

<b>MINUTES OF MEETING</b>		<b>SIMMAN 2007</b>	
SIMMMAN 2007 Meeting of organizers and co-organizers no. 4		Workshop on Verification and Validation of Manoeuvring Simulation Methods www.simman2007.dk	
Participants Frans Quadvlieg (MARIN), Riccardo Broglia (INSEAN), Sun Young Kim (MOERI), Pierre Perdon (BEC), Zao-Jian Zou (SJTU), Hironori Yasukawa (Hiroshima University), Michio Ueno (NMRI), Andres Cura (HSVA), Fred Stern (IIHR), Kristian Agdrup (FORCE)			
C.C. to Takanori Hino (NMRI), Evgeni Milanov (BSHC), Suak-Ho Van (MOERI), Paolo Bulgarelli (INSEAN), Joe Gorski (NSWC), David Hess (NSWC), In-Young Koh (NSWC), Serge Toxopeus (MARIN), Adolfo Marón (CEHIPAR), Key-Pyo Rhee (Seoul National University), Joe Longo (IIHR), Yasuo Yoshimura (Hokkaido University), Claus D. Simonsen (FORCE)			
Date Oct 18, 2006	Place Jiao Tong University, Shanghai		
No. of pages 5	Minutes taken by Kristian Agdrup (FORCE)	<b>Action items</b>	
<p><b>Agenda</b> (as distributed by Stern prior to meeting):</p> <p>0. Introductory Remarks</p> <p>1. KVLCC Captive and Free Model Tests MOERI INSEAN NMRI HSVA BSHC</p> <p>2. KCS Captive and Free Model Tests CEHIPAR NMRI BSHC SVA</p> <p>3. 5415 Captive and Free Model Tests FORCE/DMI IIHR INSEAN BEC MARIN</p> <p>4. Systems Based Simulation Methods Comparisons KVLCC KCS 5415</p> <p>5. CFD Based Simulation Methods Comparisons KVLCC KCS 5415</p> <p>6. Detailed Plan for Workshop</p>		No.	Responsible
<p><b>0. Introductory Remarks</b> Stern and Agdrup welcomed attendees and reviewed Agenda.</p>			

<p><b><u>1. KVLCC Captive and Free Model Tests</u></b></p> <p><u>MOERI/PMM:</u> Kim distributed spreadsheets containing reconstructed data for all PMM tests with both KVLCC1 and KVLCC2. The spreadsheets contain non-dimensional first-order in-phase and out-of-phase force contributions. It was noted that higher order forces are necessary for several systems based methods, to be provided by Kim. Also full time series will be necessary for comparison purposes. Agdrup to send example of format to Kim, who will then reconstruct time series.</p> <p><u>INSEAN/PMM:</u> Broglia reported that appended hull PMM tests in both deep and shallow water have been finalized for KVLCC2, and the same tests for KVLCC1 are in progress and should be finalized at end of Oct. 2006. Additionally UA repeatability test for the pure yaw, pure sway, static drift and static rudder has been carried out. Both models incl. appendages will be sent to HSVA immediately after termination of tests.</p> <p><u>NMRI/CMT:</u> Ueno distributed test program for coming CMT (and PMM) tests with both KVLCC1 and KVLCC2 in scale 1:110. Tests are scheduled for Nov. 2006; test results will be made available in Jan. 2007.</p> <p><u>HSVA/free:</u> Cura informed that free model tests with both models is scheduled for Nov. 9<sup>th</sup>, provided that models are received in due time from INSEAN.</p> <p>The possibility of conducting supplementary free model tests at MARIN early 2007 is still being pursued. Quadvlieg will confirm in November whether possible.</p> <p><u>BSHC/PMM shallow:</u> Milanov not present to give update. Stern will contact him for update on status.</p>	<p>#1</p> <p>#2</p> <p>#3</p> <p>#4</p> <p>#5</p> <p>#6</p>	<p>Kim</p> <p>Agdrup/Kim</p> <p>Broglia</p> <p>Ueno</p> <p>Quadvlieg</p> <p>Stern</p>
<p><b><u>2. KCS Captive and Free Model Tests</u></b></p> <p><u>CEHIPAR/PMM:</u> Marón not present to give update. Stern reported from Marón e-mail that model has been received at CEHIPAR, some repairs are in progress and tests are scheduled for Nov 2006. Final test date to be confirmed.</p> <p>PMM test program needs to be updated including specification of heel angles.</p> <p><u>NMRI/CMT:</u> All test data has been provided by Ueno and is available on the FTP server. Ueno distributed test program of the performed tests and noted that centrifugal forces have been subtracted in the data.</p> <p><u>BSHC/free:</u> Milanov not present to give update. Cura pointed out that model must return to SVA for additional tests after CEHIPAR tests i.e. BSHC tests will have to be postponed until early 2007. Stern will contact Milanov for update.</p> <p><u>SVA/free:</u> According to Cura the analysis of the free model tests has been finalized. Agdrup to contact SVA/Steinwand to obtain data.</p>	<p>#7</p> <p>#8</p> <p>#9</p> <p>#10</p>	<p>Marón</p> <p>Agdrup</p> <p>Stern</p> <p>Agdrup</p>
<p><b><u>3. 5415 Captive and Free Model Tests</u></b></p> <p><u>FORCE/PMM:</u> Data from appended and bare hull PMM tests is available on FTP.</p> <p><u>IIHR/PMM:</u> Tests have been finalized. Data to be made available on FTP.</p>	<p>#11</p>	<p>Stern</p>

<p><u>INSEAN/PMM:</u> Tests have been finalized and report distributed by Broglia. Data to be made available on FTP.</p> <p>Joint UA work between FORCE, IIHR and INSEAN on bare hull tests is in progress.</p> <p><u>BEC/CMT:</u> Perdon reported that bare hull rotating arm tests are in progress and are scheduled to finish end of Oct 2006. Test data will be made available end Dec. 2006 and UA results in Mar 2007.</p> <p><u>MARIN/free:</u> Quadvlieg reported that the time series data is being processed and will be available approx. end Nov 2006.</p> <p>Geometry definition of appendages will be provided by MARIN and checked by IIHR before being published on web site.</p>	<p>#12</p> <p>#13</p> <p>#14</p> <p>#15</p>	<p>Broglia</p> <p>Perdon</p> <p>Quadvlieg</p> <p>Quadvlieg/ Stern</p>																																													
<p>The <b>test plan</b> is hereby updated as follows:</p>																																															
<table border="1"> <thead> <tr> <th>Hull</th> <th>PMM app. deep</th> <th>PMM app. shallow</th> <th>PMM bare deep</th> <th>PMM bare shallow</th> <th>CMT app. deep</th> <th>CMT bare deep</th> <th>Free app. deep</th> </tr> </thead> <tbody> <tr> <td rowspan="2">KVLCC1</td> <td>MOERI (1999)</td> <td rowspan="2">INSEAN (oct 2006)</td> <td>-</td> <td>-</td> <td rowspan="2">NMRI (nov 2006)</td> <td>-</td> <td rowspan="2">HSVA (nov 2006)</td> </tr> <tr> <td>INSEAN (oct 2006)</td> </tr> <tr> <td rowspan="2">KVLCC2</td> <td>MOERI (1999)</td> <td rowspan="2">INSEAN (oct 2006)</td> <td>FORCE/ INSEAN (jan 2006)</td> <td>FORCE/ INSEAN (jan 2006)</td> <td rowspan="2">NMRI (nov 2006)</td> <td>-</td> <td rowspan="2">HSVA (nov 2006)</td> </tr> <tr> <td>INSEAN (oct 2006)</td> <td>BSHC (jan 2007)</td> <td>BSHC (jan 2007)</td> </tr> <tr> <td rowspan="2">KCS</td> <td rowspan="2">CEHIPAR (nov 2006)</td> <td rowspan="2">-</td> <td rowspan="2">-</td> <td rowspan="2">-</td> <td rowspan="2">NMRI (dec 2005)</td> <td rowspan="2">-</td> <td>SVA (apr 2006)</td> </tr> <tr> <td>BSHC (jan 2007)</td> </tr> <tr> <td>5415</td> <td>FORCE (2000)</td> <td>-</td> <td>FORCE (2004) IIHR (2005) INSEAN (2005)</td> <td>-</td> <td>-</td> <td>BEC (oct 2006)</td> <td>MARIN (2000)</td> </tr> </tbody> </table>			Hull	PMM app. deep	PMM app. shallow	PMM bare deep	PMM bare shallow	CMT app. deep	CMT bare deep	Free app. deep	KVLCC1	MOERI (1999)	INSEAN (oct 2006)	-	-	NMRI (nov 2006)	-	HSVA (nov 2006)	INSEAN (oct 2006)	KVLCC2	MOERI (1999)	INSEAN (oct 2006)	FORCE/ INSEAN (jan 2006)	FORCE/ INSEAN (jan 2006)	NMRI (nov 2006)	-	HSVA (nov 2006)	INSEAN (oct 2006)	BSHC (jan 2007)	BSHC (jan 2007)	KCS	CEHIPAR (nov 2006)	-	-	-	NMRI (dec 2005)	-	SVA (apr 2006)	BSHC (jan 2007)	5415	FORCE (2000)	-	FORCE (2004) IIHR (2005) INSEAN (2005)	-	-	BEC (oct 2006)	MARIN (2000)
Hull	PMM app. deep	PMM app. shallow	PMM bare deep	PMM bare shallow	CMT app. deep	CMT bare deep	Free app. deep																																								
KVLCC1	MOERI (1999)	INSEAN (oct 2006)	-	-	NMRI (nov 2006)	-	HSVA (nov 2006)																																								
	INSEAN (oct 2006)																																														
KVLCC2	MOERI (1999)	INSEAN (oct 2006)	FORCE/ INSEAN (jan 2006)	FORCE/ INSEAN (jan 2006)	NMRI (nov 2006)	-	HSVA (nov 2006)																																								
	INSEAN (oct 2006)		BSHC (jan 2007)	BSHC (jan 2007)																																											
KCS	CEHIPAR (nov 2006)	-	-	-	NMRI (dec 2005)	-	SVA (apr 2006)																																								
							BSHC (jan 2007)																																								
5415	FORCE (2000)	-	FORCE (2004) IIHR (2005) INSEAN (2005)	-	-	BEC (oct 2006)	MARIN (2000)																																								
<p><b>4. Systems based simulation methods comparison</b></p> <p>Quadvlieg presented proposal for instructions including background and purpose, required format, namegiving of files as well as examples of files. The proposal is commendable and was generally accepted but should be revised taking the following comments into account:</p> <ul style="list-style-type: none"> <li>- data to be submitted in non-dimensional form</li> <li>- include non-dimensionalization scheme</li> <li>- predictions should be made in model scale for comparison with free model tests</li> <li>- remove reference to shallow water manoeuvres for KVLCCs</li> <li>- select one basic speed for each hull</li> <li>- include coordinate system (horizontal, body-fixed, right-handed, z down)</li> <li>- add alternative prediction methods such as RANS/trajectories and neural networks</li> </ul> <p>Quadvlieg to iterate with remaining sub-committee to revise instructions and also prepare questionnaire.</p>	<p>#16</p>	<p>Quadvlieg/KP Rhee/Perdon/ Agdrup</p>																																													

<p><b>5. CFD based simulation methods comparison</b></p> <p>Stern reviewed sub-committee meeting during 26<sup>th</sup> ONR SNH, Rome, Italy attended Stern, Cura, Gorski, Broglia, and Simonsen.</p> <p>Stern presented Hino proposal for instructions and questionnaire including base cases for comparison with captive tests (PMM) and IIHR recommendations for 5415 base cases. The following comments were made:</p> <ul style="list-style-type: none"> <li>- base cases should be extended with "Constant yaw rate" (CMT)</li> <li>- base cases should be revised for each hull as follows: <ul style="list-style-type: none"> <li>KVLCCs – Kim</li> <li>KCS – Cura</li> <li>5415 – Agdrup</li> </ul> </li> <li>- instructions for comparison with 5415 bare hull PMM including PIV data from IIHR to be added</li> <li>- remove hydrodynamic derivatives (since groups may use different models) and replace by plots of damping and inertia forces instead, Cura to send proposal</li> <li>- add description of background, objective and examples of data using Quadvlieg proposal for systems based methods as an example.</li> </ul>	<p>#17</p> <p>#18</p> <p>#19</p> <p>#20</p> <p>#21</p> <p>#22</p>	<p>Kim</p> <p>Cura</p> <p>Agdrup</p> <p>Stern</p> <p>Cura</p> <p>Hino</p>
<p><b>6. Detailed plan for workshop</b></p> <p>Stern discussed the need for following actions to be carried out within next 1-2 months in order to keep present workshop schedule:</p> <ol style="list-style-type: none"> <li>1. instructions to participants on web site</li> <li>2. missing model test data on web site</li> <li>3. second announcement sent by e-mail to all potential participants</li> </ol> <p>Agdrup presented updated program for workshop. This was generally accepted, but should be revised taking the following comments into account:</p> <ul style="list-style-type: none"> <li>- group discussions split up into 30 min chairman presentation, 30 min questions to participants, 20 min discussion</li> <li>- reduce time for model test presentation to 40 min</li> <li>- extend time for discussions</li> <li>- replace "SBM" by "Manoeuvring predictions"</li> </ul>	<p>#23</p>	<p>Agdrup</p>
<p><b>7. Action items from previous meeting</b></p> <p>The status of action items from Meeting No. 3 (see <a href="http://simman2007.dk">simman2007.dk</a>) was checked:</p> <p>#1 OK</p> <p>#2 OK</p> <p>#3 open (speed dependency on shallow water and noise problem)</p> <p>#4 open (covered by new action item #6)</p> <p>#5 OK</p> <p>#6 OK</p> <p>#7 open (new #5)</p> <p>#8 open (possibility of free model tests in large facility in Japan)<sup>1</sup></p> <p>#9 open (new #29)</p> <p>#10 OK</p> <p>#11 OK</p> <p>#12 open (new #9)</p> <p>#13 OK</p> <p>#14 open (new #30)</p> <p>#15 open (new #11)</p> <p>#16 OK</p> <p>#17 open (new #12)</p> <p>#18 OK</p> <p>#19 open (new #14 &amp; #31)</p> <p>#20 open (possibility of CMT with appended hull at MARIN)</p> <p>#21 OK</p> <p>#22 OK</p> <p>#23 OK</p> <p>#24 OK</p> <p>#25 in progress (application for ONR funding)</p>	<p>#24</p> <p>#25</p> <p>#26</p> <p>#27</p>	<p>Broglia</p> <p>Hino</p> <p>Quadvlieg</p> <p>Stern/Agdrup</p>

<sup>1</sup> This may prove too late to pursue now; however may not be necessary.

#26 open (application for EU funding) <sup>2</sup> #27 OK #28 OK #29 open (new #15)	#28	Quadvlieg
<b>8. Miscellaneous</b> Open water data as well as resistance and self-propulsion data for the used propeller/hull is necessary for some prediction methods (including MMG model). Where possible, this should be provided for each hull, as follows: KVLCC1+2 – Broglia/Ueno KCS – Cura 5415 – Quadvlieg	#29 #30 #31	Broglia/Ueno Cura Quadvlieg
<b>9. Next meeting</b> 27 <sup>th</sup> April 2007 in France (directly after ITTC MC meeting)		

---

<sup>2</sup> This may prove too late to pursue now; however may not be necessary.