

Test Case

TC50 Test Leeway Port and Starboard

Belongs to Plan(s):

TP5 dashboard_tactics...

Belongs to Suite(s):

TS18 NMEA simulator ...

Case Type:


Functionality

Label(s):

windows

linux

Test Quality:

 **GOOD** Test Case Passing

Assign To:

click to add Assign To

Case Priority:

Medium

Estimate:


15



Is Automated

Precondition

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. The NMEA Simulator not sending XDR-sentences for heel, they are generated with NMEA Converter plugin.

Steps



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

-  Select same sentences as if you would be doing True wind calculation test with STW data. 

Options

General	NMEA0183	NMEA2000	Track	Limits	
NMEA0183 Port	COM29	<input checked="" type="checkbox"/> Use list			
NMEA0183 baud rate	4800				
NMEA0183 HDx send delay (ms)	1000				
NMEA0183 sentences to be sent					
HDG	<input type="checkbox"/> Heading	RSA	<input type="checkbox"/> Rudder Sensor Angle	MWD	<input type="checkbox"/> (True wind info)
HDT	<input checked="" type="checkbox"/> True heading	MTW	<input type="checkbox"/> Mean Temperature of Water	MWV	<input checked="" type="checkbox"/> (Relative wind info)
GLL	<input checked="" type="checkbox"/> Geographic Position	DPT	<input type="checkbox"/> Depth of Water	MWV	<input type="checkbox"/> (True wind info)
RMC	<input type="checkbox"/> Recomm. Min. Nav. Info.	VHW	<input checked="" type="checkbox"/> Water speed and heading	VWR	<input type="checkbox"/> (Relative wind info)
GGA	<input checked="" type="checkbox"/> Global Pos. System Fix Data	RPM	<input type="checkbox"/> Engine RPM		
VTG	<input type="checkbox"/> Ground speed				
ZDA	<input checked="" type="checkbox"/> Time,date,UTC,dmy,time zone				



- 2  Observe the formula and the suggested Leeway factor according the Tactics documentation, here v1.0.009: 

2.2 Calculate "Leeway"

Leeway describes the drift of the boat due to the force of the wind. Leeway is the basic input for the surface current calculation described later on. Input for the leeway calculation is your heel angle. Normally you'd say : the more you heel, the more you drift . But that's only part of the truth. Other significant inputs are boat speed and the shape of your hull...

A widely (NKE, B&G,...) used formula calculates the leeway with 3 input values : heel, boat speed (STW), and hullshape-factor.

$$\text{Leeway} = \text{hullshape-factor} \cdot \text{heel} / (\text{STW} \cdot \text{STW})$$

To make this work, you have to estimate the hullshape-factor.

The attribute in the preferences is called "*Boat's Leeway factor [0..20]:*"

The input range is 0...20, **10** is a good value to start with.



- 3  Apply the leeway factor: 

Leeway

Boat's Leeway factor [0-20]:

10  


☒ Use Heel Sensor

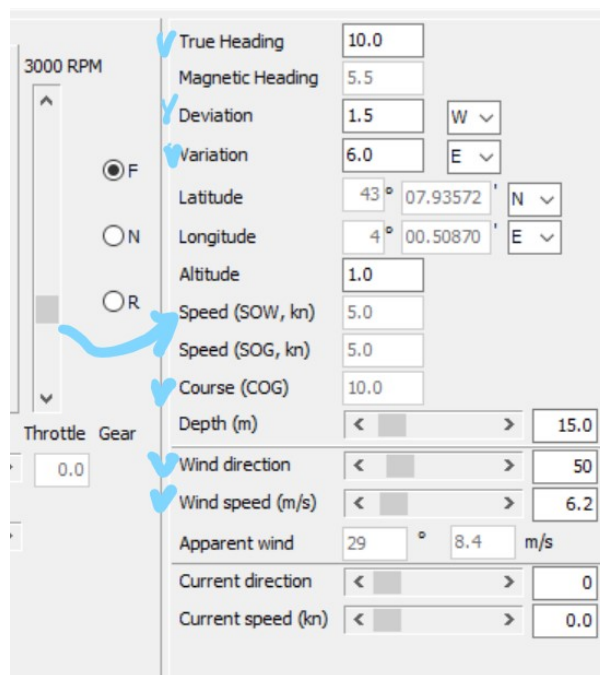
☐ fixed/max Leeway [°]:

30  

☐ manual Heel input:




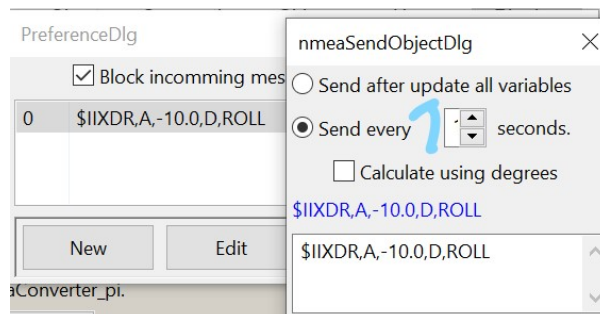
- 4  Adjust the speed on water (SOW here) with the throttle so that it is 5.0 knots. Make sure that wind direction is from starboard.



True Heading	10.0	
Magnetic Heading	5.5	
Deviation	1.5	W
Variation	6.0	E
Latitude	43° 07.93572	N
Longitude	4° 00.50870	E
Altitude	1.0	
Speed (SOW, kn)	5.0	
Speed (SOG, kn)	5.0	
Course (COG)	10.0	
Depth (m)	< 15.0	
Wind direction	< 50	
Wind speed (m/s)	< 6.2	
Apparent wind	29° 8.4	m/s
Current direction	< 0	
Current speed (kn)	< 0.0	



- 5  Using NMEA converter, make boat to heel on port side by 10 degrees. The sentence is \$IIXDR,A,-10.0,D,ROLL - copy / paste this into the NMEA converter's dialog.



PreferenceDlg

☒ Block incoming messages

0 \$IIXDR,A,-10.0,D,ROLL

New Edit

nmeaSendObjectDlg

☐ Send after update all variables


☒ Send every 1 seconds.

☐ Calculate using degrees

\$IIXDR,A,-10.0,D,ROLL


\$IIXDR,A,-10.0,D,ROLL

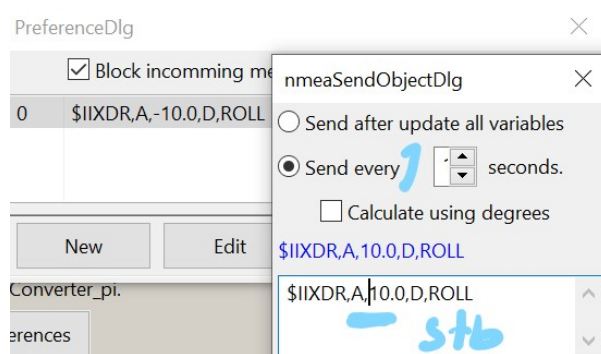


- 6  Observe the result which should be leeway to port side $10 \times -10.0 / 5^2 = -4.0$.
Observe the consistency of the arrows as depicted.



LeewayHeel
App. Wind Speed
16.33 kts
App. Wind Angle
29° ←
STW
5.00 kts
Heel
←10.0°
↑Leeway
←4.0°

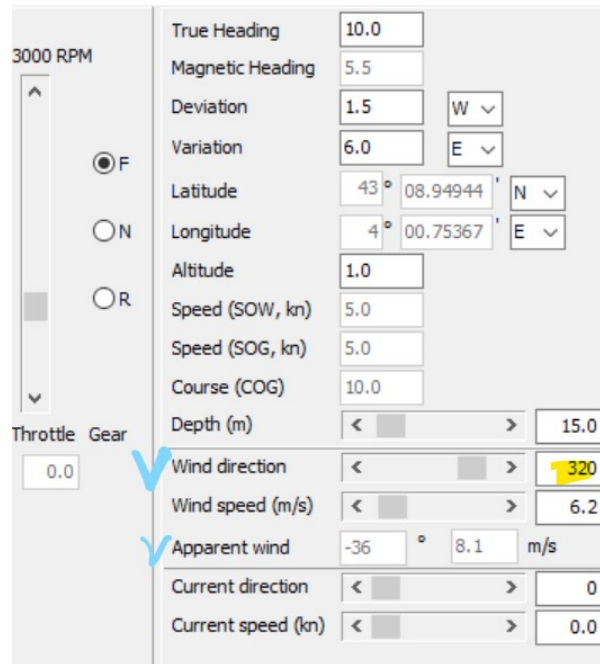
 PASS or FAIL.

- 7  Change the heel to starboard side.







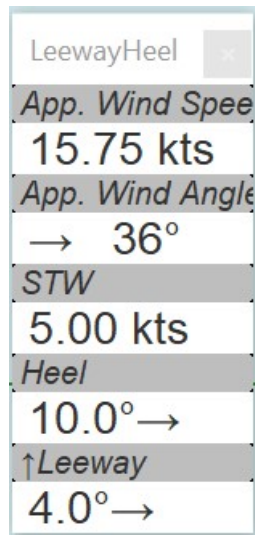
- 8  Change the direction of the wind to the port side. 



3000 RPM	True Heading	10.0
	Magnetic Heading	5.5
	Deviation	1.5 W
	Variation	6.0 E
	Latitude	43° 08.94944' N
	Longitude	4° 00.75367' E
	Altitude	1.0
	Speed (SOW, kn)	5.0
	Speed (SOG, kn)	5.0
	Course (COG)	10.0
Throttle	Depth (m)	< 15.0
Gear	Wind direction	< 320
0.0	Wind speed (m/s)	< 6.2
	Apparent wind	-36 8.1 m/s
	Current direction	< 0
	Current speed (kn)	< 0.0



- 9  Observe the result which should be leeway to port side $10 \times 10.0 / 5^2 = 4.0$. 
Observe the consistency of the arrows as depicted.



LeewayHeel
App. Wind Speed
15.75 kts
App. Wind Angle
→ 36°
STW
5.00 kts
Heel
10.0° →
↑ Leeway
4.0° →



PASS or FAIL

⊕ Add Step

Attachments

Options

General NMEA183 NMEA2000 Track Units

NMEA183 Port COM29 ☒ Use bit

NMEA183 baud rate 4800

NMEA183 Hex send delay (ms) 1000

NMEA183 sentences to be sent

HDC

☐ Heading

HDT

☒ True heading

GLL

☐ Geographic Position

GPR

☒ Depth of Water

GSA

☐ Recommended Minimum Keel Info

VIS

☐ Global Pos. System Fix Data

ZDA

☐ Ground speed

☒ Time date UTC day time zone

RSA

☐ Rudder Sensor Angle

MTW

☐ Mean Temperature of Water

DPT

☐ Depth of Water

WVR

☐ Water speed and heading

RPM

☐ Engine RPM

RWD

☐ (True wind info)

RWV

☒ (Relative wind info)

RWV

☐ (True wind info)

VWR

☐ (Relative wind info)

2.2 Calculate "Leeway"

Leeway describes the drift of the boat due to the force of the wind. Leeway is the basic input for the surface current calculation described later on. Input for the leeway calculation is your heel angle. Normally you'd say : the more you heel, the more you drift. But that's only part of the truth. Other significant inputs are boat speed and the shape of your hull... A widely (NIKE, B&G...) used formula calculates the leeway with 3 input values : heel, boat speed (STW), and hullshape-factor.

Leeway = hullshape-factor*heel*(STW*STW)

To make this work, you have to estimate the hullshape-factor.

The attribute in the preferences is called "Boat's Leeway factor [0..20]"

The input range is 0..20. 10 is a good value to start with.

Leeway

Boat's Leeway factor [0-20]: 10

☒ Use Heel Sensor

☐ fixed/max Leeway [°]: 30

☐ manual Heel input

3000 RPM

True Heading

10.0

Magnetic Heading

5.5

Deviation

1.5

Variation

6.0

Latitude

43° 07.93572' N

Longitude

4° 00.50870' E

Altitude

1.0

Speed (SOW, kn)

5.0

Speed (SOG, kn)

5.0

Course (COG)

10.0

Depth (m)

15.0

Wind direction

50

Wind speed (m/s)

6.2

Apparent wind

29

Current direction

4

Current speed (kn)

8.4

Throttle Gear

0.0

PreferenceDlg

☒ Block incoming messages

☐ Send after update all variables

☒ Send every 1 seconds

☐ Calculate using degrees

\$IIXDRA,-10.0,D,ROLL

\$IIXDRA,-10.0,D,ROLL

\$IIXDRA,-10.0,D,ROLL

New Edit

nmeaSendObjectDlg

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☒ Send every 1 seconds

☐ Calculate using degrees

\$IIXDRA,-10.0,D,ROLL

\$IIXDRA,-10.0,D,ROLL

\$IIXDRA,-10.0,D,ROLL

New Edit

LeewayHeel

App. Wind Speed 16.33 kts

App. Wind Angle 29° ←

STW 5.00 kts

Heel ← 10.0°

Leeway ← 4.0°

«

<

1

2

>

»

Add Attachments

RESULTS	DEFECTS	REQUIREMENTS		
Status	Test Plan Run	Assigned To	Updated At↑	Actions
✓ Pass	TPR34 dashboard_tactic_pi_st...	Petri Makijarvi	about a year ago	
▶▶ Skip	TPR35 dashboard_tactics_pi_...	Petri Makijarvi	about a year ago	
▶▶ Skip	TPR36 dashboard_tactics_pi_...	Petri Makijarvi	about a year ago	
▶▶ Skip	TPR37 dashboard_tactics_pi_...	Petri Makijarvi	about a year ago	
▶▶ Skip	TPR41 dashboard_tactics_pi_...	Petri Makijarvi	about a year ago	
<div>«<div><12345></div>»</div>				
ACTIVITY	HISTORY	COMMENTS		