

Getting the most out of your Imray Digital Charts

Before you start

Electronic navigation is a revolutionary tool which will have far reaching impact on both the professional seafarer and the leisure navigator. We now have (in 2010) the first merchant ships trialling navigation entirely on digital computer based charts.

However it is important that we, as users of Imray Digital Charts (referred to from now as IDC), do not rely entirely on one system for our position when at sea. I carry printed charts which cover the area I am likely to sail into, perhaps they are not all up to date but they will do as a backup. I also have a second GPS set, which is really intended to provide a position for the DSC VHF set, but will also provide a position if the computer lets me down.

So while I might actually be navigating using a computer and IDC charts I have a second source of a GPS position, the ability to follow a route using a separate system, and paper charts on which I can navigate using the time honoured techniques.

The following sections are intended to explain how I use IDC to carry out all of my navigation, both before I set sail and when I am at sea. Computer users know that computer programmes provide more than one way of doing each task. Imray's Digital Chart software is no different. The following sections are intended to show you one way of carrying out a set task – and they are not necessarily the only way, or even the best way – but they are how I have carried out these tasks successfully.

Choosing a suitable computer

The IDC software contains lots of data, and numerous memory hungry software routines. It will run on a low specification computer, and Windows XP. However, use on a low specification machine with little memory available will limit what you can do successfully. You may have to limit yourself to one set of charts (a single region) and limit yourself to following your vessel's GPS position. Opening multiple windows, using AIS, following a route, and displaying tidal overlays, all take processing power and memory – which may cause a low grade laptop to slow until it looks like it has crashed.

Most of us already have the laptop. I currently use a Samsung Q45 laptop which I have had for over a year now, and which has an Intel twin core T5550 1.8GHz processor, 3GB of RAM, 300 GB hard disc drive, a 12" screen, runs Windows Vista, and has a 2 hour battery life. It is used for more than just navigating – and that is perhaps an advantage and a disadvantage. The screen size is small enough to keep the laptop portable, yet big enough to see at sea. I can also find somewhere to locate this small laptop securely.

A few thoughts in case you need to choose a laptop to use the software on:

Running IDC on a small 'netbook' computer with a hard disc drive would be possible. Typically they now have a Mobile Atom N270 (1.6GHz) processor, 1GB of RAM, 160GB hard disc drive, 10" inch screen, Windows XP, and a 4 hour battery life. However beware of attempting to use the versions which came

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without a hard disc drive, and relied upon electronic memory. Experience of those for other purposes suggests that they would struggle to cope with the processing and memory requirements of IDC. Note also that IDC will only run under a Windows operating system. The advantages of such netbook computers include the low price (just over £200), and low battery drain. The small screen size is a potential disadvantage.

The laptop computers currently available would be highly suitable. Typical current laptops have a 15" inch screen, Intel Pentium T3400 (2.16GHz) processor, 3GB RAM, and 320GB hard disc drives. The battery on such a laptop will typically last around 2 hours. The 15" screen is an advantage in that you can see the chart easily – but it might be difficult to find somewhere sensible to locate such a large laptop.

How do you secure the laptop to the chart table without permanently damaging it?



Where to put the computer

It is tempting to install the navigational laptop on the chart table. That would however interfere with traditional navigation – should that be needed. It is far better to install it separately, so that it can be held securely and stored away from sight (when not in use). It needs to be somewhere away from the hatchway – and the potential to get wet. It also needs to be somewhere where it isn't too bright, because you cannot see a laptop screen in daylight. It is an added advantage if you can see the screen from the helm – particularly in a small boat.

I have altered a bookcase to incorporate a laptop 'locker' which folds up when not in use – taking the laptop with it. The power supplies and converters are all mounted behind the laptop – as can be seen in the photo.

The laptop is held securely to the base of the lid of this locker by whipping twine lashings,

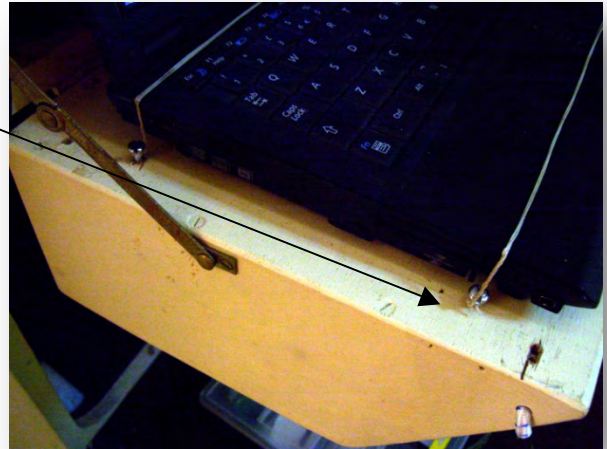


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one at the back of the keyboard and one at the front of the keyboard. The lashings are secured to the heads of self tapping screws – which sounds crude – but works.

You could of course use lashing eyes which sounds better.

Incidentally I have never had any problems using any laptop at sea. In theory the hard disc drive should be vulnerable to shocks and accelerations, but I have not experienced problems due to motion. My boat is small, and is often exposed to wind and sea, and the usual rough motion to be found off the west coasts of the UK in force 6 and 7 winds.



The bookcase closed – hiding the laptop



Providing power for the computer

It is really not critical how long the internal battery in the laptop lasts before it becomes discharged. Limiting passages to 2 hours duration is not feasible! So you will have to have a method of recharging it while using it at sea – rather than relying on its internal battery.

The simplest option is to buy a small 'inverter' which will convert the 12 volt supply from your boat battery into 240 Volt 50 Hz mains power to drive the mains charger which came with your laptop. This will typically draw 4 to 6 amperes from the boat's battery. You will of course be able to charge mobile phones and the like as well with it. The problem is that it uses too much power – those 4 to 6 amperes will have to go back into the



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battery eventually. No problem on a motor boat – but a problem on a sailing boat.

So if you have a sailing boat a better option is to use a DC to DC converter which converts the 12 volts from the boat battery directly into the DC voltage required by the laptop. My own computer requires an 18 volt supply – and not all of the DC to DC converters on offer will step the voltage up.

In practice my computer (its DC to DC converter really) take 4.5 amperes when charging the internal battery and then when that is fully charged 2 amperes to actually run the laptop from the boat's own battery.



This converter changes 12 volts into 15, 16, 18, 20, 22, or 24 volts DC.

Most computer and electronics suppliers stock both DC to DC converters and a range of inverters. Just be sure that the voltage required by your computer and the power required (in watts) can be supplied by the converter/inverter that you buy.



Choosing and connecting a GPS receiver

Most users of IDC seem to connect their laptop to a hand held marine GPS receiver. The IDC software will connect to your existing GPS but there are advantages in having a completely separate system. Two completely independent systems seem like the best form of backup to me!

As already mentioned I have a hand helm Garmin GPS with an NMEA output which is connected to the DSC VHF set. It provides position information which can be used in an emergency. If you have to press the red button on the VHF to send a Mayday - the position is already there.

Since my laptop is 'Bluetooth' enabled I have bought a 'Bluetooth' GPS receiver from my local branch of a national electronics store. Bluetooth is a radio communication interface – so the laptop and GPS



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communicate with each other when they are within 30 feet of each other by radio. No wires. The GPS has a small solar panel as well as an internal battery and will run for 30 hours between recharges. I just place it on a bookshelf in the cabin.

I have previously used a USB wired GPS 'puck' which worked equally well. I had to change it because of moving to a new laptop and a new operating system. Not all USB GPS receivers work with Vista!

All of these GPS receivers have worked effectively when situated within the cabin of the boat. However this is a wooden boat – and the nature of the hull and deck will have an effect on the GPS reception inside the cabin.

Follow the GPS manufacturer's instructions to connect your GPS set to your laptop, which is something that I can't work through, because there are so many variables. Once that is successfully achieved set the IDC software to find the GPS set automatically (with the GPS set up, connected and running). It should work within a few minutes and then a vessel cursor should appear in the correct geographical position.

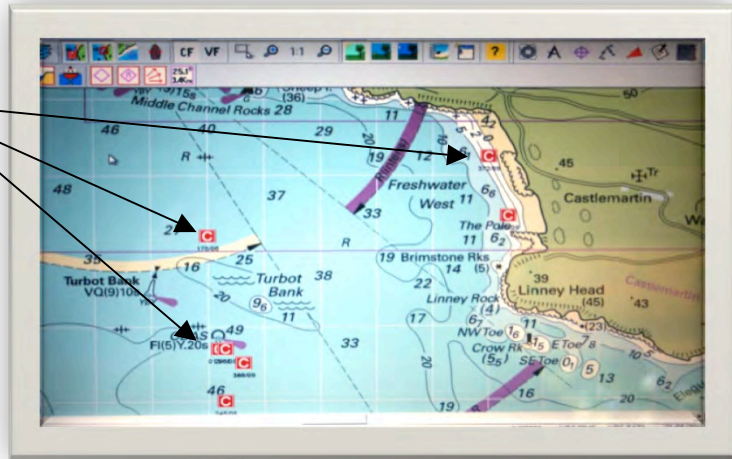


Registering the software

The package which you bought contains detailed instructions for registering the software. The following is intended as an overview to explain the steps needed to use the software. When you first try to open the IDC software it will open a window which requests you to enter certain codes. There are three boxes for codes, firstly for the 'purchase code', secondly for a 'request code', and thirdly for a 'response code'. The 'purchase code' is the code which was provided with the software. When that has been entered you need to click the button to 'generate a request code' – which links the code which came with the software and a code which is specific to your computer. This 'request code' is then transmitted to Imray, by email or by phone, or on line, and you will receive a 'response code'. When you next open the IDC software the same registration window will reopen, with the 'purchase code' and the 'request code' already filled in. You just need to fill in the 'response code', and the software will become available for you to use.

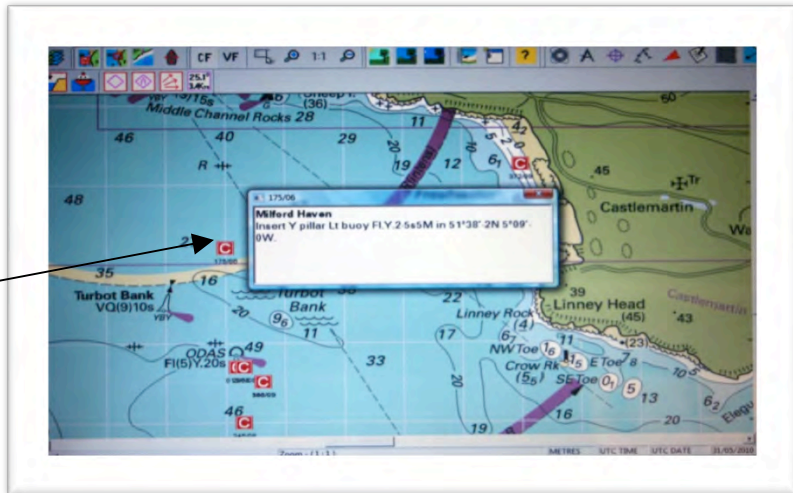
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Chart corrections appear as symbols on the chart, which can be turned on or off by clicking the chart correction symbol at the top.



Downloading corrections

In purchasing a copy of this IDC software you are provided with, the portfolio of charts for the given area, and the software required to enable you use the charts. You are also provided with access to chart corrections for one year. These corrections have to be downloaded, and are available on a regular (usually monthly) basis. When they have been downloaded and installed alongside the IDC software they appear on the chart as a 'C' symbol. When you click on the symbol on the chart it brings up a pop up window which has the text of the correction written in it. These corrections do not actually correct the chart itself, they just add text icons in the relevant places. During the year, you will also be able to download new editions of any of the charts in the package which have been reprinted. Note that completely new versions of a digital chart are issued at the same time as a new paper chart is published.



After the one year subscription expires, you will have to pay a renewal subscription to continue to receive updates for the pack of charts as described above for the next year. By purchasing a renewal subscription each year you will always have the latest corrections and versions of the charts in your portfolio. Note however that when you renew at the end of the year, next year's charts do not have the corrections from last year as modifications on the charts. That only occurs when a chart is reprinted.

Connecting an autopilot to the system

Currently the facility to connect an autopilot to IDC has been withdrawn.

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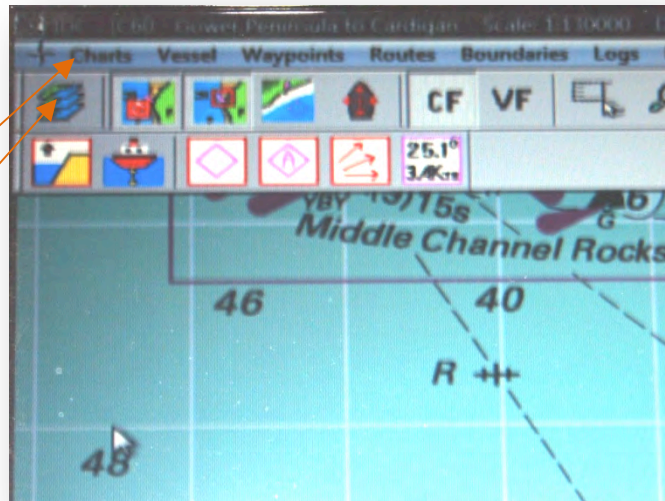
Getting Started

The essence of successful navigation is planning. The more preparation you can do before going to sea then the more time you can spend actually managing the vessel, and crew. On short handed family sailing boats this is particularly valuable. Using IDC effectively will free the navigator from the chart table, and when the navigator is also the skipper and most (if not all) of the crew this is important.

Note that wherever the word mouse and left mouse button are mentioned in these instructions – the operation can equally be carried out using the finger pad and buttons on a laptop. I don't use a mouse on the boat – but it's easier to describe the planning operations this way.

Opening a chart

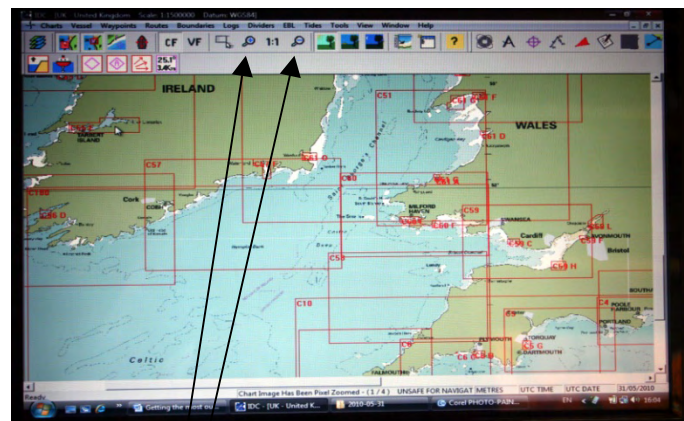
There are a number of ways of opening a chart, but if you are used to using Imray paper charts you will already be familiar with the code number for the chart of the area you sail in. The simplest way to open a chart is to click on the left hand menu item 'charts' or the icon below it.



Planning a simple route

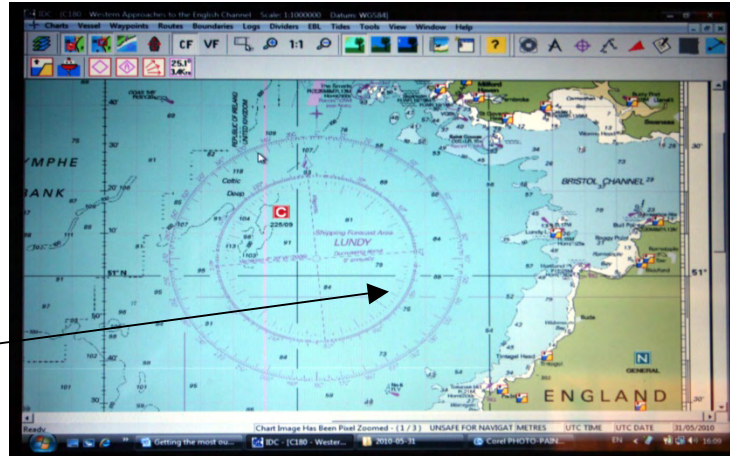
To illustrate the creation of a simple route lets plan a passage from Milford Haven to Padstow.

Firstly going to the chart manager we can open the chart of the whole of the UK. This will enable us to see where the limits of the area covered by different charts lie. You will always find it as the last chart listed – at the bottom of the list. Double click on its title and it will open. There are two icons in the centre of the icons along the top, which allow the size to be changed, they look like magnifying glasses. Click the one with a minus sign in it 3 or 4 times so that a sensible amount of the UK is visible. Now hover the mouse pointer over the chart, hold down the left mouse button and scroll the chart so that you can see the whole of Cornwall and Wales. You will see that C58 and C60 are required to cover this passage. However if you

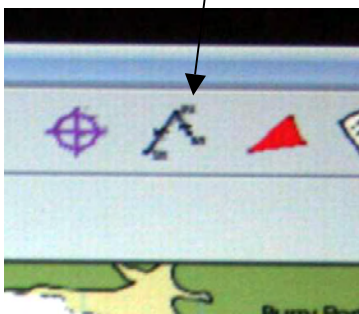


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zoom out further you should be able to spot that C180 covers the whole area on one chart. Start by opening C180. Adjust the zoom level so that Milford Haven (in big letters at the south western end of Wales) is just in view at the top of the screen, and Padstow (in smaller letters half way up the north Cornish coast) is just in view at the bottom of the screen.



On the right hand side of the row of icons you will see a symbol which looks like



two lines – a route – click it once. Now hover the pointer over the chart near the entrance to the Milford Haven and click it once. A position circle will appear on the chart and as you drag the

pointer away towards Padstow a route line will follow. Position the pointer over the entrance to Padstow and double click the left mouse button. The route may not be in the correct position but we can use larger scale charts to work that out.

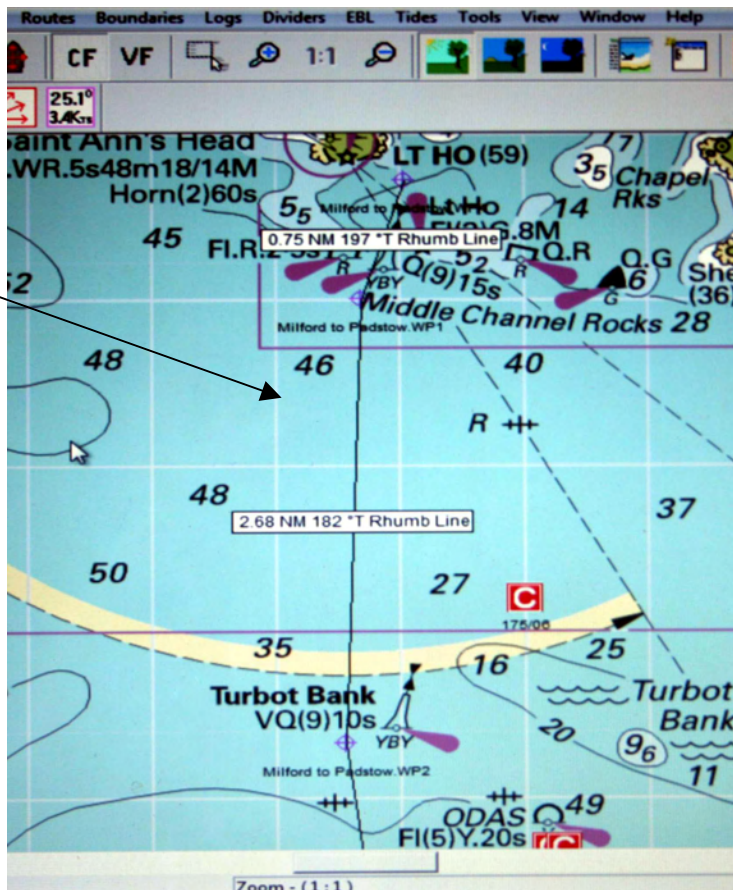


Now zoom in on this chart and move the section visible to cover the entrance to the Milford Haven. Right click on the chart itself, and a sub-menu will appear. Select 'charts available' from it. Select C60. Zoom in so that you can see the entrance properly. **Left** click on the first waypoint at the start of the route, and a sub menu will appear, asking if you want to move the waypoint. Click 'yes', and the waypoint will move as you move the mouse. Move it until it is close west of the Turbot Bank Buoy. Now right click on that waypoint, and a menu will appear with some options.

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Move the cursor to hover over 'add to route', and sub-options will appear, select 'by mouse'. As you move the mouse, the route will be dragged out, so place the cursor near the buoys marking the fairway into the Haven, and single click to add a waypoint, double click to add the last one, and save the changes to the route.

Now we can do the same thing at the other end of the route, by going back to C180 to get an overview, moving to the last waypoint, changing chart to C58, and zooming to see the approach to Padstow. Move the waypoint to clear the rocks and headlands, and add another waypoint to take us into the bay near the approach to Padstow.



Now go over the whole route to check that there are no dangers near the route. Starting at the Padstow end (since that is already in sight on the screen) zoom to '1 to 1' scale, and using the mouse by holding down the left mouse button, drag the chart so that every part of the route has been examined. When you get to the edge of the chart, click on the border of the chart and the adjacent chart will open so that you can follow the rest of the route. When you get to the entrance to the Haven, it is wise to go to the largest scale chart C51K, (by using the right mouse button and viewing 'charts available').

The route is now ready to use.

Following a simple route

Assuming that you have a GPS receiver sending positions to the IDC software, then the boat position should be shown on the chart. You can manually steer the boat, referring to the computer screen for guidance and just keep on adjusting your course to follow the route. This is the simplest way to follow the route, and uses the least processing power on the computer.

However IDC is capable of much more than this. From the above situation with a route visible and the GPS following the vessels position, you can right click on the route, and the popup menu which appears will show the option 'activate route' in dark letters. You will then be able to click to activate the route.

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The route will now appear with the first waypoint flashing and a line joining the current position to the waypoint. It is useful to now go to 'view' in the main menu and click on 'console'. This will bring up a row of data entries down the left hand side of the screen. These can be altered, to show more or less information, but you should find the course, and speed, and position etc automatically listed and updated. It will also show the data for the current route – such as cross track error etc. You can now manually set the course to steer by hand, or manual adjust an autopilot, to follow the route. It is quite normal to follow a route like this, adjusting the course to steer as the passage progresses, to ensure that the boat remains roughly on or near the route. As you near each waypoint IDC will alert you to the need to change course. Of course it is prudent to actually plot the positions occasionally on a paper chart, and use some other method of position fixing to confirm the position shown on the screen.

Using tidal information manually

In the standard installation which does not have the extra tidal program (published by Meridian Chartware Ltd), it is necessary to use a separate tidal atlas and a tide table to determine the tidal streams and tidal heights at specific points on the chart, in the traditional way.

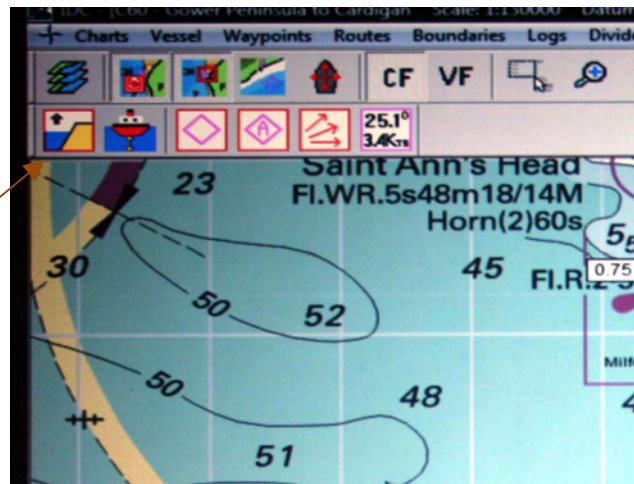
Printing paper copies of the chart and the passage plan

It is possible to print out the whole chart, as well as a specific section of the chart. You can print the whole chart on a single piece of paper, or parts of the chart on multiple sheets of paper. However it isn't really practical to make paper copies of charts for use in navigation at sea.

Adding the optional UK Tides or Biscay Tides from Meridian Chartware Ltd

There is a version of the IDC software which comes complete with the Meridian tidal software. The tidal software can also be bought separately. In either case when they are used together they become very powerful, and allow the calculation of the best time to undertake a passage, as well as calculating the course to steer allowing for tidal streams. You can use them to plan for a future time, as well as to allow for tides as they occur (in real time).

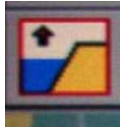
When the tidal software has been installed a new set of 6 icons appear in the menu section at the top of the screen.



From left to right they cover, tidal heights at standard and secondary ports, tidal height calculations, tidal diamond locations, activating a tidal diamond, showing real time tidal streams, and annotating the tidal stream arrows with direction and rate. Left clicking the icon turns the feature on or off.

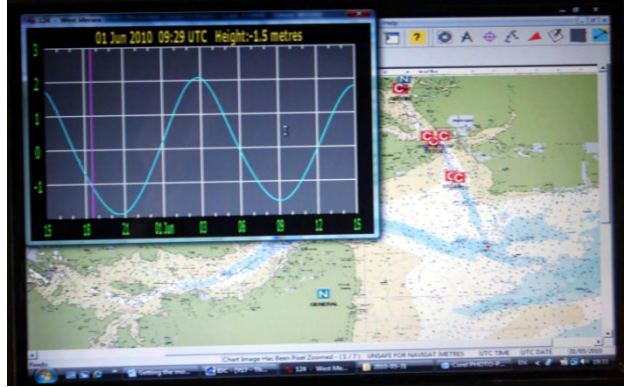
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Tidal heights

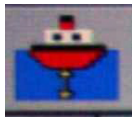


Clicking this symbol will display or hide a set of these symbols on the chart. They represent the places where tidal height calculations can be carried out.

In other words they represent standard and secondary tide stations. When you right click on one of these symbols a sub-menu appears. The most useful option is the 'tidal curve' option which displays a graph the tidal heights over the next 24 hours at that place. It overlays a graph displaying the tidal heights for the next 24 hours, as a separate window. It shows the current time as a magenta line. Use the mouse to hover over a particular time and the height is displayed above the graph.



Tidal height calculations



When this icon is clicked a popup menu appears. This can be used to carry out tidal height calculations automatically. For example enter the vessels draft and the safety margin you allow, and the depth of water where you propose to anchor. Then right click on the nearest tidal station icon, and select 'tidal graph'. The graph displayed will now have a red section highlighted on it. If the tidal curve goes into the red area at any part of its curve then there will not be enough water for you to anchor there during the times when that curve is in the red area.

Tidal diamonds



Clicking on this icon will show these symbols wherever there is a tidal stream table available on the chart. The data is just the same as that shown on a paper chart, giving the direction, and rate, of the tidal stream for each hour before and after high water at a given place.

Tidal streams



This is a much more useful feature which will show the actual tidal stream in the correct position on the chart, for each tidal diamond. The direction of the stream is indicated by the direction the arrow flies, and the strength by the length of the arrow.



When this icon is clicked then the actual direction and strength of the tidal stream is shown in a box adjacent to each tidal arrow. This feature is very useful and can potentially replace the tidal stream atlas, and the tide tables.

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Active tidal diamond



Clicking this icon allows a particular tidal stream diamond to be set as the 'active' tidal diamond – and the data will be displayed in the console.

Planning a more complex route

Using the UK chart as an index

Let me take you through the process of planning a route from Milford Haven to Southern Ireland. It will demonstrate some of the techniques needed to plan a passage effectively. The techniques are applicable to all passages that you might want to plan.

I use the UK chart – which is always at the bottom of the list of charts however many you have installed – as a starting point. I can always identify which charts I need to look at for any particular plan from looking at the UK chart. It tells me the chart numbers. So to plan this route I need C60, C57 the plan for Milford Haven (C60E), and the plan for Kilmore Quay (C57H).

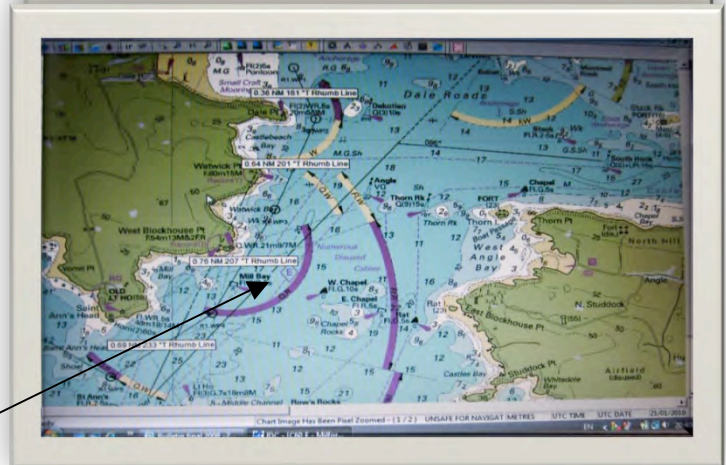
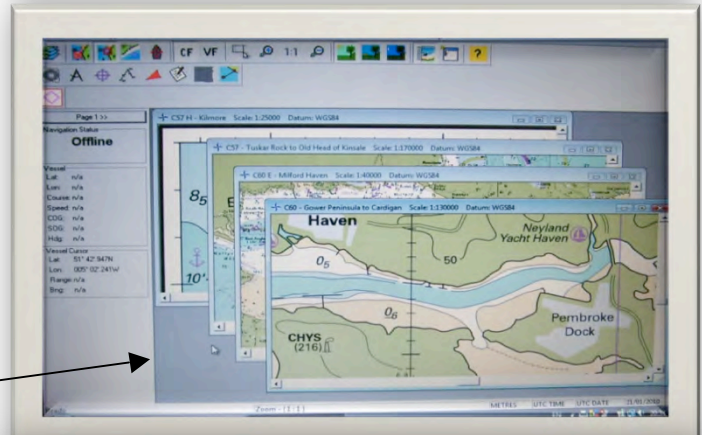
Using multiple windows and creating a passage plan across windows

Using the 'open a new window' four times allows me to have the four charts needed available as shown to the right.

Now to start planning the route bring C60 to the top and use the icon on the toolbar to open a new route and insert the waypoints using the mouse.

At this stage it is not important if the waypoints are in the wrong positions – their positions will be checked and adjusted later. I just want a first stab at the whole route.

So, on the right you can see that a starting



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position near Dale has been entered and the rough route out of the haven has been inserted. As I scroll the mouse the chart will move and I can hover near the left hand edge of the screen to get it to show me the western part of this chart.

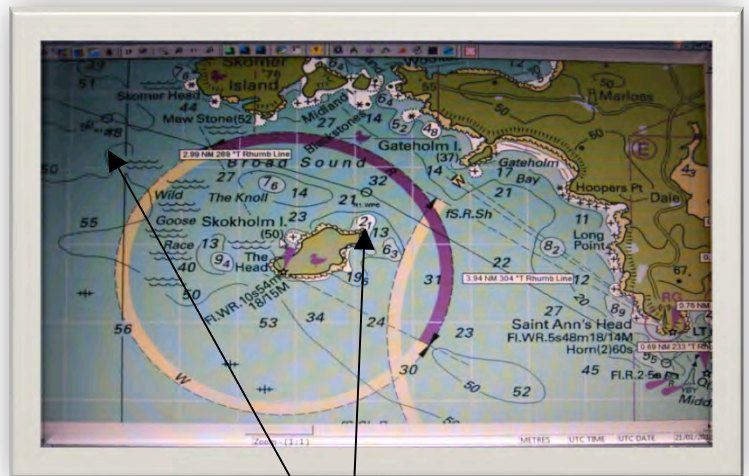
I can then move the cursor (ignoring the fact that the route is following my cursor) until I am over the button to click on the upper margin of C57 – which will bring C57 to the front and make it visible. I can now complete the route by clicking somewhere to the west of the Saltee islands and then just to the east of the passage between the islands and the mainland.

Checking the route in detail

Before following any route we need to go over every section of it in detail to make sure that it is safe and sensible for us to follow it. So let's go to the harbour plan for Milford Haven and check the first stage from Dale anchorage to the sea.

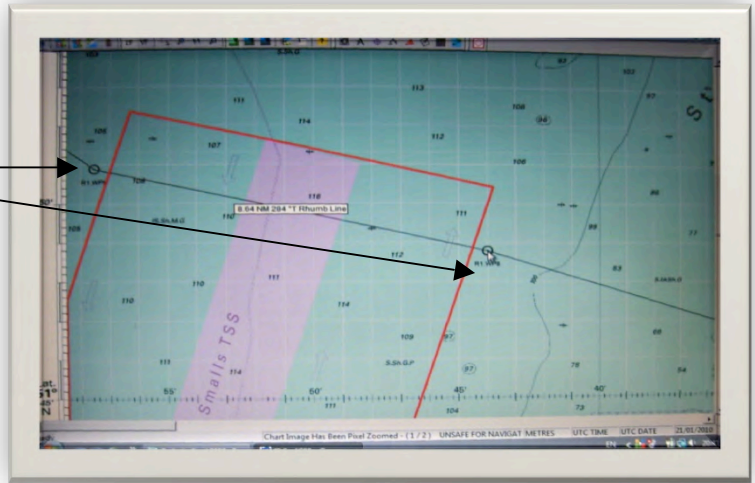
By bringing the chart C60E to the front we can go over the first section. By clicking on each waypoint and responding to the 'do you want to move this waypoint' prompt we can position each waypoint accurately. We can also add waypoints into the route by right clicking on the route itself. I am happy that the waypoints shown will not take us into the path of the commercial shipping, nor put us into water too shallow to be safe. So we can scroll along the route track, following every section of it. On reaching the edge of the chart C60E,

I would not click on its edge – which would open C60 in that window, but transfer instead to the other window where C60 has already been opened. Now looking at C60 in detail two extra waypoints have been inserted into the route in this view to take the route inside Skokholm Island, and to take us clear of Skomer Island. These waypoints will also keep us away from the overfalls around these islands – not that we have decided when to leave yet, but we are clear of them anyway.



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The next issue is the traffic separation lanes between Wales and Ireland. We are obliged to cross them at 90 degrees so two new waypoints have been added at either side of the passage across the lanes.



Now onto the chart C57. There are no issues so on to chart C57H. The two waypoints which were added initially were in the wrong position so they have been moved to ensure that the first brings us into sight of the buoys marking the passage across St Patrick's Bridge, and the second to the fairway buoy in the entrance to Kilmore Quay harbour. It also ensures that the planned route takes us through the gap in the rocks.



Now to finalise the route, click on any leg of the route and select properties. It will bring up this menu where we can choose a suitable name for the route – we want to save it so that we can call it up at any time in the future when we want to make this passage – in the coming year or any future year. I like to give routes sensible names so this is 'Milford to Kilmore'. It is useful to choose a different line type and colour – something which will be easily seen without peering at the detail on the screen. I want to see at a glance that the boat is on track or off track when I eventually follow the route at sea.

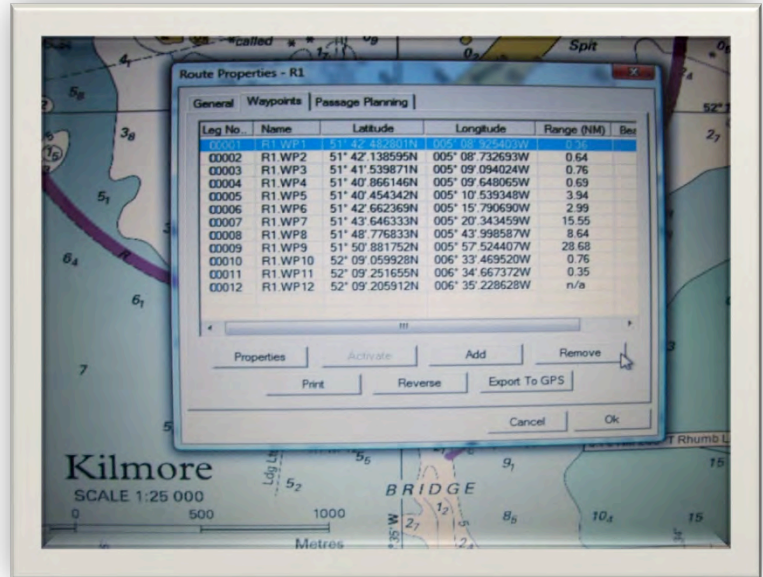


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The waypoints and the basic details of the route are visible on the next page by clicking on 'waypoints' at the top of this menu. This is what this route looks like in this view.

We will come to the passage planning window shortly – we need to explore the tidal information available in the optional Tidal programme before we can use the passage planning window to its full effect.

Finally a comment about waypoints. I never use other people's waypoints – because there is no need. It is just a matter of choosing a place to change course where the water is deep enough, and where the resulting track does not go over any dangers. Published waypoints are potentially dangerous – visions of a crowd of boats all following exactly the same route and hitting each other spring to my mind!



Tidal constraints at departure and arrival ports

We could leave Dale at any state of the tide – so we can ignore the departure point as a tidal constraint, but the arrival port Kilmore Quay has only a metre of water in its entrance at low water springs, and the approach is shallow for a considerable distance offshore. I can get my own boat in at low water, but not if there is any swell, so let's treat this as a real tidal constraint. Traditionally we would use the tidal height data and the secondary port corrections from the Nautical Almanac, to work out when it is safe to enter, with say a minimum of 2 metres of water in the entrance. With the tidal add-on to IDC life is much simpler. When the tidal software has been installed 3 new icons become available at the top of the screen. By clicking on the tidal height icon we can reveal a set of icons on the chart which represent primary and secondary tidal height stations.

The tidal streams act as a real constraint, and on leaving the Haven we want to have the tidal stream flowing with us until we are clear of the coast and well offshore. Tides can run at up to 7 knots in this area – so it is worth getting this part right. We can use the tidal stream planning features of IDC to work out the best time to depart.

Passage plans including predicted tidal streams

With the Tidal software available in IDC an extra window in the passage plan becomes significant. When you right click on a route the popup menu shows three views, headed 'general', 'waypoints' and 'passage planning'. When you open the passage planning window, the central area will be blank, and there is a button at the bottom 'calculate'. Click on 'calculate' and a data entry table appears. You can enter details for the planned passage and the software will calculate the details. For example with a

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specific departure time and date, as well as a predicted boat speed, IDC will calculate the tidal streams relevant to each leg, and fill in the table with relevant information. This will include a list of all the legs giving course, distance, tidal streams, and courses to steer allowing for tides. This can be printed, or just stored. If the box for 'calculate best departure time' is ticked, then IDC will calculate the best departure time for each day over a period of about a week, which will result in the best use of the tidal streams. In both cases be sure to select 'calculate using tides' and "automatic tides'. This will result in IDC selecting the nearest tidal diamond for each leg of the passage. The advantage to be gained from the tidal flow will be expressed as a % tidal gain. If one of the best departure options is selected then the data for that option will fill the planning window. This is a really useful feature, and encourages me to make the best use of the tide.

Alternative destinations in case of weather changes

I have produced passage plans for all of the passages I am likely to make and stored them on the hard drive of the laptop. This is something which I have done at home during the winter, or as I actually make those passages which means they are created over a longer period of time. Each time I want to use them I can just display the relevant route, and hide the others. If I want to change my destination during a passage then I just have to display the routes which I want to use as an alternative, and then hide the original route. This means that I have plans ready prepared in case I need to change my destination when at sea.

Using the software at sea

Basics

All of the different options that you can use to make life easier at sea will use processing power, and memory. So the more features you have on at the same time the slower the computer will run, and you will need to try this for yourself to determine which features are worth using in your own circumstances.

Clearly it is useful to have the real time tidal streams displayed, and the console can provide valuable information. Having a route 'active', so that warnings are displayed when you approach waypoints, or stray too far off course, can be useful. The significant advantage of having an active route is that the console can display the course to steer, cross track error, and time to next waypoint.

The easy access to the screen brightness features in the main menu is helpful. You will want to reduce the brightness of the screen if you are using it at night!

Using the Console effectively

It is advisable to set up the parameters to be displayed in the console before use at sea, to ensure that only valuable data is displayed, and that that data is in an order which is useful to you. The displayed data can be changed from the 'tools' menu under 'console options'. For example if you are not using the

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AIS (Automatic identification system) function, then it is worth turning off all of the AIS data. Using the console does of course reduce the screen area available for the chart display.

Course to steer - taking into account tidal streams

The planning option automatically calculated the courses to steer for each leg, but when you are at sea IDC can calculate the course you actually need to steer, taking into account the predicted tidal stream at this moment in time. To do this you need to have the vessels position from the GPS being displayed, and an active route being followed. If you right click on the vessel icon, a sub menu will appear, select 'course to steer'. You will be prompted to check the vessel speed, and the tidal information being used. This is a valuable method of predicting the course you need to steer, but remember that you will need to be ready to fine tune the course as you follow the route, and perhaps the cross track error increases (CTA is a measure of how far you are to one side of the required course).

Using tidal diamond data manually to evaluate a course to steer

It is possible to use the information from the tidal predictions, as displayed on IDC when this icon is activated, as the data for manual course to steer calculations plotted on a chart. It is like having an easily read tidal stream atlas which shows only the current situation.



Setting up a deviation card

Deviation is a function of the material that your boat is made from, and where the significant metal work is located compared to the compass – and is outside the scope of this document. However when using IDC to calculate the course to steer it would be useful if the actual deviation card were entered in IDC – so that IDC can provide you with courses to steer which take the deviation into account. How valuable this feature is to you depends upon how much deviation your steering compass experiences. You can enter the courses and deviation values from the 'vessel' menu, by clicking 'vessel properties'. Deviation is the last submenu on the right in this pop up window.

Exporting routes to a GPS set

If you want to use IDC purely as a planning tool away from the boat, and use a hand held GPS set to actually navigate while at sea then it is possible to export waypoints from IDC to a file storage device, or to export them to a GPS set which is connected to the computer. This is not a feature I have tried. However there are so many advantages of having IDC running when at sea, including displaying tidal streams, and being able to calculate courses to steer allowing for tides, that it is difficult to justify not using it at sea. The reassurance of being able to see the vessels position, moving across the chart, is very reassuring.

Keeping an automatic navigational log

There are automatic features within IDC which can help to record where you have been, and indeed help you to keep a full navigational record.

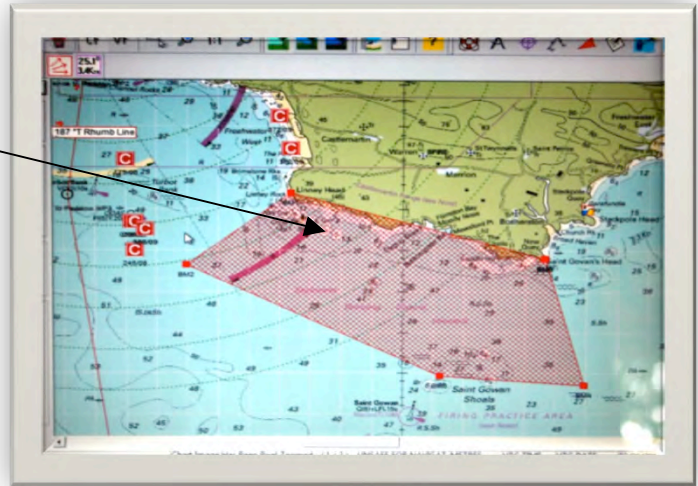
The log feature will actually record log book entries into a file stored on the hard drive of the computer. These features are accessed from the 'logs' menu, where a 'new log' can be created. It is possible to have a separate file for each day, starting a new log every morning, and leaving yesterday's log secure. You can manually make log entries, and if you are following an active route, much of the actual data will

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be automatically entered, leaving you to make notes. It is also possible to record the vessels track automatically. I use this as a feature all the time. It leaves a trail on the screen showing where I have actually been. If there is a log book open and in use the positions will be automatically entered into that logbook. It is worth editing the track features to make sure that an appropriate number of entries are made. I am happy allowing automatic records to be created every 10 minutes. It could provide evidence of where I have been and when, and it certainly is interesting to see the actual track when tacking to windward.

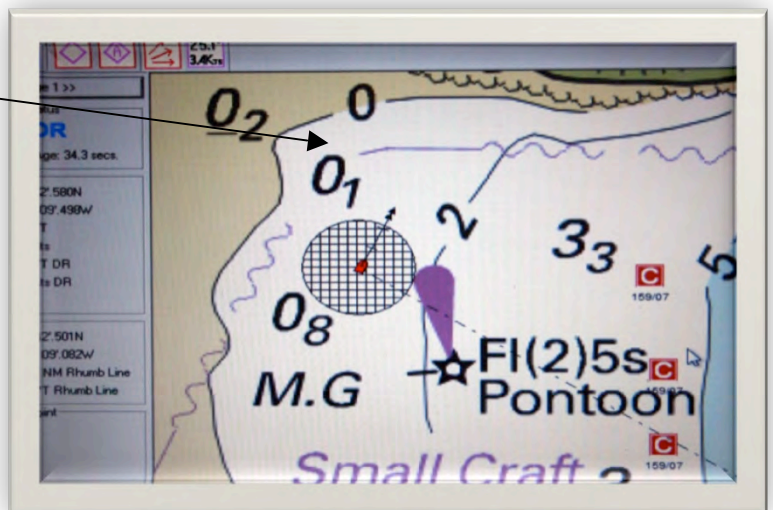
Avoiding dangers using boundaries

It is possible to create and save a set of records containing details of areas to avoid, or areas to stay within. These could be used to highlight an area where it is dangerous to go, perhaps because the water is too shallow, or because the area is perhaps a firing range. They could also record the safe water within a harbour. These areas are saved in a data base. I have used them to highlight isolated dangers, and fish farms. IDC can set off an alarm when one of these active boundary areas is entered, or even if it is left. It would be feasible to highlight the chart with all of the area you wanted to avoid prior to departure, just like naval navigators are trained to do.



Creating an anchor alarm

The latest version of IDC has a built in anchor alarm feature. To access this right click on the vessel icon, and click on 'create'. A crosshatched circle will appear centred on the vessels current position. You can adjust the size of the 'swinging area' by moving the cursor. When it is an appropriate size then left click on the mouse to set the alarm. To disable the alarm right click on the vessel and under 'anchor alarm' click 'disable'. It is important to get the size of the anchor alarm right. To large an area and the alarm will be of little value. Too small an area and the alarm will go off at every minor change of wind or tide.



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The disadvantage of this feature is that you will have to run the computer while at anchor – using power. It may involve a significantly smaller battery drain to use a hand held GPS set (assuming it has an anchor alarm feature). I would not want to leave the computer draining the battery (2.0 amperes) all night but I would be prepared to leave the handheld GPS (0.2 amperes) on all night.

I hope that the above notes and illustrations help you to learn to use your copy of IDC swiftly and effectively!

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Author of *Adriatic Pilot* (Imray)