Test Case TC59 CMG, polar performance indicators

Belongs to Plan(s): TP5 dashboard_tactics...

Belongs to Suite(s): TS21 NMEA simulator ...

Case Type: Functionality

Label(s): *click to add Label(s)*

Test Quality: **EXCELLENT** Defects Closed Fixed

Assign To: *click to add Assign To*

Case Priority: Medium

Estimate: *click to add Estimate*

Is Automated

Precondition

This is the follow-up of the test TC58 and It is recommended to continue right after it. In this test we use NMEA simulator http://www.kave.fi/Apps/ to create and control speed on water, it is also to make the apparent wind consistent with the heel (in this, pro-forma). It will be used also to provide SOG and COG needed in calculations. The NMEA Simulator not sending XDR-sentences for heel, they are generated with NMEA Converter plugin. The test polar file is coming from the examples of weather_routing_pi plugin, but it is not needed to activate that plugin or even install it, the polar file used is here, as attachment (**it shall be changed** compared to the previous test):

Example-06-24.pol

In this test we are using and testing the performance assistance Tactics functions. Of course, since we are not sailing but motoring and controlling even the wind, there is no dynamic testing possible. We take the advantage of the simulator to provide a consistent set of parameters as input to Tactics regatta processor so that we can take the time to observe if its output is consistent with the requirements and the description in the manual.

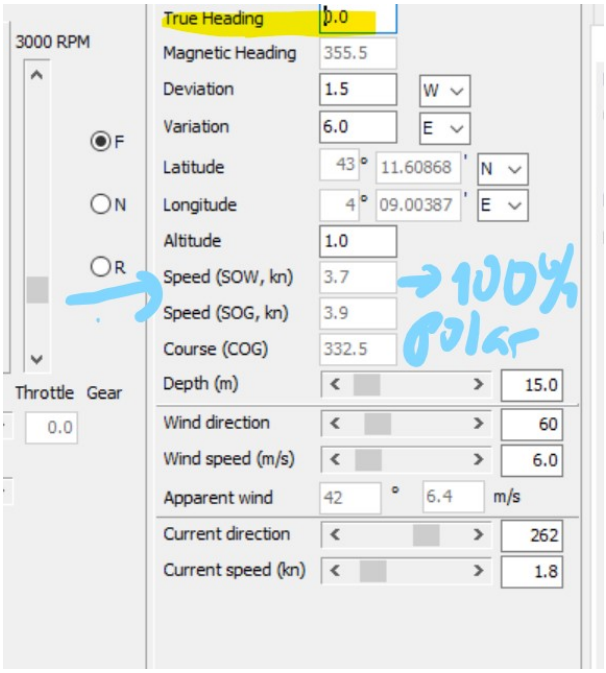
Steps

Click "**Tab**" or "**Shift + Tab**" to navigate grid

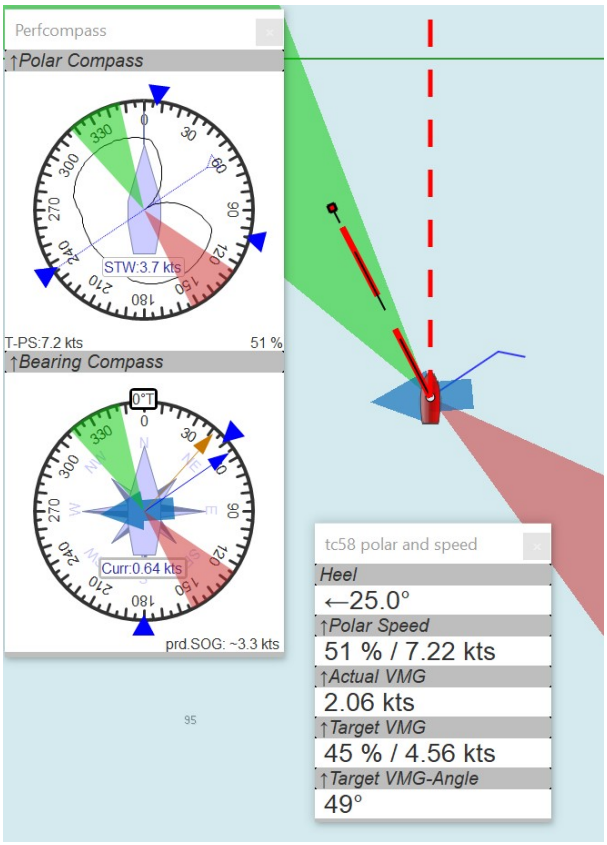
1 Close the OpenCPN application, wait until it is completely closed and edit the opencpn.ini or cnf-file. Search for the Example-06-24.pol and add manually an output file for the resulting lookup-table file, like this (again, adapt the user name based path):

```
[PlugIns/Dashboard/Tactics/Performance]
PolarFile=C:\\Users\\Petri\\opencpn\\Testplan\\ts_polaires\\Example-06
-24.pol
PolarLookupTableOutputFile=C:\\Users\\Petri\\opencpn\\Testplan\\ts_pol
aires\\Example-06-24-out.txt
```

2 We changed the polar above to one which covers our speed range. Let's do some proper "sailing" to increase the speed a bit so that the polar speed is 100 %, we want the heading to be straight to north:



Look at that Polar Speed. we need to reach that speed, put your nanny crew to work!

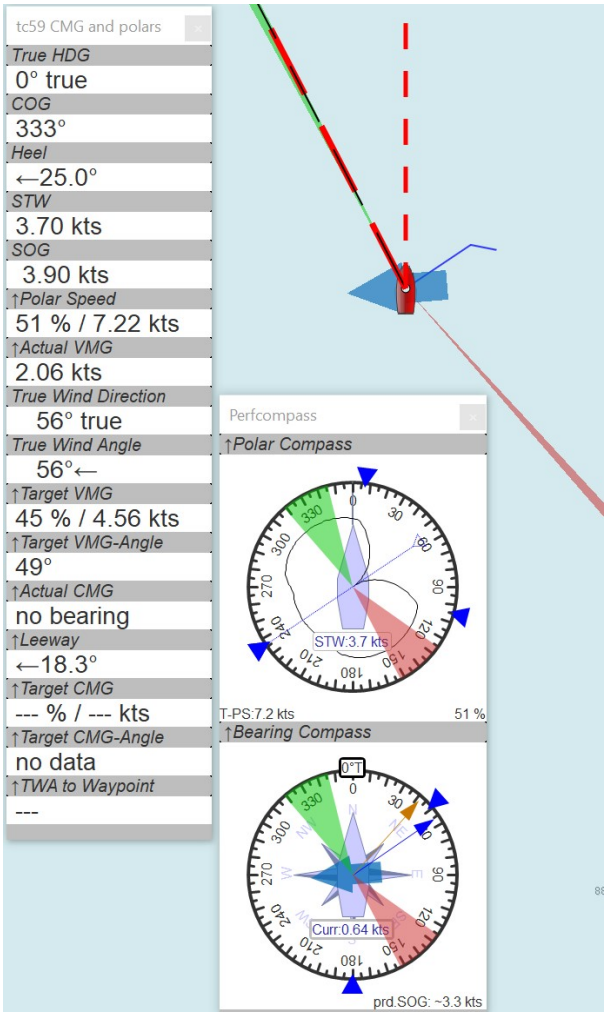


3

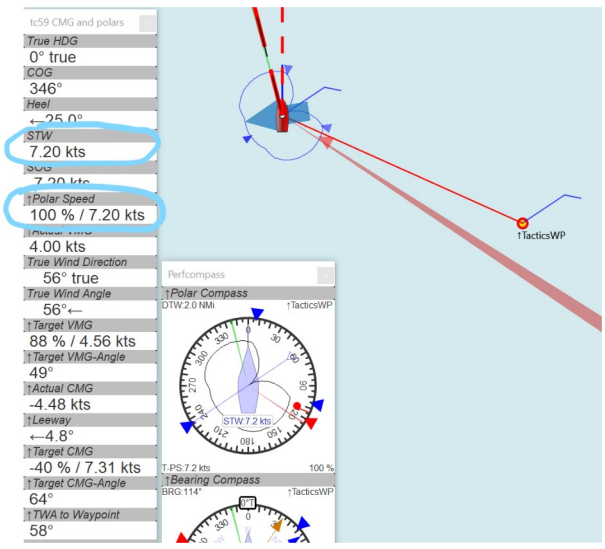
The setup needs now an instrument panel with all CMG instruments. I have prepared one here:

instruments-ini.txt

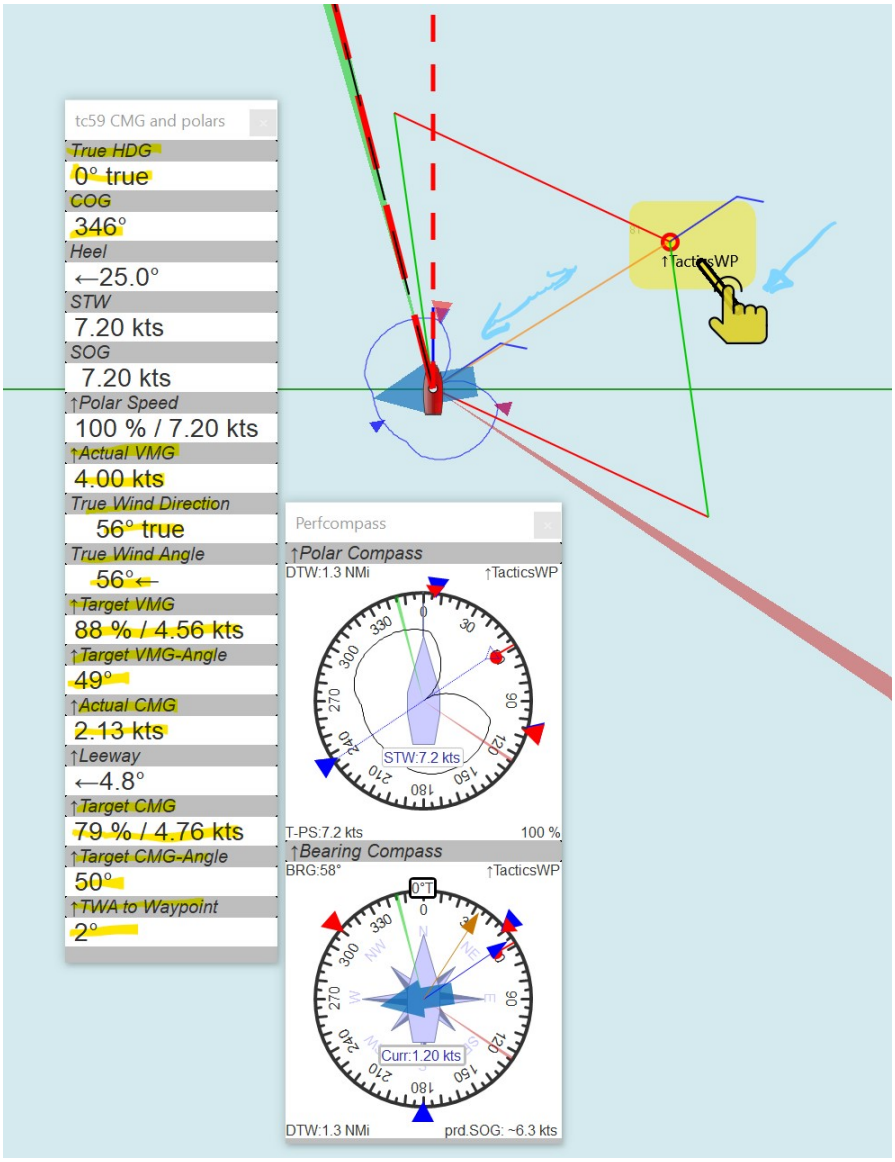
but it does not take long to prepare a test bed like this (note: you need True Wind Speed, it is in file but not in the screenshot):



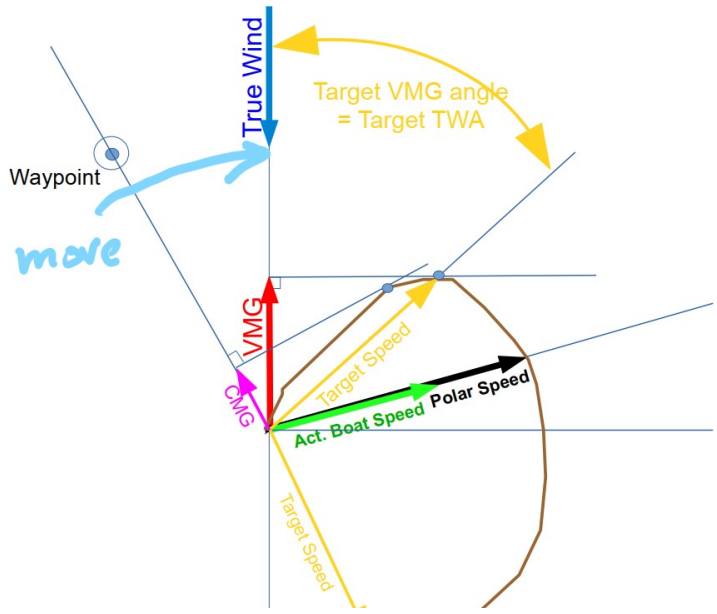
Verify at this step that we have reached the **100 %** performance efficiency. Take note that we are not advancing in optimal angle in the polar (blue arrow in the polar compass. Place a Tactics waypoint as illustrated, roughly, somewhere in the other tack:



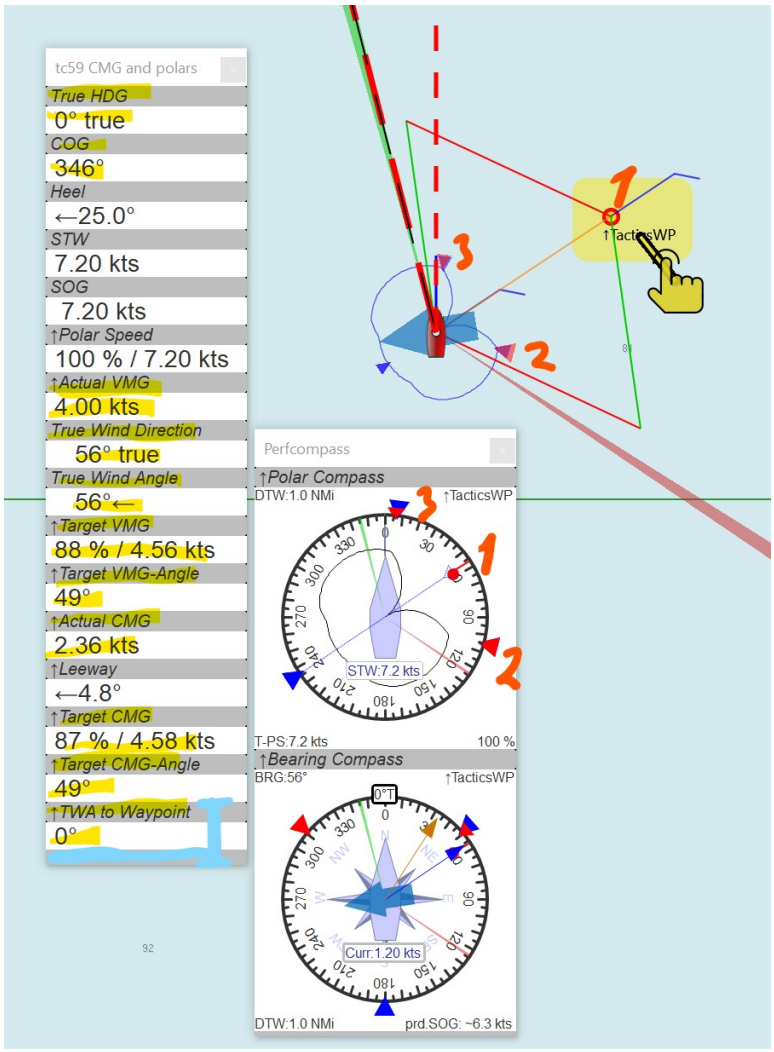
4 Move the Tactics waypoint so that it aligns with the True Wind direction. It is not easy and it will not stay there long since the boat is moving. Observe for now the TWA to Waypoint which should be close to zero.



To understand what you are doing here, and what we can expect to see as performance indicators, see this vector diagram:

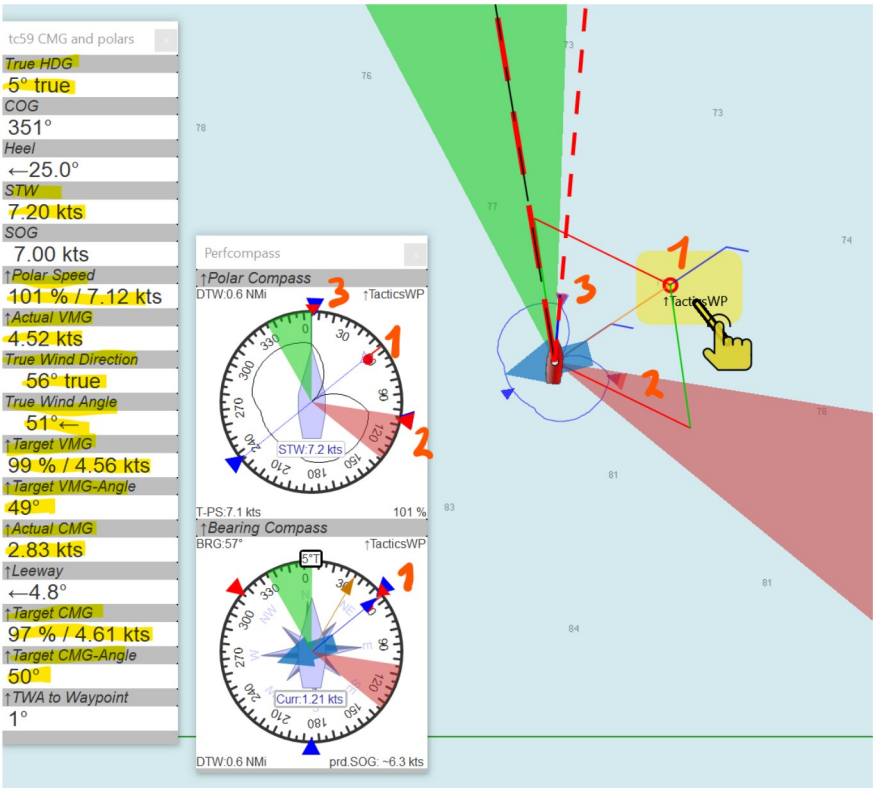


5 Is it because we are not pointing exactly towards the true wind? Let's try again:



As you can see, it is better what comes to performance towards the WP, but the bad performance is that we are not in optimal angle for the wind speed, according to the polar. See the blue arrow on polar compass.

6 Let's point five degrees more to the wind (and adjust the sails, accordingly, in our minds), new heading of the boat is resulting to 5 degrees. We increase the speed a notch, so that we are 101 % of performance! What happens in the below snapshot?



Tactics waypoint is quite accurately at the true wind's direction (1).

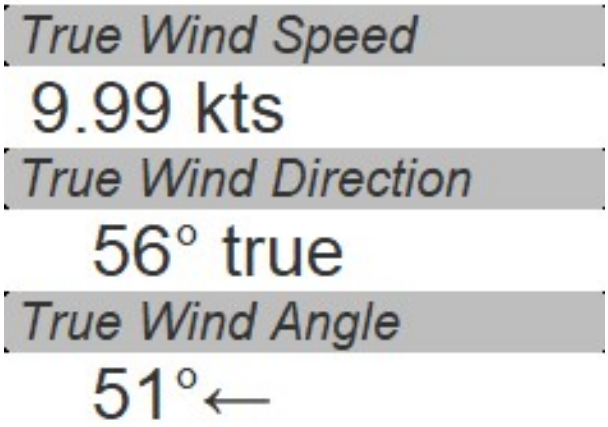
The blue arrow is now pointing hat we are now in the optimal performance angle (3), so does the red arrow on the other tack (2). This is indicated also by the Target VMG and Target CMG both being almost 100% and having the same speed, which is also the same as the Actual VMG.

You can observe that the laylines showing us the best route to the target are now in the middle of their respective laylines. Perfect harmony.

Of course, in reality we are moving only 2.83 knots towards the waypoint (Actual VMG) - we cannot never reach the required Target VMG (and here Target CMG) Angle of 50 degrees - towards the wind. But we are going there as quick as we can!

PASS or FAIL

7 Record for the polar file lookup table test which follows the true wind speed and angle from the instruments.



8 Quit OpenCPN. Go to the path where the Tactics has stored the outlook polar table, see step 1.

Open that file in as a CSV spreadsheet, TAB as separator.

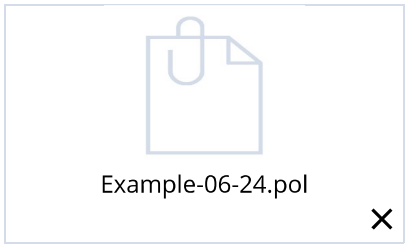
Verify the speed at TWS = 10 and TWA = 50. It shall be **7.1**. (same as the input polar file)

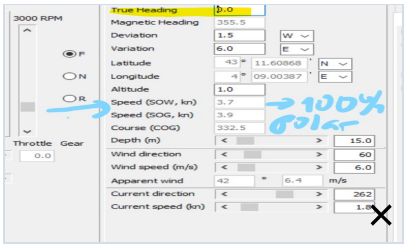
Verify the speed at TWS = 10 and TWS = 51. It shall be **7.12** (same as the optimized Polar Speed above).

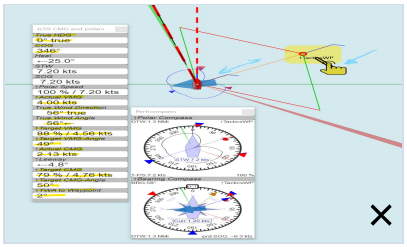
PASS or FAIL

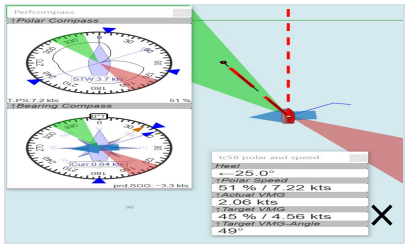
Add Step

Attachments









« ‹ 1 2 3 › »

Add Attachments

RESULTS	DEFECTS	REQUIREMENTS

Status	Test Plan Run	Assigned To	Updated At↑	Actions
✔ Pass	TPR44 dashboard_tactics_p...	Petri Makijarvi	about a year ago	
⏩ Skip	TPR47 dashboard_tactics_p...	Petri Makijarvi	about a year ago	
Pending	TPR81 dashboard_tactics_p...	Petri Makijarvi	about a year ago	
Pending	TPR82 Signal K HDG senten...	Petri Makijarvi	about a year ago	
Pending	TPR83 dashboard_tactics_p...	Petri Makijarvi	about a year ago	

« ‹ 1 2 3 › »

ACTIVITY	HISTORY	COMMENTS