MINUTES OF MEETING

SIMMAN 2007

Workshop on Verification and Validation of Manoeuvring Simulation Methods
www.simman2007.dk

SIMMMAN 2007
Meeting of organizers and co-organizers no. 3

Participants
Frans Quadvlieg (MARIN), Riccardo Broglia (INSEAN), Takanori Hino (NMRI), Evgeni Milanov (BSHC), Joe Gorski (NSWC), Andres Cura (SVA), Fred Stern (IIHR), Patrick Purtell (ONR), Claus D. Simonsen (FORCE), Kristian Agdrup (FORCE)

C.C. to
Sun Young Kim (MOERI), Suak-Ho Van (MOERI), Paolo Bulgarelli (INSEAN), Claudio Lugni (INSEAN), Mathias Vogt (HSVA), Michio Ueno (NMRI), 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), Pierre Perdon (BEC)

Date	Place
June 22, 2006	FORCE Technology, Lyngby
No. of pages: 5	Minutes taken by: Kristian Agdrup (FORCE)

	Action items No.	Responsible
1. Introductory remarks Agdrup welcomed participants and Stern gave summary of background and purpose of workshop. The planned date for the workshop was announced: **October 15th – 17th 2007** (3 days) in Copenhagen.		
2. Model Test Plan **KVLCC1+2:** - Stern reported from recent meeting in Korea that MOERI PMM data is currently being re-analysed (reconstructed). Agdrup to check with S.Y. Kim reg. delivery date.	#1	Agdrup/Kim
- Broglia enquired about missing surfaces in hull definition file (iges). Simonsen to check the iges-files on the web site and inform others.	#2	Simonsen
- Broglia announced that INSEAN appended hull PMM tests are planned for Sept-Oct 2006. Rudder and propeller are ready. Report on bare hull PMM tests will be available soon. Outstanding issues such as speed dependency on shallow water and noise due to mechanical problem of PMM will be investigated further by INSEAN/FORCE.	#3	Broglia/Lugni/ Agdrup/ Simonsen
- Milanov proposed that BSHC conduct shallow water PMM tests with (one of the) KVLCC models instead of KCS, mainly due to more appropriate model size. In the light of the mentioned issues it was decided that BSHC should perform bare hull PMM tests with the KVLCC2 model from INSEAN. These tests are tentatively scheduled for Jan 2007, to be confirmed.	#4	Milanov
- Hino distributed test program for CMT as well as limited PMM tests with KVLCC1+2, planned for Nov-Dec 2006. This test program will be put on web site. NMRI expects to make test data available via FTP-server early 2007.	#5	Agdrup
- Date for free model tests at HSVA and model transportation from INSEAN is still to be confirmed.	#6	Cura/Lugni
- In order to have a full set of free model test data for validation including a full turning circle it would be necessary to conduct tests in a larger (wider) tank. Quadvlieg will attempt to find slot for such tests at MARIN and also contact Marintek to check their possibilities. Hino will check possible facilities in Japan.	#7 #8	Quadvlieg Hino
- Open water data of the used stock propellers should be made available for participants (for MMG-model and others). This will be provided by INSEAN and NMRI, respectively, should be sent to Agdrup for publishing on web site.	#9	Broglia/Hino
- Itinerary of KVLCC1+2 models: INSEAN to HSVA – end Oct, 2006 HSVA to BSHC – dec 2006 BSHC to INSEAN – feb 2007		

KCS: - CEHIPAR was not represented at meeting, but according to e-mail from Marón the PMM tests (4DOF, appended hull) will be carried out in October (to be confirmed). Questions from Marón reg. model transportation/data format will be replied by Cura/Agdrup. - Cura explained that free model tests in SVA have been completed and results are being analysed. However due to high course instability of KCS at selected GM (0.6 m), it was not possible to perform all zig-zag tests. - Milanov announced willingness to carry out supplementary free tests at BSHC. These tests should also cover sufficient tests to enable participants to do system identification, Milanov will propose test program. Test date is tentatively set to Dec 2006. - CMT and PMM tests at NMRI have been performed. Hino distributed report incl. test program, open water data and selected results. Hino will send electronic version to Agdrup for update of web site/FTP server. - Propeller data i.e. drawing and open water curves should be made available. Cura will send data to Agdrup for publishing on web site. **- Itinerary of KCS model:** SVA to CEHIPAR – end Aug 2006 CEHIPAR to SVA – end Sept 2006 SVA to BSHC – end Nov 2006 BSHC to SVA – end Dec 2006	#10 #11 #12 #13 #14	Marón Cura/Agdrup Milanov Hino Cura
5415: - FORCE PMM test data, both appended (2000) and bare hull (2004) are now available on FTP-server. - IHHR bare hull PMM test data to be put on FTP server. Also PIV measurements are available from these tests, should be noted on web site. - INSEAN bare hull PMM test report is finalized and will be distributed by Broglia. Test data to be put on FTP server. - BEC was not present, but according to e-mail from Perdon the rotating arm tests (bare hull incl. bilge keels) will be carried out in September, to be confirmed. The model will be transported from FORCE to BEC on July 5th. - MARIN (2000) free model data should be put on FTP-server. If applicable, a subset of this data can be made available for system identification groups. Also propeller open water curves to be provided for publishing on web site. - Quadvlieg announced that MARIN is looking in to the possibility of conducting CMT with the model in the original appended configuration, to be confirmed. **- Itinerary of 5415 model:** FORCE to BEC – July 5th 2006 BEC to MARIN – ? --- Stern/Agdrup clarified as follows regarding the **costs of model transportation**: The general procedure is that shipment costs are part of the expenses involved in conducting tests, i.e. the tank that borrows the model also bears the shipment costs, usually including the transportation back to the place of origin.	#15 #16 #17 #18 #19 #20	Stern Agdrup Broglia Perdon Quadvlieg Quadvlieg

The **test plan** is hereby updated as follows:

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)	INSEAN (oct 2006)	-	-	NMRI (dec 2006)	-	HSVA (nov 2006)
KVLCC2	MOERI (1999) INSEAN (oct 2006)	INSEAN (oct 2006)	FORCE/ INSEAN (jan 2006) BSHC (jan 2007)	FORCE/ INSEAN (jan 2006) BSHC (jan 2007)	NMRI (dec 2006)	-	HSVA (nov 2006)
KCS	CEHIPAR (oct 2006)	-	-	-	NMRI (dec 2005)	-	SVA (apr 2006) BSHC (dec 2006)
5415	FORCE (2000)	-	FORCE (2004) IHHR (2005) INSEAN (2005)	-	-	BEC (sep 2006)	MARIN (2000)

3. Comparison of simulation results

It was agreed that a set of **instructions** should be set up defining the exact content and format of simulation results from the participating groups. All participants should fill out a **questionnaire** to document the used method. It is important that these documents are made available to participants via the web site as soon as possible.

CFD-based:

Instructions and questionnaire will be based on the ones used at the Tokyo CFD workshop (see http://www.nmri.go.jp/cfd/cfdws05/index.html). Hino and Gorski agreed to prepare **draft of instructions and questionnaire and send to other members of sub-committee for comparison of CFD-based methods by end of August**. Stern should also be included for co-ordination purposes. The sub-committee must then iterate and agree on **final versions for publishing on web site before next SIMMAN meeting in October**.

#21 **Hino**/**Gorski**/ Cura/Stern

Systems-based:

Quadvlieg outlined proposal for comparison of system-based simulation results. It was agreed that focus should be on ship trajectories, but that "local forces" such as hull-, propeller- and rudder forces also should be included where possible. Participants should deliver ASCII-file of time series in prescribed format, which will be post-processed by a dedicated plotting program (Matlab script or other), common for all hulls.

Quadvlieg agreed to prepare **draft of instructions and questionnaire and send to other members of sub-committee for comparison of systems-based methods by end of August**. Agdrup should also be included for co-ordination purposes. The sub-committee must then iterate and agree on **final versions for publishing on web site before next SIMMAN meeting in October**.

#22 **Quadvlieg**/ KP Rhee/Hess/ Agdrup

To enable CFD-groups to proceed as soon as possible, a set of **base cases for comparison** was defined from the PMM test programs:

	KVLCC1+2	KCS	5415
speed, Fn	0.142	0.26	0.28
static drift, β	4 deg	4 deg	4 deg
pure sway, v´	0.08	0.08	0.07
pure yaw, r´	0.4	0.4	0.3 (*)
yaw & drift, r´/ β	0.4 / 4 deg	0.4 / 4 deg	0.3 / 8 deg (*)

(*) NB. at $0.60U_0$ i.e. Fn = 0.168

4. Workshop program

Stern and Agdrup outlined two different alternatives for the program, each with different distribution of paper presentations/poster sessions/group discussions as well as length of the workshop. The following was agreed:

- participants should prepare a **poster** documenting their method i.e. with a partly fixed content, probably an extract of questionnaire items
- participants should also submit a **paper** that will be published in **proceedings** (paper and electronic format)
- main content of workshop will be **poster sessions** (where authors will present own poster at different times), **chairman presentations** (model tests and comparison results, respectively) and **group discussions**, where each participating group under each topic (e.g. KCS, systems based methods) will be given 2-4 min. to express their "most important/problematic/surprising findings"
- total length of workshop should be **3 days**
- **observers** (not participating with simulation data or other) are welcome
- participation fee will be around **500 EUR**

Based on the above the executive organizing committee will prepare new proposal for the program before next meeting (October). — #23 — Stern/Agdrup

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It was discussed who and how many participants we could expect. A rough estimate is 40-80 persons. Agdrup and Quadvlieg who will participate in the MARSIM 2006 conference (June 25-30th, Netherlands) were asked to take this opportunity to look for potential workshop participants there. — #24 — Agdrup/ Quadvlieg

5. Action items from previous meeting

The status of action items from Meeting No. 2 (see simman2007.dk) was checked:

#1 OK
#2 pending (new action item #1)
#3 pending (new #6)
#4 pending (new #6)
#5 pending (new #7)
#6 pending (new #10+11)
#7 pending (new #13)
#8 OK
#9 OK
#10 pending (new #15+17)
#11 OK
#12 OK
#13 OK
#14 OK
#15 OK
#16 OK
#17 OK
#18 OK
#19 pending (new #12)
#20 OK
#21 OK
#22 (application to ONR) pending
#23 (application to EU) pending — #25 — Stern/Agdrup
#24 OK — #26 — Quadvlieg

6. Miscellaneous - Rudder turn rate is missing on web site for KCS (2.32 deg/s) and 5415 (5 deg/s) - Definition of used coordinate system is missing on web site. (Coordinate system is as normally used in manoeuvring i.e. x-axis positive forward of midships, y-axis positive to starboard from centre line, z-axis positive down from water line.) - Appendage geometry files for 5415 as well as additional details of the performed free model test, available from MARIN, should be made available on web site.	#27 #28 #29	Agdrup Agdrup Quadvlieg/ Agdrup
7. Next meeting 18th October 2006 in Shanghai (directly after ITTC MC meeting)		
8. Post meeting update: meeting at MARSIM 2006 Date: June 27, 2006, Terschelling, the Netherlands Present: K.P. Rhee, S.Y. Kim, F. Quadvlieg, C. Simonsen, K. Agdrup Summary: Those not present at FORCE meeting were updated on decisions made including schedule and action items. Ideas were exchanged regarding item #22 (comparison of systems based simulations). To this end Rhee distributed "SNAME Mathematical-Maneuvering Model Standardized Data Sheet for ESSO 190,000 DWT Tanker" and Quadvlieg outlined proposal for instructions.		