International Conference on Marine Simulation and Ship Manoeuvrability 1996

(MARSIM' 96)

Copenhagen, Denmark 9 - 13 September 1996

Editors:

M.S. Chislett

ISBN: 978-1-62276-665-9

Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (1996) by International Marine Simulator Forum All rights reserved.

Printed by Curran Associates, Inc. (2013)

For permission requests, please contact International Marine Simulator Forum at the address below.

International Marine Simulator Forum Prof. Capt. Stephen J. Cross Maritime Institute Willem Barentsz P.O.Box 26 8880 AA, West Terschelling The Netherlands

Phone: +31 653 590001 Fax: +31 517 412111

sjcross@hetnet.nl

Additional copies of this publication are available from:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 USA

Phone: 845-758-0400 Fax: 845-758-2634

Email: curran@proceedings.com Web: www.proceedings.com

Table of contents

| Preface | |
|--|----|
| Organization | |
| 1 Simulation | |
| 1.1 Safety in navigation | •4 |
| Twenty years of marine simulator (CAORF) operations: Lessons learned during these years <i>H. Eda, F. E. Guest & J.J. Puglisi</i> | 3 |
| Effective representation of light aids to navigation in ship handling simulator <i>M.Numano</i> | 13 |
| Safety analysis for the Port of Barcelona (flammable products basin) using a real time manoeuvring simulator <i>J.R.Iribarren</i> , <i>J.M.Montero & I.Garcia-Carrasco</i> | 21 |
| 1.2 Navigation technology | |
| The simulation of tug operations in a multiple simulator environment B. K. Jakobsen, E. R. Miller, J. H. Wulder & H. Hensen | 29 |
| The potential application of virtual reality based simulators to shiphandling and marine operations <i>E.R.Miller, M.Fitch & R.Castillo</i> | 39 |
| A study on a support of decision-making for collision avoidance in INS Y.Ishioka, K. Kose, H. Kobayashi, C.Yang, S.Nakamura & H.Yamada | 49 |
| A multi vessel training system for high speed craft A.S.Christensen & P.Schjeldal Jensen | 59 |
| 1.3 Curriculum/training | |
| The need for improved curriculum development in marine simulation training <i>P.Barber</i> | 77 |

| Inland waterways training using simulation piloting L.L.Daggett | 89 |
|--|-----|
| A study of trainees' learning attitudes towards shiphandling simulator training DL.Fang | 97 |
| Simulator time and its sea time equivalence (phase I and II) J.H.Wulder, J.M.C. Schraagen, M.van Hattem & F.L.A. Bloot | 109 |
| Instruction, training and expertise advancement of pilots: The key elements in obtaining the highest possible quality of certified pilots in the Netherlands <i>H.A.Dijkhuizen, P.den Butter & B.R. Koning</i> | 125 |
| Methodology for bridge simulator skills assessment <i>S.J.Cross</i> | 145 |
| 1.4 Human factors/design | |
| Keynote lecture: Human factors and ergonomics for maritime safety <i>N. Moray</i> | 155 |
| Development of harbor capability assessment simulation system by the application of fuzzy algorithm <i>IY.Gong</i> , <i>YG.Kim</i> , <i>CM.Lee</i> , <i>JW.Kim</i> & <i>HJ.Lee</i> | 161 |
| A statistical study of mariners' behaviour in collision avoidance at sea J.Zhao, W.G.Price, P.A.Wilson & M.Tan | 169 |
| Cognitive aspects of the captain's work in a critical situation T.Clemmensen | 177 |
| Beyond bridge resource management: The risk management culture of the U.S. Coast Guard W.E. Hanson | 191 |
| 1.5 Full mission and PC simulators | |
| Insurance and simulation: The next accident that does not happen could be yours <i>P.Pols & S.Aggevall</i> | 203 |
| Computer system of simulation of ship's motion Z. Kitowski, J. Garus, B. Żak | 213 |
| Full integration simulation using both engine room and bridge simulators, design and experiences M.J.van der Marel, F.S.H.Verkerk & M.Harms | 221 |
| Applying prototype ship transit data to simulator validation <i>D.W.Webb & R.T.Wooley</i> | 225 |
| The selection and training of simulator instructors <i>J.D.Douglas</i> | 237 |

1.6 The STCW Convention

| Simulation and the revised 1978 STCW Convention D.F. Drown | 245 |
|--|-----|
| The revised STCW Convention and the new simulator performance standards: Some implications for simulator designers, operators and instructors <i>P.M. Muirhead</i> | 257 |
| An analysis of marine simulator instructors qualifications and training needs R.M.Mercer & D.Sharpe | 267 |
| The role of simulators and the qualifications of instructors and assessors under the STCW Convention <i>M.L.Barnett</i> | 275 |
| STCW 1995 redemption or receivership C.R. Pillsbury | 285 |
| 2 Manoeuvring | |
| 2.1 Manoeuvring standards | ** |
| Assessment of ship manoeuvrability based on IMO resolution No. A.751 CG. Kang & JH. Kim | 293 |
| On ship manoeuvrability estimation based on IMO resolution No. A.751(18) E.Nikolaev, T.Inutina & M.Lebedeva | 303 |
| A classification society's experience with IMO resolution No. A.751(18) A.E. Ræstad | 309 |
| 2.2 New technologies in manoeuvring | |
| Shiphandling at low speed in deep and shallow water K. Martinussen | 321 |
| New manoeuvring sea trial system using DGPS DJ.Yum, TI.Lee, HY.Lee & HW.Lee | 333 |
| Development of a collision avoidance system considering the navigation plan K.P.Rhee & H.J.Lee | 341 |
| Ability of berthing assisted by joy stick controller M. Endo, H. Kobayashi & Y. Murayama | 349 |
| A study of supporting system for berthing maneuver H. Kobayashi | 357 |
| 2.3 Prediction of hydrodynamic forces | |
| Keynote lecture: Prediction of ship manoeuvrability: State of the art <i>M. Fujino</i> | 371 |
| | |

| Measurements of stern flow field of a ship in oblique towing motion K. Nonaka, T. Nimura, T. Haraguchi & M. Ueno | 389 |
|--|-----|
| Non-linear hydrodynamic hull forces derived from segmented model tests J.P.Hooft & F.H.H.A.Quadvlieg | 399 |
| On a prediction method of hydrodynamic forces acting on ship hull including the effect of hull form <i>K.Kijima, Y.Furukawa & K.Yukawa</i> | 411 |
| Calculation of manoeuvring hydrodynamic force including the effect of viscosity Liu Zuyuan, Zhang Xiedong & Wu Xiuheng | 419 |
| Performance of an enhanced rudder force prediction model in a ship manoeuvring simulator A.F.Molland, S.R.Turnock & P.A.Wilson | 425 |
| Hydrodynamic forces on a ship moving with constant rudder angle: A theoretical treatment of rudder angle test <i>H.Yasukawa</i> , <i>Y.Yoshimura</i> & <i>K.Nakatake</i> | 435 |
| 2.4 Performance under special conditions | |
| Experimental determination and modelling of restricted water effects on bulkcarriers <i>E. Laforce & M. Vantorre</i> | 451 |
| Squat predictions for manoeuvring applications V.Ankudinov, L. Daggett, C.Huvall & C.Hewlett | 467 |
| Hydrodynamic analysis of a ship collision accident: A triple-play scenario <i>P. Kaplan</i> | 497 |
| A neural network to identify ship hydrodynamic coefficients P.Waclawek | 509 |
| On the influence of speed on the manoeuvring behaviour of a container carrier <i>P.Oltmann</i> | 515 |
| 2.5 Manoeuvring prediction | |
| Further notes on the dynamic stability parameter and the prediction of manoeuvring characteristics <i>N.H.Norrbin</i> | 527 |
| Systematic approach for ship manoeuvrability prediction <i>K. Kose, W.A. Misiag & X. Xiong</i> | 535 |
| A study on the accuracy of the recent prediction technique of ship's manoeuvrability at early design stage <i>T.Ishiguro</i> , <i>S.Tanaka</i> & <i>Y.Yoshimura</i> | 547 |
| Applications of the manoeuvring prediction program SIMSUP to meet the new IMO standards G. Capurro & P. Sodomaco | 563 |

| Neural networks applied on identification of ship motions C.Caux & P.Jean | 577, |
|---|------|
| 2.6 Mathematical modelling of ships' steering and manoeuvring behaviour | |
| A generalized math model for manoeuvring M.S.Chislett | 593 |
| Study on ship manoeuvring mathematical model in shiphandling simulator <i>Yang Yansheng</i> | 607 |
| An advanced physical-mathematical model of ship-hull hydrodynamic forces deduced from simplified vortex model during manoeuvring motion in slow speed <i>K. Karasuno & K. Maekawa</i> | 617 |
| Hydrodynamic modelling for ship manoeuvring simulation J.S. Pawlowski | 625 |
| Full scale measurements of a set of yaw/sway manoeuvring Q-indices C.G.Biancardi, D.Cavazzi, G.Graziano & M.T.Masullo | 635 |
| | ٠, |
| Author index | 643 |