deckman.

NMEA

NMEA string VPW contains the VMG information, with VMG contained in field number 1. In the `[nmea]` section, the line

```
VPW      1     0    16
```

will read in this data to the variable VMG in Deckman.

Note. Please check your instrument system documentation for details about which NMEA strings are output.

WTP

VMG has function number 19 on the WTP, so in the `[wtp]` section the line

```
19  6
```

will read this in to the variable VMG in Deckman.

User variables

Note. Throughout this section, entries along a line are separated by at least one space.

It is possible to take any combination of variables from the database and calibrate and filter them in a number of different ways.

New variables are first added to the bottom of the [variables] list in the `j_varsXX.d` file and the rest of the row must also be completed according to the standard `j_varsXX.d` format. The names for the variables are read by Deckman from here. Next, in the `[UserVariables]` section, enter the Deckman identification number of your new variable, followed by the Deckman identification number of the variable you wish to calibrate or filter, the name of the calibration file (which must end `.cal`) and the name of the filtering file (ending `.fil`).

Note. To have no filtering or calibration for any user variable, simply enter `null.cal` or `null.fil` in the relevant place.

Two variables are included in Deckman in this section by default, and we will use one of these as an example here: a variable showing a moving average of true wind direction.

The new variable we are adding here is a moving average for the true wind direction. In the `[variables]` section of `j_varsXX.d` the line

```
80 MA_TWD  MWD  0  0  2
```

has been added. The variable we are adding is therefore called MA_TWD, has a short name `MWD`, has a Deckman identification number of 80, zero decimal places, is not an absolute value and is 0-360 data. So far, this is as detailed in the [variables] section of j_varsXX.d (see above).

Next, the line

```
80 7 null.cal  MA_TWD.fil
```

is added to the [UserVariables] section of j_varsXX.d . This means that the new variable we are creating (represented by Deckman identification number, 80, in the first column) is using data from Deckman identification number 7 (second column). Deckman identification

number 7 represents true wind direction, if you look further towards the top of the list in the [variables] section of j_varsXX.d. Also in the line above we can see that the new variable has no calibration file (shown by null.cal) and a filtering file named MA_TWD.fil.

All that remains now is to create the relevant filtering and calibration files.

Filtering

A subdirectory of your **data** directory is called **filters**. In here you must create the filtering files which you specified in the [UserVariables] section.

The filtering file will usually contain two numbers: the first is the type of filtering (see table below),while the second (and occasionally third) defines the filtering.

Filtering function	Damping type	Other numbers (or notes)
1	Ordinary exponential	Inverse of required damping time in secs/5
2	Exponential, for 360°	Inverse of required damping time in secs/5
3	Exponential, for 180°	Inverse of required damping time in secs/5
4	two term Kalman filter	(refer to B&G)
5	band pass - mainly for rate gyros	(refer to B&G)
6	k term moving average	Calculates a moving average (see below)
7	3rd order Chebyshev	Damping in secs

	low pass; ripple fraction 0.1	
8	as 7 for 360°	Damping in secs
9	as 7 for 180°	Damping in secs
10	3rd order Chebyshev band pass; fixed coefs	(DO NOT CHANGE: used for rate gyros, *see below*)
11	Non-linear	(See below)
12	Non-linear, for 360°	(See below)
13	Non-linear, for 180°	(See below)
14	RMS calculation	Root mean square – for example, in calculating wave amplitude
15	Period calculation	Period calculation – for example, time between waves.
16	As for 6 but for 0 to 360°	Calculates a moving average (see below)
17	As for 6 but for 0 to 180°	Calculates a moving average (see below)

Functions 11, 12 and 13 are exponential functions which will cause the data to move more quickly if the difference between the new data and the last value move outside a bound. The first damping number is as for functions 1-3 (i.e. - inverse of required damping time in secs/10); the second specifies the bound—outside this value, the damping becomes less until at 8 times the bound value there is almost no damping at all. These functions are particularly useful for boat speed and heading when coming out of a tack. For example, the line

```
12 0.2 4
```

gives a damping of 1 second in normal use (inverse of 0.2 divided by 5); however, when difference between the new data and the last value is

greater than 4°, the damping gradually reduces until at 32° difference, no damping is applied.

Functions 6, 16 and 17 provide a means of calculating a moving average. Since Deckman applies the filtering at 5 times per second (5Hz), the second number in the filtering file is 5 times the time period over which you want to calculate the moving average (i.e. for a 10 second moving average, enter 50).

Note. It is highly unlikely that you will need to use functions 14 or 15 – these are functions which are used elsewhere in Deckman (and on the B&G WTP) and the information is contained here for the sake of completeness.

To continue with our example from above, the file MA_TWD.fil would be:

```
16 50
```

indicating that this is a moving average (filtering function 16) over a time period (50, being 10 seconds at 5Hz)

Calibration

Another subdirectory of your **data** directory is called **calibs**. In here you must create the calibrating files which you specified in the [UserVariables] section.

Again here, the first number on the first line of the file specifies the calibration type:

0	null calibration
1	ordinary linear
2	Linear for 0-360°
3	Linear for –180 to 180°
4	table
5	table for 0-360°
6	table for –180 to 180°

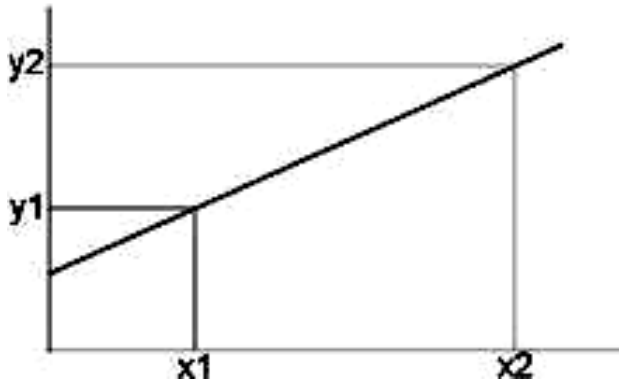


Figure 12.1

Functions 1, 2 and 3 then require four terms on the same line as the calibration type is specified. These are x1, y1, and x2, y2, where x is the independent variable and y is the dependant variable which we need to calibrate.

Below, we will use the example of calibrating a compass. A possible calibration file might look like:

```
2  0  20  5 25
```

which would be adding a 20° offset; obviously (hopefully!) it is unlikely that you would ever have to apply such a large offset to a compass, but the large numbers are just to illustrate the functionality below.

Functions 4, 5 and 6 are more complicated. The first line of the file is the same as for calibrations 1, 2 and 3; after this you create one or more tables to further calibrate the variate, and these operate on whatever the output is from the first line. The first way that this can be done is with one simple table of corrections.

Calibration example 1

A sample file might look like:

```
5 0 20 5 25

Table -1 +
0 10
180 -10
360 10
```

The first line of the file still works the same as before but the result is then further calibrated from the table. The –1 following the word `table` indicates that the corrections are applied directly to the output from the initial calibration. Next, the addition sign (+) after the –1 indicates that the corrections in the table are to be added. Then, the numbers in the left column indicate values of the incoming data, while the right column indicates the correction to be applied, with Deckman interpolating for data between the defined values. The table below indicates the result of this two-stage calibration:

Original data	Result of first line	Result after table
0	020	28
90	110	108
180	200	192
340	000	010

You can see that Deckman is interpolating for headings between those at which the corrections are specified and that the calibrations in the table are applied to the output from the first line of the file rather than the original input.

It is also possible to calibrate your variate with respect to another variate in Deckman's database.

Calibration example 2

For example, you could enter:

```
5 0 20 5 25

table –1 +
0 10
180 -10
360 10

table 0 +
-20 10
0 0
20 10
```

The first line and first table of this are identical to above, but the outcome of the first table is then further modified by the second table. In the example, the –1 after the word `table` indicated that the correction was applied to the variate itself. Entering any other number after the word `table` means that we are calibrating with respect to another variable in Deckman's database, with the variables referred to by the Deckman identification number (see **j_varsXX.d** above). In the example above, the 0 refers to the Deckman identification number for Heel. The second table therefore applies corrections depending on the angle of heel: the first column is the angle of heel and the second is the correction to be applied to the compass. The result of the second table in the above example would be:

Input from first table	Angle of heel	Result of second table
50	30	65
50	10	55
50	0	50
50	-20	60
50	-30	65

Here, the offset to the compass heading is altered by the angle of heel. Of course, the corrections in the previous table will continue to be applied before the corrections with respect to heel.

Here you can see that, as well as interpolating within the calibration points you enter, Deckman will also extrapolate outside them.

Calibration example 3

It is also possible to multiply, subtract and divide in your corrections. For example, a table to alter boatspeed with respect to angle of heel might look like:

```
4   0   0   1   1

table 0 *
-40   0.95
-30   0.95
-25   0.975
-20   0.99
-15   1.0
 15   1.0
 20   0.99
 25   0.975
 30   0.95
 40   0.95
```

This table is, therefore, taking the standard input from boatspeed (which would be specified in the **j_varsXX.d** file) and applying a correction based on angle of heel (Deckman identification number 0 after `table`). So far, this is operating the same as the example above. Next, however, we have a multiplication sign (*), which indicates that boat speed is to be multiplied by the values in the table. Then the table works as before for calibrating with respect to another variable: the left column indicates the value at which the calibrations to be applied while the right column is the multiplication factor. The example above would act to reduce boatspeed with increasing angle of heel.

Other identifiers and operators

As well as the word `table` Deckman also recognises two other identifiers:

Variable	The next number refers to the Deckman number, and a mathematical symbol indicates what operation is to be performed.

Constant	To specify a constant value to use in the calculation; a mathematical symbol indicates what operation is to be performed.

Deckman also recognises the following mathematical operators

/	Divide
-	Subtract
=	Assigns a value to the variable you are calibrating

Calibration example 4

The line

```
constant 3.3 *
```

would mean that we are multiplying by a constant 3.3.

Calibration example 4

This example shows a possible calculation of leeway, and illustrates the possibilities of the calibration facilities. The file would look like this:

```
4  0  0  1  1

table -1 =
-30  -25
-25  -25
 25   25
 30   25

constant 6.4 *

variable 1 /
variable 1 /
```

The first line of this is taking the input from Deckman identification number 0 (Heel). The table then refers to this output and the equals signs means that we are assigning values. The effect of this table would be that, for Heel values up to 25, the value assigned will be exactly the

same as the Heel angle. Above 25 the assigned value will stay at a constant of 25 since when Deckman interpolates between 25 and 30 the assigned value remains 25, and beyond 30 the extrapolation will still give the value 25. The next line will multiply by a constant of 6.4 and each of the final two lines will divide by boat speed (Deckman identification number 1).

Incidentally, the result of this calculation is similar to the standard calculation of leeway, which is:

k*Heel/Boatspeed^2

except that, as we saw, Heel angle is limited to 25.

Summary

The following provides a summary of the operation of the calibration tables:

The calibrations are applied sequentially, so that those specified first in a file will be applied before those specified later.

Identifiers recognised are `table`, `constant` and `variable`

Number –1 indicates that the calibrations are applied directly to the variate

Any other number indicates that the calibration is with respect to a variable in Deckman's database, with the number referring to the Deckman identification number as specified in **j_varsXX.d**

User variables in Deckman

Once you have specified the calibration and filtering functions for your variables, it is possible to create files to enable the values from within Deckman.

Damping

In the **damping** subdirectory, the file **damping.txt** controls the damping functions available in Deckman. Each variable that you wish to be able to control from Deckman has its own line and the format of each line is: name (as you wish it to appear in Deckman), code **D** for damping, Deckman identifier (as listed in **j_varsXX.d)**, width of display field in characters and number of decimal places. For example:

```
MA TWD     D 80 4 0
MA_TWS     D 81 4 0

=====================
Parameters:

1: name (appears on Deckman)
2: code (D for damping)
3:   variate   number   in   main   list
(j_vars03.d)
4: width of display field in chars
5: number of decimal places
```

The line of equals signs (===) indicates the end of the file – text below this is simply instructions on the format.

Calibration

In the **calibration** subdirectory, the file **svcals.txt** controls the calibration facilities available in Deckman. Again, variables have their own line, and the format is: name, code K for calibration, Deckman identification number, width of display field in characters, number of decimal places and the calibration type; the calibration types are listed in the following table:

0	Intercept	(see below)
1	Slope	(see below)
2	Inverted slope	For example, for boatspeed, to convert from Hz per knot to knots per Hz
3	Set value	For example, forestay load, where you load up to a known value, then input this number in Deckman.

Note that from inside Deckman you are only able to calibrate either one of the slope and intercept (see Figure 12.1 Figure 12.1), to change both you must used the advanced facilities outlined in this chapter.

A file might look like

```
Cal_Cmp  K  82  5  1  0


=====================
Parameters:

1: name (appears on Deckman)
2:   code   (K   for   single   value
calibration)
3:  variate  number  in  main  list
(j_varsXX.d)
4: width of display field in chars
5: number of decimal places
6: cal param id (0 intercept, 1 slope,
2 inverted slope, 3 set value)
```

The result in Deckman

Inside Deckman, hit **gmenu>user vars control** will bring up a dialog like those shown (Figure 12.2 and Figure 12.3). The button at the top of the window allows you to choose either calibration or damping.

The example on the right is the damping control, and operates in seconds (rather than being multiplied by 5Hz in the file).

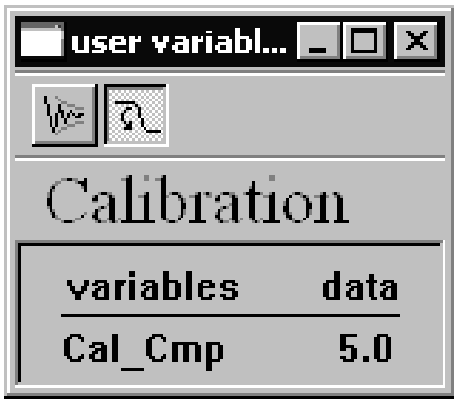


Figure 12.2

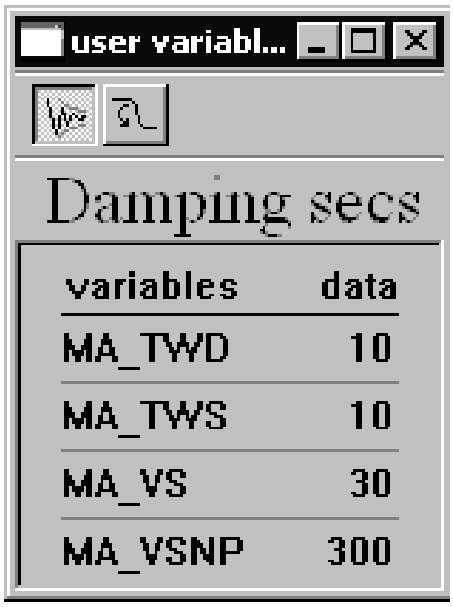


Figure 12.3

The calibration control allows you to change only the first line of the relevant calibration file – you must edit the files directly to adjust the tables. With the **user variables** window open, select **menu** and you will see the additional options **Advanced damping…** or **Advanced calibration…** Selecting either of these you will be presented with a dialog similar to that shown in Figure 12.4

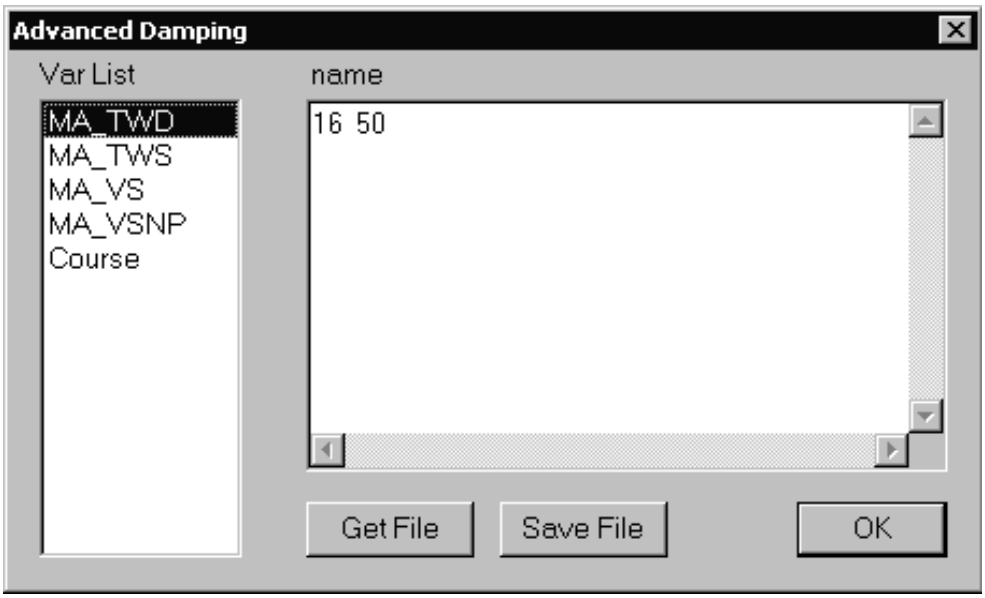


Figure 12.4

This allows you to access and edit either the calibration or damping files from within Deckman. Double click on the appropriate file to open, make any changes you wish (as described in the relevant section above), then hit **Save File** followed by **OK** to close the window.

Example J_varsXX file

```
[variables]
 0 Heel              Hl      1    1    0
 1 Boatspeed         VS      2    0    0
 2 AW_angle          AA      0    1    1
 3 AW_speed          AS      1    0    0
 4 Leeway            Le      1    1    0

 5 Course            Cs      0    0    2
 6 Heading           Hd      0    0    2
 7 TW_Dirn           TD      0    0    2
 8 TW_angle          TA      0    1    1
 9 TW_speed          TS      1    0    0

10 GW_Dirn           GWD     0    0    2
11 GW_speed          GWS     1    0    0

12 Orig_TWS          ts      1    0    0
```

```
13 Orig_TWA          ta      0    1    1
14 Orig_TWD          td      0    0    2
15 TWD_Off           wdo     0    0    1

16 VMG               VG      1    1    0

17 Ext_SOG           SOG     2    0    0
18 Ext_COG           COG     0    0    2
19 Ext_VMC           VMC     2    0    0
20 Opt_VMC           OVC     2    0    0
21 Cse_OVMC          COC     0    0    2

22 Vs_target         TS      2    0    0
23 Vs_targ%          T%      0    0    0
24 TWA_targ          AT      0    1    1
25 Vs_perf           PPV     2    0    0
26 Vs_perf%          PP%     0    0    0

27 Vs_nav            PNV     2    0    0
28 Vs_nav%           PN%     0    0    0
29 Brg_o_Mrk         BM      0    0    2
30 Dst_t_Mrk         DM      2    0    4
31 Tm_t_Mrk          TM      0    0    3

32 Curr_Rate         CrR     2    0    0
33 Curr_Dir          CrD     0    0    2
34 MCur_Rate         MCR     2    0    0
35 MCur_Dir          MCD     0    0    2
36 DCur_Rate         DCR     2    0    0
37 DCur_Dir          DCD     0    0    2
38 LCur_Rate         LCR     2    0    0
39 LCur_Dir          LCD     0    0    2

40 ManOvrBrg         MOB     0    0    2
41 ManOvrRng         MOR     3    0    4

42 O_Heel            OHl     1    1    0
43 O_Boatspd         OVS     2    0    0
44 O_Course          OCs     0    0    2
45 O_TW_Dirn         OTD     0    0    2
46 O_TW_angle        OTA     0    1    1
47 O_TW_speed        OTS     1    0    0

48 Hl-OHl            DHl     1    0    0
49 VS-OVS            DVS     2    0    0
50 Cse-OCse          DCs     0    0    1
51 TWD-OTWD          DTD     0    0    1
52 TWA-OTWA          DTA     0    0    1
53 TWS-OTWS          DTS     1    0    0
```

```
54 OBRng            OBR     0     0     0
55 OBBrg            OBB     0     0     2
56 OBRngW           ORW     0     0     0
57 OBRngM           ORM     0     0     0
58 OBGMW            OGW     1     0     0
59 OBGMM            OGM     1     0     0
60 OBDMC            ODC     1     0     0
61 OBDMOC           ODO     1     0     0

62 Depth            Dep     1     0     0

63 DST_STRB         DOS     2     0     4
64 TM_STRB          TOS     0     0     3
65 DST_PORT         DOP     2     0     4
66 TM_PORT          TOP     0     0     3

67 GGAUTC           UTC     1     0     0
68 GGASVA           SVA     1     0     0
69 GGAQHD           QHD     1     0     0

70 S_APortDn        APD     0     0     3
71 S_APortUp        APU     0     0     3
72 S_AStbdDn        ASD     0     0     3
73 S_AStbdUp        ASU     0     0     3

74 AveCse           ACs     0     0     2
75 AveTWD           ATD     0     0     2
76 AveTWS           ATS     1     0     0
77 AveNav%          AN%     0     0     0

78 O_AWA            OAA     0     1     1
79 O_AWS            OAS     1     0     0

80 MA_TWD           MWD     0     0     2
81 MA_TWS           MWS     1     0     0
82 MA_VS            MVS     2     0     0
83 MA_VSNP          MVP     1     0     0

84 DST_LAYL         DTL     1     0     4
85 TM_LAYL          TTL     0     0     3
86 UP_CSTRB         UCS     0     0     2
87 UP_CPORT         UCP     0     0     2
88 DN_CSTRB         DCS     0     0     2
89 DN_CPORT         DCP     0     0     2
90 UP_LSTBD         ULS     0     0     2
91 UP_LPORT         ULP     0     0     2
92 DN_LSTBD         DLS     0     0     2
93 DN_LPORT         DLP     0     0     2
```

```
94 DST_LINE          DSL      1     0     4
95 TM_LINE           TSL      0     0     3

96 AWA_TARG          AAT      0     1     1
97 SEA_TEMP          STC      1     0     0

[UserVariables]
80  7  null.cal  MA_TWD.fil
81  9  null.cal  MA_TWS.fil
82  1  null.cal  MA_VS.fil
83 28  null.cal  MA_VSNP.fil


[newvars]
GGAUTC     67
GGASVA     68
GGAQHD     69
S_APortDn  70
S_APortUp  71
S_AStbdDn  72
S_AStbdUp  73
DST_LAYL   84
TM_LAYL    85
UP_CSTRB   86
UP_CPORT   87
DN_CSTRB   88
DN_CPORT   89
UP_LSTBD   90
UP_LPORT   91
DN_LSTBD   92
DN_LPORT   93
DST_LINE   94
TM_LINE    95
AWA_TARG   96


[2boattelem]
78  2
79  3

[averages]
74  5
75  7
76  9
77 28


[datalog]
 0   0    0.0   30.0
```

```
 1   1    0.0   12.0
 2   2    0.0  180.0
 3   3    0.0   20.0
 4   4    0.0    6.0

 5   5    0.0  360.0
 6  12    0.0   20.0
 7  13    0.0  180.0
 8   7    0.0  360.0
 9   8    0.0  180.0

10   9    0.0   20.0
11  15  -20.0   20.0
12  17    0.0   12.0
13  18    0.0  360.0
14  22    0.0   12.0

15  27    0.0   12.0
16  23   90.0  110.0
17  28   90.0  110.0
18  34    0.0   10.0
19  35    0.0  360.0

20  42    0.0   30.0
21  43    0.0   12.0
22  44    0.0  360.0
23  45    0.0  360.0
24  46    0.0  180.0

25  47    0.0   20.0
26  48   -5.0    5.0
27  49   -5.0    5.0
28  50  -10.0   10.0
29  51  -15.0   15.0

30  52  -15.0   15.0
31  53   -5.0    5.0
32  54    0.0  300.0
33  55    0.0  360.0
34  56 -100.0  100.0

35  57 -100.0  100.0
36  58    0.0   50.0
37  62    0.0   50.0


[b&g]
 0   0  H   0
 1   1  -   0
```

```
10   3  -   0
12  12  -   0
13   2  -   0

14  13  =   0
15  14  -   0
23   4  L   0
25   5  C   1
50  18  -   0

51  17  -   0
11  62  -   0
 5   6  -   0
27  97  -   0

[ockam]
H   0   30.0
B   1   10.0
A   3   20.0
a  12   20.0
D   2   60.0

d  13   60.0
c  14   60.0
h   4   10.0
C   6  360.0
Y  62   50.0

U  18   60.0
U. 17   10.0

[ockgps]
X.  0.01  latitude
X   0.01  longitude

[magnum]
boatspeed       B
heading         C
true_wind_speed a
true_wind_angle d
true_wind_dirn  c
app_wind_speed  A
app_wind_angle  D
mizzen_AWS      %
mizzen_AWA      &
heel            H
depth_surface   W
depth_keel      w
opposite_tack   O
```

```
COG/SOG          f
rudder_angle     Y
user_1           1   POLAR_VS
user_2           2   TARG_VS

[nmea]
VHW 5 0 1
VHW 3 0 6
VWR 3 0 3
VWR 1 1 2
VTG 1 0 18
VTG 5 0 17

[wtp]
 0   0
55   6

 2   1
10   2
11   3
22  13
23  12

24  14
16   8
17   9
18   7
14   5

12   4
28  18
27  17

77  67
78  68
79  69

[instruments]
simul                      9600 none    8    1
```

My Deckman

Dongle number ……

Version codes …… for version ……

(updates) …… for version ……

(updates) …… for version ……

Charts installed

Type (e.g. C-Map)	Number	Area covered	Unlock code

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