

## Model Test Specification

<b>Hull</b>	<b>5415</b>
<b>Test type</b>	<b>Captive (CMT)</b>
<b>Water depth</b>	<b>Deep</b>
<b>Appendages</b>	<b>Appended</b>

### TEST PROGRAM

#### Series 11: Drift

##### Constant drift angle (Set 1)

Set	$\Sigma$	Vs [m/s]	n [min <sup>-1</sup> ]	$\beta$ [deg]	$\gamma$ [-]	$\delta$ [-]	$\beta$ →	-10	0	2	4	6	10	12	16	20
1	9	9.26	109.1	→	0	0		x	x	x	x	x	x	x	x	x

##### Continuous variations of drift angle (Set 4 & 5)

Set	$\Sigma$	Vs [m/s]	n [min <sup>-1</sup> ]	$\beta$ [deg]	$\gamma$ [-]	$\delta$ [-]	$\beta$ →				track
2	1	-3.09	-36.4	→	0	0	$\beta$ →	[-30 , 30]			T5-5
3	1	-3.09	36.4	→	0	0	$\beta$ →	[-30 , 30]			T5-5
4	2	3.09	0	→	0	0	$\beta$ →	[-180 , 180]			T5-3
5	2	3.09	36.4	→	0	0	$\beta$ →	[-180 , 180]			T5-3
6	1	5.56	86.2	→	0	0	$\beta$ →	[-30 , 30]			T5-1
7	1	9.26	109.1	→	0	0	$\beta$ →	[-30 , 30]			T4-11

**Series 12: Yaw****Constant yaw rate (Set 1)**

Set	$\Sigma$	$V_s$ [m/s]	$n$ [min <sup>-1</sup> ]	$\beta$ [deg]	$\gamma$ [-]	$\delta$ [-]	$\gamma$ [-] →	-0.6	-0.3	-0.1	0	0.05	0.1	0.2	0.3	0.6
1	8	9.26	109.1	0	→	0			xxx		x	x	x	x	x	

**Yaw oscillation (Set 2)**

Set	$\Sigma$	$V_s$ [m/s]	$n$ [min <sup>-1</sup> ]	$\beta$ [deg]	$\gamma$ [-]	$\delta$ [-]	$\gamma$ [-] →	-0.6	-0.3	-0.1	0	0.05	0.1	0.2	0.3	0.6
2	7	9.26	109.1	0	→	0			x	xxx	x		xxx		x	

**Multiple variation of yaw rate in one run (Set 3)**

Set	$\Sigma$	$V_s$ [m/s]	$n$ [min <sup>-1</sup> ]	$\beta$ [deg]	$\gamma$ [-]	$\delta$ [-]	$\gamma$ [-] →	-0.6	-0.45	-0.3	-0.2	0	0.2	0.3	0.45	0.6
3	9	9.26	0	0	→	0		x	x	x	x		x	x	x	x
4	15	9.26	109.1	0	→	0		x	x	xxxxx	x	x	x	xxx	x	x

**Continuous variations of yaw rate (Set 4 & 5)**

Set	$\Sigma$	$V_s$ [m/s]	$n$ [min <sup>-1</sup> ]	$\beta$ [deg]	$\gamma$ [-]	$\delta$ [-]	$\gamma$ [-] →	[-0.6 , 0]	[0 , 0.6]	track
5	2	-3.09	-36.4	0	→	0				T5-6
6	2	3.09	0	0	→	0				T5-4
7	2	3.09	36.4	0	→	0				T5-4
8	2	5.56	86.2	0	→	0				T5-2
9	2	9.26	0	0	→	0				T4-1
10	2	9.26	109.1	0	→	0				T4-1

**Series 13: Drift and yaw****Drift and constant yaw rate (Set 1)**

Set	$\Sigma$	$V_s$ [m/s]	$n$ [min <sup>-1</sup> ]	$\beta$ [deg]	$\gamma$ [-]	$\delta$ [-]	$\gamma$ [-] →	-0.6	-0.3	-0.1	0	0.05	0.1	0.2	0.3	0.6
1	8	9.26	109.1	0	→	0			xxx		x	x	x	x	x	
2	2	9.26	109.1	10	→	0					x		x		x	

**Yaw oscillation with drift (Set 2)**

Set	$\Sigma$	$V_s$ [m/s]	$n$ [min <sup>-1</sup> ]	$\beta$ [deg]	$\gamma$ [-]	$\delta$ [-]	$\gamma$ [-] →	-0.6	-0.3	-0.1	0	0.05	0.1	0.2	0.3	0.6
3	7	9.26	109.1	0	→	0			x	xxx	x		xxx		x	
4	5	9.26	109.1	10	→	0			x	x	x		x		x	

**Multiple variation of drift and yaw rate in one run (Set 3)**

Set	$\Sigma$	$V_s$ [m/s]	$n$ [min <sup>-1</sup> ]	$\beta$ [deg]	$\gamma$ [-]	$\delta$ [-]	$\gamma$ [-] →	-0.6	-0.45	-0.3	-0.2	0	0.2	0.3	0.45	0.6
5	3	9.26	109.1	-10	→	0				x		x		x		
6	9	9.26	109.1	0	→	0		x	x	x	x	x	x	x	x	x
7	3	9.26	109.1	6	→	0				x		x		x		

**Continuous variations of drift and yaw rate (Set 4)**

Set	$\Sigma$	$V_s$ [m/s]	$n$ [min <sup>-1</sup> ]	$\beta$ [deg]	$\gamma$ [-]	$\delta$ [-]	$\gamma$ [-] →	[-0.6 , 0]	[0, 0.6]	track
8	2	9.26	0	0	→	0				T4-1
9	2	9.26	109.1	0	→	0				T4-1
10	2	9.26	0	6	→	0				T4-8
11	2	9.26	109.1	6	→	0				T4-8
12	2	9.26	109.1	10	→	0				T4-9
13	2	9.26	109.1	20	→	0				T4-10
Set	$\Sigma$	$V_s$ [m/s]	$n$ [min <sup>-1</sup> ]	$\beta$ [deg]	$\gamma$ [-]	$\delta$ [-]	$\beta$ [-] →	[-30 , 30]		track
14	1	9.26	109.1	→	0	0				T4-11
15	1	9.26	109.1	→	0.1	0				T4-12
16	1	9.26	109.1	→	0.2	0				T4-13
17	1	9.26	109.1	→	0.3	0				T4-14
Set	$\Sigma$	$V_s$ [m/s]	$n$ [min <sup>-1</sup> ]	$\beta$ [deg]	$\gamma$ [-]	$\delta$ [-]	$\gamma$ [-] →	[-0.6 , 0]	[0, 0.6]	track
18	2	9.26	0	→	→	0	$\beta$ →	[5 , -10]	[-10 , -25]	T4-3
19	2	9.26	109.1	→	→	0	$\beta$ →	[5 , -10]	[-10 , -25]	T4-3
20	2	9.26	0	→	→	0	$\beta$ →	[10 , -5]	[-5 , -20]	T4-4
21	2	9.26	109.1	→	→	0	$\beta$ →	[10 , -5]	[-5 , -20]	T4-4
22	2	9.26	0	→	→	0	$\beta$ →	[15 , 0]	[0 , -15]	T4-2
23	2	9.26	109.1	→	→	0	$\beta$ →	[15 , 0]	[0 , -15]	T4-2
24	2	9.26	0	→	→	0	$\beta$ →	[20 , 5]	[5 , -10]	T4-5
25	2	9.26	109.1	→	→	0	$\beta$ →	[20 , 5]	[5 , -10]	T4-5
26	2	9.26	0	→	→	0	$\beta$ →	[25 , 10]	[10 , -5]	T4-6
27	2	9.26	109.1	→	→	0	$\beta$ →	[25 , 10]	[10 , -5]	T4-6
28	2	9.26	0	→	→	0	$\beta$ →	[-15 , 0]	[0 , 15]	T4-7
29	2	9.26	109.1	→	→	0	$\beta$ →	[-15 , 0]	[0 , 15]	T4-7

**Series 15: Drift and rudder**

Continuous variations of drift angle (Set 4)

Set	$\Sigma$	Vs [m/s]	n [min <sup>-1</sup> ]	$\beta$ [deg]	$\gamma$ [-]	$\delta$ [-]	$\beta \rightarrow$	[-30 , 30]	track
1	1	9.26	109.1	$\rightarrow$	0	0			T4-11
2	1	9.26	109.1	$\rightarrow$	0	10			T4-11
3	1	9.26	109.1	$\rightarrow$	0	20			T4-11
4	1	9.26	109.1	$\rightarrow$	0	30			T4-11

**Series 16: Yaw and rudder**

Multiple variation of yaw rate in one run (Set 3)

Set	$\Sigma$	Vs [m/s]	n [min <sup>-1</sup> ]	$\beta$ [deg]	$\gamma$ [-]	$\delta$ [-]	$\gamma$ [-] $\rightarrow$	-0.6	-0.45	-0.3	-0.2	0	0.2	0.3	0.45	0.6
1		9.26	109.1	0	$\rightarrow$	-10			x		x			x		x
2		9.26	109.1	0	$\rightarrow$	0		x	x	x	x	x	x	x	x	x
3		9.26	109.1	0	$\rightarrow$	10		x	x	x	x		x	x	x	x
4		9.26	109.1	0	$\rightarrow$	20		x	x	x	x		x	x	x	x
5		9.26	109.1	0	$\rightarrow$	30		x	x	x	x		x	x	x	x

Continuous variations of yaw rate (Set 4)

Set	$\Sigma$	Vs [m/s]	n [min <sup>-1</sup> ]	$\beta$ [deg]	$\gamma$ [-]	$\delta$ [-]	$\gamma$ [-] $\rightarrow$	[-0.6 , 0]	[0 , 0.6]	track
6	2	9.26	109.1	0	$\rightarrow$	0				T4-1
7	2	9.26	109.1	0	$\rightarrow$	10				T4-1
8	2	9.26	109.1	0	$\rightarrow$	20				T4-1
9	2	9.26	109.1	0	$\rightarrow$	30				T4-1

**Series 17: Drift, yaw and rudder**

Continuous variations of drift and yaw rate (Set 4)

Set	$\Sigma$	Vs [m/s]	n [min <sup>-1</sup> ]	$\beta$ [deg]	$\gamma$ [-]	$\delta$ [-]	$\gamma$ [-] $\rightarrow$	[-0.6 , 0]	[0 , 0.6]	track
1	2	9.26	109.1	10	$\rightarrow$	0				T4-9
2	2	9.26	109.1	10	$\rightarrow$	10				T4-9
3	2	9.26	109.1	10	$\rightarrow$	20				T4-9
4	2	9.26	109.1	10	$\rightarrow$	30				T4-9
Set	$\Sigma$	Vs [m/s]	n [min <sup>-1</sup> ]	$\beta$ [deg]	$\gamma$ [-]	$\delta$ [-]	$\beta$ [-] $\rightarrow$	[-30 , 30]		track
5	1	9.26	109.1	$\rightarrow$	0.2	0				T4-13
6	1	9.26	109.1	$\rightarrow$	0.2	10				T4-13
7	1	9.26	109.1	$\rightarrow$	0.2	20				T4-13
8	1	9.26	109.1	$\rightarrow$	0.2	30				T4-13

**Series 18: Speed Variations****Multiple velocities in one run (Set 5)**

Set	$\Sigma$	$V_s$ [m/s]	$n$ [min <sup>-1</sup> ]	$\beta$ [deg]	$\gamma$ [-]	$\delta$ [-]	$V_s$ →	0.51	1.03	1.54	2.06	2.57	3.09		track
1	6	→	109.1	90	0	0		x	x	x	x	x	x		T5-9

**Continuous variations of speed (Set 5)**

Set	$\Sigma$	$V_s$ [m/s]	$n$ [min <sup>-1</sup> ]	$\beta$ [deg]	$\gamma$ [-]	$\delta$ [-]	$V_s$ →	[0 , 12.35]	track
2	1	→	109.1	10	0	0			T5-7
3	1	→	109.1	0	0.3	0			T5-8