

### Chart Monitoring

If chart monitoring is switched on, the program of the CHARTPILOT monitors – independently of the display mode and the presentation that has been set – the **present own position**, the **future own position** and the present area of the **System Track** in relation to the **safety contour** set in the selected chart, in relation to certain objects existing there ("objects of interest") and in relation to all **User Chart Objects** of the type **own safety line**, **own MARPOL line** and **danger highlight**.

If the chart monitoring detects a violation, the corresponding chart alarm **SAFETY CONTOUR**, **OBJECT OF INTEREST** or **USER CHART OBJECT** is issued, supplemented in each case by the object class that is violated. Not every further violation leads to repetition of the alarm; for details, see the Operating Instructions.

#### Settings for the chart monitoring:

The settings are made in the menu **Alarm Settings > Chart Alarms**: **Switching the chart monitoring on/off**: Separately according to the monitoring mode, using the buttons **Safety Contour**, **Objects of Interest** and **User Chart Objects**.

**IMPORTANT**: A monitoring mode should only be switched off if the explanations on chart monitoring given in the Operating Instructions have been taken into account.

**Setting the monitored area for the future own position**: Separately according to monitoring mode: By clicking, define whether the monitored area is to be specified in metres (**Distance**) or through the sailing time (**Time**). All values can be entered independently of each other.

**Setting the speed under which the chart monitoring is automatically switched off**: In the field **Min. Speed for Chart Alarms** (0 kt = no deactivation).

➔ An important prerequisite for successful chart monitoring is the correct setting of the safety contour. For further preconditions, see the Operating Instructions.

### Anchor Watch

**Anchor watch**: If the anchor watch function is switched on, an alarm is shown when the ship touches the border of the Anchor Watch Area edited as a User Chart Object.

**Switching the anchor watch function on/off**: In the menu **Alarm Settings > Chart Alarms** with the button **Anchor Watch Area**.

### Depth Alarm

The alarm **DEPTH LIMIT EXCEEDED** can be generated as soon as the connected navigation echosounder transmits a depth value that is less than the limit value that has been set.

The settings are made in the menu **Alarm Settings**: **Setting the alarm limit value**: In the field **Depth Alarm**; this is possible at all indicators, and is distributed system-wide.

**Switching the alarm output on/off**: With the button **Depth Alarm**.

### Alarms

Alarms are displayed in the alarm list which opens automatically. For an overview on the significance and special features of all alarms, see the Operating Instructions of the CHARTPILOT under **List of Alarms**.

**Switching off the acoustic signal**: In the alarm list with **Acknowledge**.

**Acknowledging an alarm**: By clicking **Acknowledge** again, the marked alarm is acknowledged (insofar possible).

**Suppressing the acoustic signal for certain alarms**: In the menu **Alarm Settings**, switch off the **Buzzer On** function.

**Switching on the display of the alarm list manually**: Click on the horn symbol **E**.

➔ The acoustic signal can be adjusted with regard to frequency, duration and volume; see the Operating Instructions under **Making System Settings**.

Relationship to the Watch Alarm and Bridge Alarm Systems (with the corresponding installation):

- Through timely acknowledgment of the **DEAD MAN PRE ALARM**, output of the watch alarm is prevented.
- The bridge alarm system reports correspondingly configured alarms in the alarm list of the CHARTPILOT.
- The data display **Bridge Alarm System** lists all the alarms that can be transferred by the Bridge Alarm System. (Data displays: see page 3)

**Alarm with yellow background**: Alarm is present and was acknowledged at the CHARTPILOT. **Red inscription**: Alarm is present and has not yet been acknowledged.

### Voyage Recording

All CHARTPILOTS and each MULTIPLOT constantly perform the following data recordings on their hard-disk drives:

**Long-term recording**: Low volume of data, recording interval 30 minutes, memory capacity: 90 days.

**Short-term recording**: High volume of data, recording interval 10 to 300 seconds, memory capacity 12 or 24 hours.

Operating takes place in the menu **Voyage Recording**, which appears in a dialog box after **Voyage Recording** is clicked in the tree.

**Resetting the long-term recording**: (Before the start of the voyage; only necessary if no other data are to be contained in the file): With Options > **Reset Long-Term Recording**.

**Replaying the current short-term recording**:

1. Cancel the definition of the System Track.
2. Click on File > Load Newest > **Short-Term Recording**. A large flashing **V** is shown to indicate that the display is a replay of recorded data.
3. **Control the replay** with the symbol buttons of the **Voyage Recording** menu. The settings for the display, monitoring etc. are not recorded and can therefore be changed as desired during replay. Current alarms are not shown. Protocol prints can be made of the recorded data (Set the printing cycle to 10 seconds, if all data are to be printed).

4. **Ending the replay**: With File > **Exit**.

**Replaying the current long-term recording or older recordings**: Through the corresponding selection in step 2.

**Storing the current recording as file**: With File > Store > **Selection**. Enter a file name, click on **OK**, limit the time period to be stored (if required), click on **OK** again.

### Protocol Prints, Printer Control

#### Protocol Prints

**Switching the protocol printing on/off**: In the menu **Peripheral Devices** with the button **Protocol Print**.

Specifying the data to be recorded: In the menu **Peripheral Devices** with the button

- **System Settings**: Changes in the selected navigation sensors, and in operational data of the TRACKPILOT and of the SPEEDPILOT

- **System Messages**: Certain alarms which have occurred at the CHARTPILOT

- **Cyclic Protocol**: Cyclic recording of nautical data

**Specifying the data to be recorded cyclically**: In the menu **Peripheral Devices > Config. Cyclic Protocol**, use the buttons **Add** and **Remove** to insert the data under **Configured Items**, and set the printing cycle under **Period**. Conclude the input with **OK**.

➔ In addition, the date, time and System Track data are recorded.

**Printing the current screen content**: In the menu **Peripheral Devices** with the button **Print Screen** or in the context menu **W** of the button **Menu**.

#### Printer Control

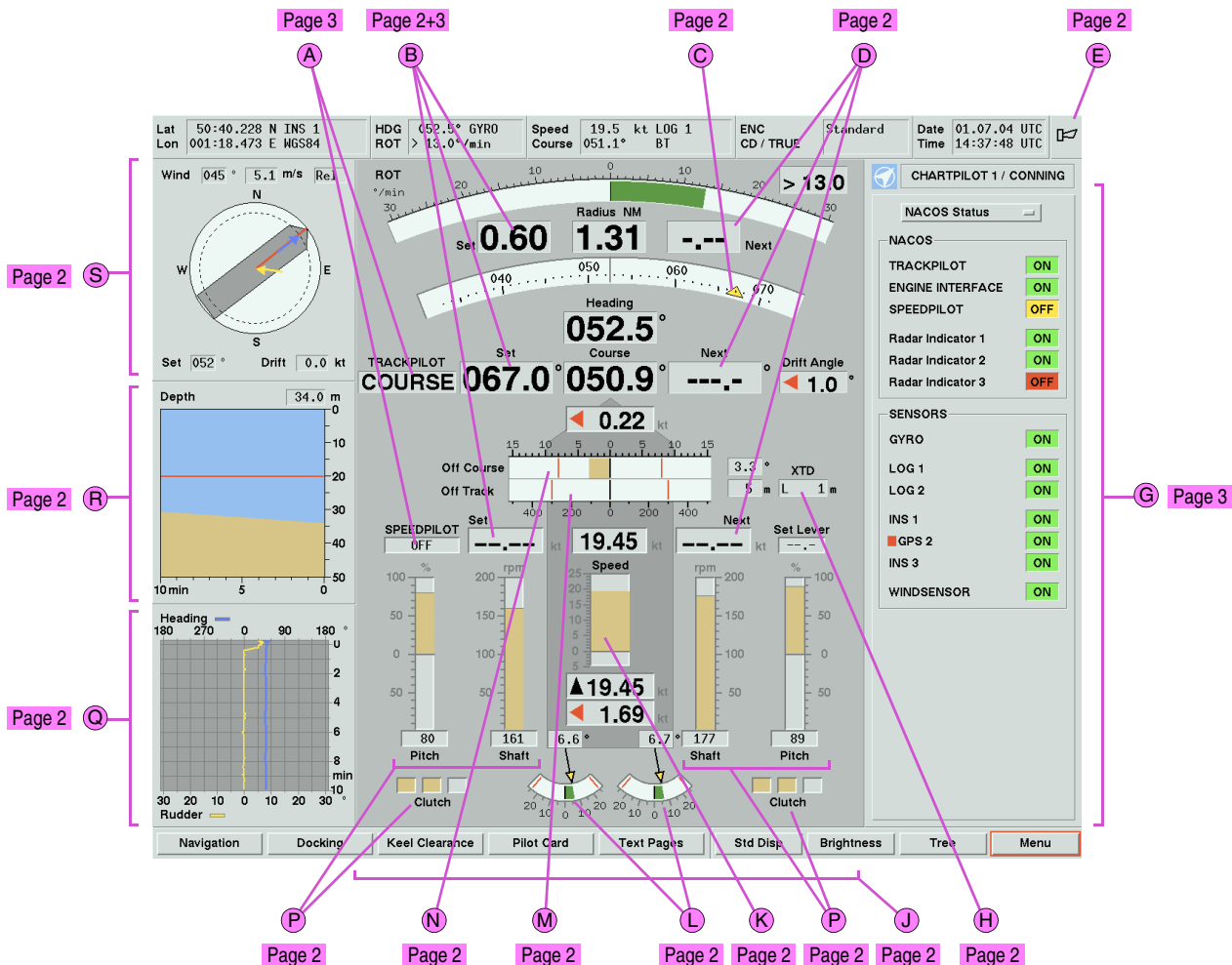
In many menus and dialog boxes, the **Print** button available there can be used to initiate print-outs on one of the optional printers. The detailed control of the printer is performed in the menu **Peripheral Devices**:

**Selecting the printer**: With **Selected**.

**Prematurely printing out the data being stored for printing**: With the button **Print Now / Form Feed**.

**Stopping the printing**: In the menu **Peripheral Devices** with the button **Print Erase/Stop** (data stored for printing are deleted).

**Stopping the transfer of data to the printer**: With **Remove Printer Files**.



### CHARTPILOT as Conning Display

**Switching on the presentation of a conning display**: In the tree of the Chart mode or Conning mode with the buttons **Navigation**, **Docking** and **Keel Clearance**.

➔ For the objects displayed there, only the facts that are not self-explanatory are described here.

#### Navigation Page

**Middle part J** can be partially switched over in the menu **Navigation** within the frame **Display Mode**: **Open Sea**: Off Course **N**, Off Track **M**, XTD **H** and Speed (longitudinal speed, graphic **K**); **Harbour**: Instead of this, thrusters; **Bow Down**: Middle part inverted.

#### Non-self-explanatory data:

**Set values B** and **Next values D**: Settings for the TRACKPILOT and SPEEDPILOT

**Course scale**: Yellow triangle **C** = set course

**Off Course N** and **Off Track M**: Deviations from the track being used by the TRACKPILOT: Red lines = limits; red bar = limit exceeded (Off Track becomes XTD in the Track mode of the TRACKPILOT)

**XTD H**: Deviation from the System Track, R = ship is situated to the right of the track

**Speed K**: Bar colour: grey = speed over ground, blue = speed through the water

**Thruster**: Bar length: 100% power corresponds to half the ship's width; bar to the left = thruster pushing the ship to port

**Rudder angle L**: Yellow triangle = set rudder angle (from TRACKPILOT), red lines = rudder limit

**Pitch, shaft P**: Data from the propulsion shaft and propeller

**Clutches Q**: Yellow = engine coupled

Alternatively to the thruster, rudder angle, power, pitch, shaft, clutches:

**Azimuth thruster**: Bar length corresponds to the speed; bar red = propeller turning in reverse, ship is pushed against the ahead direction of the thruster; black triangle and number = ahead direction of the thruster; coloured background of the thruster direction: whether red means that the ship is moved to port or that the water jet is directed to port can be configured at service level; yellow triangles = set values; red circular segment = rudder limit (from TRACKPILOT)

**Three single displays on the left Q, R, S**: Selection in the menu **Navigation** with the buttons **Display 1**, **Display 2** and **Display 3**.

Operating of non-self-explanatory data:

**Wind+Set S**: The switch-over of wind speed dimension and of rel/true can be performed through the context menus of these fields; direction of the ship symbol = heading; yellow arrow = wind direction; blue arrow: direction of current; red line = present course

**Depth R**: Scaling by means of context menu; red line = alarm limit

**Recording Q**: Blue line = heading; yellow line = rudder angle or ROT, selection in the menu **Navigation** within the frame **Recording Options**

**Manoeuvre**: Overall effect of the thruster; use the context menu to select the parameter from which the display is calculated.

#### Docking Page

With the exception of the ship symbol, all data displays can be switched on/off. All settings are made in the **Docking** menu.

**Drift and Wind**: The switch-over of wind speed dimension and of rel/true can be performed through the context menus of these fields.

**Depth, Thruster**: See Navigation Page.

**History**: The last 10 ship positions; the total time period is adjusted with the sliding controller.

**Prediction**: The expected next 10 ship positions; the total time period is adjusted with the sliding controller.

**Speed**: The dimension can be set.

**Bow Up, Bow Down, Bow Left, Bow Right**: Orientation of the entire display to account for monitor arrangement (e.g. on the bridge wings):

#### Keel Clearance Page

The settings are made in the **Keel Clearance** menu.

**Depth situation under the ship**: Below the ship symbol: Grey area = the last measurements of the navigation echosounder; green bar = position of least measured depth under the ship (numerical value above as **Minimum Depth**); bar goes red = measured water depth is less than the depth alarm value.

**Trim**: – = bow is down.

**Squat**: Draught increase caused by the suction effect.

**Remaining clearance**: Least measured depth, minus the trim (if positive), heel and squat.

**Part 3**

**Generating a Passage Plan (Voyage Planning)**

The passage plan deals especially with the time aspect of a voyage. In the pre-planned track, which as the System Track should be used as a basis for the passage plan, the Arrival Attributes must be entered correctly, together with the Planned Speed values if the voyage is to take place with a non-constant speed. The following description applies for the case that the track has not yet been defined as the System Track (otherwise see System Track).

1. Call up this track for display (with the menu Tracks > Load).
2. Mark this track in the menu Tracks > Time Schedule > Loaded Tracks, and exit the menu with OK.

Perform the following settings in the menu which then opens. The parameters contained in the list can be selected and sorted after pressing the Columns button (see the Operating Instructions).

- Only the waypoints that have an Arrival Attribute are listed. If desired, all other waypoints can also be displayed with Show All.
- 3. Within the frame Time Zone, enter the time zone used for all time information.
- 4. Mark the starting point (first waypoint of the passage plan) in the list, and click on Set Departure.
- 5. Mark the arrival point and then click on Set Arrival.
- 6. Within the frame Speed Base, click on Planned to use the Planned Speed values of the track (these can be limited by a value entered in the Limit field) or on Set to use the value entered in the Value field for the entire track. Click on Apply.
- 7. Either enter the planned departure time within the frame Departure (the earliest arrival times are then computed). Or enter the planned arrival time within the frame Arrival (then the latest possible departure times are calculated). Or enter both values (the speeds are then reduced if possible). Confirm all inputs with Apply.
- 8. **Printing out this passage plan:** Click on Print, then Passage Plan.

**Passage list:** This differs from the passage plan only through a different compilation of the parameters.

**Printing out the passage list:** Click on Print, then Passage List (the passage list contains the parameters specified by the program) or click on As Configured (the passage list then contains the parameters shown in the menu and previously selected with Columns; see above).

**System Track**

If the pre-planned track to be sailed is defined as the System Track, it has the following special significance, amongst other aspects:

- It is used as the basis for track monitoring and chart monitoring.
- All track-related displays during the voyage execution (e.g. in the data displays) refer to this track.
- With a TRACKPILOT, the System Track can be sailed automatically.
- With a SPEEDPILOT, the speeds contained in the System Track or calculated from the specified ETA can be set automatically.
- The System Track can only be used in the pre-defined direction (increasing waypoint numbers).

**Defining a Track as the System Track**

➤ If a TRACKPILOT is connected, the following settings can only be made at the CHARTPILOT if the TRACKPILOT is not using the System Track data; see the Brief Operating Instructions under Track Keeping Functions. The same applies for the SPEEDPILOT.

The track must already have been called up for display. In the menu Tracks > Set System Track, mark the track and click on the OK button. The System Track is displayed in red.

➤ **Cancelling the definition of the System Track:** In the menu Tracks with the button Cancel System Track.

If the ship is located before the first waypoint of the System Track, the approach track to that waypoint is displayed automatically.

**Drawing and/or recalculating the approach track to a certain waypoint:** In the menu Tracks > Select Next Waypoint, mark the waypoint and click on the OK button.

**Checking the System Track subsequently:** If the pre-planned track was not successfully checked after the last change, the corresponding message is shown when it is defined as the System Track. **Preparing the check** (chart settings etc.): See Part 4, page 3, *Generating a Pre-planned Track, Preparation for use of the chart* (the switch-over to the Planning display mode mentioned there is not necessary). **Carrying out the check:** In the data display Track/Control T or Track/Schedule a, click with the INFO key in the field To WP V. The test result is shown in the box which then opens.

**Specifying the ETA, Calculation of the Arrival Speed by the Program**

This corresponds to the generation of the passage plan, but with entry of the present times (for details and prerequisites, see that section).

1. Mark this track in the menu Tracks > Time Schedule > System Track.

Perform the following settings in the menu which then opens.

2. Mark the arrival point and then click on Set Arrival.
3. Within the frame Speed Base, click on Planned to use the Planned Speed values of the track (these can be limited by a value entered in the Limit field) or on Set to use the value entered in the Value field for the entire track. Click on Apply.

4. Within the frame Arrival, enter the ETA, confirm with Apply. Click on Activate Schedule. The ETA is then taken over and the Arrival Speed is calculated. **Display:** In the data displays Track/Control T, Track/Schedule a and Conning E.

➤ The calculation begins with the current waypoint; in case the ship is not on the System Track, the approach track is considered. The calculation is repeated continually during the voyage and the Arrival Speed values are corrected as necessary.

**Track Monitoring**

The track monitoring compares the own position with the System Track and generates an alarm if the preset limit values are exceeded.

**Setting the alarm limit values:** Perform the settings for the alarms in the menu Alarm Settings.

➤ In systems with TRACKPILOT, the settings can only be performed at the TRACKPILOT Master; see the Brief Operating Instructions under Track Keeping Functions.

In the Course Limit field, the difference between the own course and the track direction for which the alarm COURSE LIMIT EXCEEDED appears is set. In the Track Limit field, the distance from the System Track for which the alarm TRACK LIMIT EXCEEDED appears is set. In the Waypoint Approach field, the duration of time for which the alarm APPROACHING WAYPOINT appears before the next wheel over point is reached is set.

To change the values, click on the corresponding field and enter the new value. Then click on the Apply button.

➤ The course limit and track limit values can be overwritten by the values contained in the System Track - see Part 4, page 3, *Editing the Waypoint Data*.

**Switching the alarm output on/off:** With the button Track Alarms, the output of the specified alarms can be switched on/off. If the alarm output is switched on, the button Waypoint Approach can be used to suppress the output of the APPROACHING WAYPOINT alarm.

**Data Displays**

Various data displays can be shown in the right-hand side strip.

➤ They are covered by any menus which are switched on.

**Switching the data displays on/off:** For the Chart mode: In the menu Presentations > Display Settings with Data Displays. For the Conning mode: Data displays cannot be switched off.

**Selecting a data display:** After clicking on the title button U of the data display; the data displays of the Chart mode can also be selected in the menu Presentations > Display Settings within the frame Data Displays.

**In Chart Mode and in Conning Mode:**

**The data displays Track/Control T and Track/Schedule a:** These contain, with different groupings, data of the present leg of the System Track including the data which result from the voyage planning that was performed - see page 1, *Specifying the ETA, Calculation of the Arrival Speed*.

**Data selection in the data display Track/Schedule:** With the middle button W, the data of the lower half are selected:

- **Planned Time Schedule X:** Data of the arrival point if ship sails with the Arrival Speed.
- **Actual Time Schedule:** Data of the arrival point if the ship sails with the present speed.
- **Next Leg Data Y:** Data of the next waypoint if the ship sails with the present speed.

➤ Both data displays are also available in Conning mode; there they additionally contain (at the bottom) the status messages of the TRACKPILOT with reference to the System Track.

**Only in Chart Mode:**

**The data displays Conning E and Docking b:** These are different groupings of graphic elements belonging to the displays that can be shown in Conning mode. In addition, the upper part of the data display Conning contains data on the present leg of the System Track.

**Setting possibilities:** In each case by means of the context menu of the field F, D: dimension of the wind speed and rel/true switch-over, in the data display Conning also the scaling of the depth history.

**Only in Conning Mode:**

**The data display NACOS Status G:** Status of the units of the system; for meaning, see the Operating Instructions

**The data displays Bridge Alarm System:** For content, see Alarms.

**Switching on the displays:** Click on the title button of the opened data display, select Status & Ext. Alarms, then click on the corresponding subtitles.

**TRACKPILOT and SPEEDPILOT Data**

At the CHARTPILOT, the data are located in the following displays (for an explanation of the TRACKPILOT data, see the Brief Operating Instructions *Track Keeping Functions*):

- **TRACKPILOT display M and SPEEDPILOT display D:** Mode, set values. **Switching the displays on/off:** In the menu Presentation > Display Settings within the frame Pilot Display.
- **Menu Pilot > TRACKPILOT e:** Parameterization of the TRACKPILOT
- **Menu Pilot > SPEEDPILOT f:** Parameterization of the SPEEDPILOT
- **Navigation Page** (in the Open Sea mode): Mode A, set values B and actual values, partly in graphic form
- **Data displays (Track/Control T, Conning E):** System Track data, set values and actual values.

**Maintenance**

**Cleaning/exchanging the filter pads:** Quarter-yearly; see Operating Instructions.

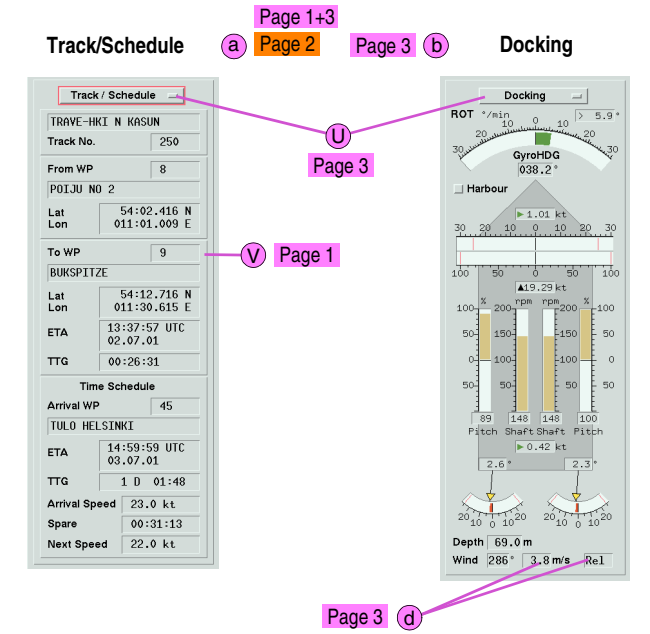
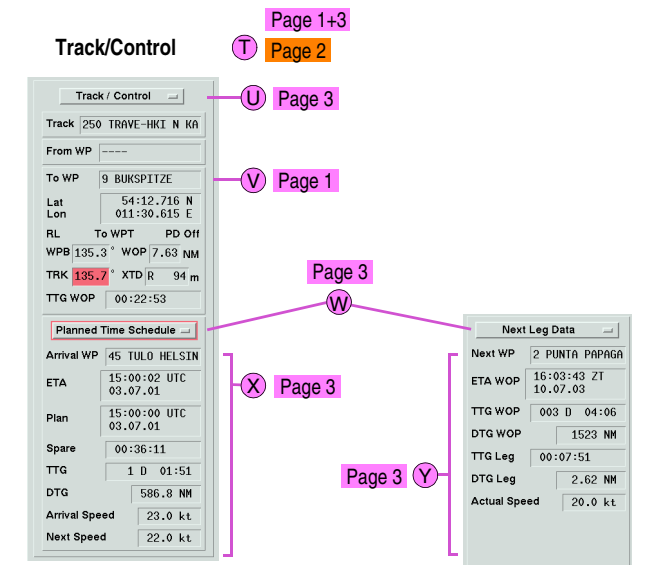
**Checking the fans:** Quarter-yearly; see Operating Instructions.

**Checking the monitor performance:** Annually. This is done to check whether the ability to recognize the symbols and other chart objects easily and clearly is impaired by a falsification of colour reproduction.

A) **Testing the grey values:** To be performed in daylight. Display the ENC, and set the colour palette to Bright Day. Open the Info box, and in the index card Legend, under ECDIS Chart 1 Presentation, click on the line Show Greyscale Test Diagram. The test bars which then appear must be displayed in graded shades of grey, and must only have very slight colour components or none at all.

B) **Testing the colour display:** This test must be performed at night with the colour palette Dark Night and also with various room brightness. Display the ENC and adjust the colour palette to suit the room brightness. Open the Info box, and in the index card Legend, under ECDIS Chart 1 Presentation, click on the line Show Colour Diff. Diagram. In all rectangles displayed, there is a diagonal line with a different colour. All lines must be clearly recognizable.

**Data Displays:**



**Pilot Menus:**

**TRACKPILOT menu e** Page 3 **Page 3 f** **SPEEDPILOT menu**

