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## Message from the Chairman

Since the last *ittc-news* there have been a number of changes in the membership of the Technical Committees and I would like to extend a warm welcome to the following colleagues who have been appointed to various ITTC Technical Committees: Mr. F. Winsor of IOT-NRC, Canada (Ocean Engineering Committee); Dr. R. Broglia of IINSEAN, Italy, (Manoeuvrability Committee), Dr. Ukon of NMRI, Japan (Propulsion Committee) and Dr. K. Nishimoto of University of Sao Paulo, Brazil (Assessment of Ocean Environmental Issues Specialist Committee).

I would like to record our appreciation to Dr. B.Colbourne of IOT-NRC, Canada (Ocean Engineering Committee), Dr. T. Kudo of NMRI, Japan (Propulsion Committee) and Dr C Lugni of INSEAN, Italy (Ocean Engineering Committee) for their valuable contributions to the early work of their respective committees. I would also like to record our appreciation to Dr. Maurizo Landrini of INSEAN, Italy (Manoeuvrability Committee), whose tragic death has saddened the hydrodynamics community around the world, for his valuable contributions to the early work of the Manoeuvrability Committee

I am pleased to advise you that the arrangements for the 24<sup>th</sup> ITTC are progressing well and they can be followed on the Conference website:

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<http://www.ittc.ncl.ac.uk> . The website gives details of the conference venue, hotel accommodation in Edinburgh, preliminary technical programme; planned social activities as well as membership of the technical committees and key dates for delivery of the committee reports. I would welcome your suggestions for additional information that you would like to see on the Conference website.

With the Season's Greetings and all good wishes for a Prosperous New Year.

**Atila Incecik, Chairman**  
**24th ITTC Executive Committee**

## News from the Executive Committee

The Executive Committee have formally accepted the application from Seoul National University, Korea, to become a Member of the Advisory Council.

It has been necessary for the Executive Committee to approve to election of several new Technical Committee Members. This was brought about by the untimely and tragic deaths of Dr. Kazuo Hirata from IPT Brazil and Dr. Maurizo Landrini from INSEAN Italy, as well as the resignation of several others. The new members are as follows:-

<b>Committee</b>	<b>New member</b>
Ocean Engineering	Mr. F. Winsor IOT-NRC, Canada.
Manoeuvrability	Dr. R. Broglia, INSEAN, Italy.
Propulsion	Dr. Y. Ukon, NMRI, Japan.
Assessment of Ocean Environmental Issues Specialist .	Dr. K. Nishimoto, University of Sao Paulo, Brazil.

Nominations have been received from Southern Europe, to fill the vacancy in the Ocean Engineering Committee. This has still to be approved by the Executive Committee.

It was agreed by the Executive Committee that ITTC

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should make a formal application to be granted Observer Status at the International Maritime Organisation (IMO). This is understood to be a very lengthy process.

The Executive Committee has decided to set up a working group to investigate and make a proposal for an ITTC fee.

The next meeting of the Executive Committee will take place in St John's, Newfoundland, Canada. This will be held between 9<sup>th</sup> to 13<sup>th</sup> August 2004, during the 25th ONR Symposium on Naval Hydrodynamics.

### **News from the Advisory Council**

The Advisory Council met on September 24 and 25, 2003 in Pusan, Korea in conjunction with the Conference on Numerical Ship Hydrodynamics – NSH 8

For the next two years the Council will focus on its core activities:

- Monitoring the work of technical committees
- Developing terms of reference for future technical committees
- Reviewing ITTC Recommended Procedures

At its first meeting the Council also discussed business carried over from the 23<sup>rd</sup> ITTC including development of the ITTC web site.

### ***Progress Reports from the Technical Committees***

All Technical Committees but one had provided progress reports and each one was discussed by the Council. Each Committee has been informed of the Council's comments and recommendations.

Most Committees seem to be on track regarding their tasks. However some Committees have been asked to make an assessment whether they can fulfill all tasks with their available resources and within the time frame.

### ***ITTC Web site***

The co-operation with SNAME, which hosts the ITTC web site works very well. Further improvements will be made to the website. It is also planned to start the inclusion of ITTC Conference Proceedings on the website in the near future.

### ***Date for next meeting***

The next meeting of the Council will be held on August 9 and 10, 2004 in conjunction with the ATTC meeting and the ONR Symposium in St Johns, Newfoundland

### **News from the Technical Committees**

#### ***Resistance***

The second RC meeting was held on September 26 and 27, 2003 at Busan National University, South Korea and hosted by Prof. Seung Hee Lee. All Section leaders presented summaries of the progress made, and the RC analysed the work to be done and fixed the time schedule.

As a part of Task 4: "Uncertainty analysis for towing tank measurements", the RC launched the proposal of a series of comparative tests for identifying facility biases. The invitation was sent out by mail to all the ITTC institutional members.

The DTMB 5415 Combatant model, one of the hull forms used in the Gothenburg CFD Workshop 2000, is the selected model for the tests on resistance, sinkage and trim, and wave measurement prepared to investigate facility biases, precision limits and total uncertainties. The model will be prepared into two scales (2-3 meters and 6-8 meters length) to increase the number towing tanks participating in this effort. A number of positive replies have been already received from the ITTC community.

The tasks of these comparative tests will be:

- (1) Three different types of experiments (resistance, sinkage and trim, and wave measurement) will be carried out to investigate facility biases, precision limits and total uncertainties.
- (2) Each participating institute has to investigate its experimental error sources and determine the facility biases, the precision limits and the total uncertainties following the ITTC procedures 7.5-02-01-01 Rev 00, "Uncertainty Analysis in EFD, Uncertainty Assessment Methodology" and 7.5-02-01-02 Rev 00, "Uncertainty Analysis in EFD, Guidelines for Towing Tank Tests".
- (3) The results will be submitted to the RC in standard format sheets.
- (4) The study of extrapolation to full scale errors and uncertainties is recommended.

A possibility of cooperation with the Maneuvering Committee will be discussed.

As already announced, CFD Workshop Tokyo 2005 will be held. The committee will work in close collaboration with the secretariat of the workshop, in order to contribute to the workshop, to utilize the result in Task 3: Trends in CFD, to update and improve ITTC recommended Procedure 7.5-03-01-01 "UA in CFD, Uncertainty Assessment Methodology and Procedures", and to prepare ITTC recommended Procedure 7.5-03-02-01 "UA in CFD, Examples for Resistance and Flow".

The next meeting will be held in Helsinki (Finland), on 16-17 August 2004.

### ***Propulsion Committee***

The second meeting of the Propulsion Committee was held on the 17th, 18th and 19th September 2003 in Korea, hosted by KRISO. All nine members of the Committee attended. Satisfactory progress has been made on the various tasks assigned to the Committee.

Developments in the propulsion field which have been noted and which will be reviewed in more depth include pods and waterjets (more detailed aspects of which are being dealt with by ITTC Specialist Committees), composite propellers and the use of smart materials together with transcavitating propellers. Reviews are being made of the latest developments and applications of PIV for flow measurement and high-speed cameras for measuring cavitation characteristics.

In reviewing the existing ITTC Recommended Procedures, the Committee has decided to use questionnaires to gather feedback from test tanks regarding their use of the Cavitation and Cavitation Appearance Procedures, together with the Procedures for Propulsion and Open Water tests and the Uncertainty Analyses for these tests. These questionnaires would be sent out early in 2004. The Committee has also noted that a new procedure should be developed for the testing of mixed and hybrid propulsor combinations.

The task of the Committee to develop a Procedure for specifying the accuracy of model propeller geometry is well under way and a draft of the proposed Procedure would be circulated to the tank community for comment in due course.

Steady progress had been made on reviewing the development of numerical design and analysis methods for propulsion and numerical methods for the prediction of propeller induced wake, cavitation and induced hull pressures. Similarly, work is progressing on the review of secondary thrusters and combinations of such thrusters. The work on wake wash and propulsion would be confined to the

operation of propulsors in shallow water and some progress had been made in this area.

The major Korean shipyards had provided information on design and construction activities related to large or mega containerhips and this, together with an extensive report produced by NMRI, Tokyo, is providing a good basis for the Committee's review of the problems relating to propellers for very large container ships.

The Committee has liaised with the Resistance Committee and the Specialist Committees on Power Performance Prediction and Cavitation Erosion. It will continue to liaise with these Committees, together with the Waterjet and Podded Propulsion Committees on particular items of mutual interest.

The next meeting of the Committee will be held at INSEAN, Rome, from the 31st March to the 2nd April, 2004. The final meeting will be held in November, 2004, at DTMB, Washington.

### ***Manoeuvring Committee***

The second meeting of the Maneuvering Committee (MC) was held on 27-28 October 2003 at FORCE Technology, Lyngby, Denmark and hosted by Dr. J.B. Petersen. Seven of the eight members attended. A minute of silence was held in memorial to the tragic untimely death of MC member and colleague Dr. Maurizio Landrini, INSEAN.

Past action items and progress and future plans and action items were discussed for each section of the MC report and Quality Manual (QM) procedure. Significant progress was made prior to and at the meeting on uncertainty analysis (UA) for static and dynamic PMM test QM procedure. Plans were made for collaborative UA for PMM and rotating arm tests. The importance of similar activities for free model tests was discussed and inquiries will be made for necessary institutional support to accomplish this task. It is the intention that the procedure for captive model testing will be updated with a section on rotating arm/x-y carriage tests. The MC will collaborate with the Resistance Committee on developing a new QM procedure for certification of facilities or estimating facility biases for "standard" towing tank tests. The MC report was reorganized to accommodate new sections on IMO Standards and Safety and Physics. A questionnaire will be developed and sent to ITTC members to aid the committee in its evaluation and discussion of issues related to dealing with IMO standards and safety issues. Relevant journal articles and conference proceedings were collected and assigned for each section of the MC report. Schedules were made for progress on extended outlines with

bibliographies for each section and subsections of the MC report and for updating all current QM procedures and developing the new QM procedures on UA for captive model tests. The next meeting will be held on 6-7 April 2004 at Seoul National University, Korea.

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1. Introduction
2. Progress in Systems-Based Simulations
3. Progress in CFD-Based Simulations
4. Benchmark Data
5. Progress in Model-Test Techniques
6. Scale Effects and Full-Scale Validation
7. High speed & Unconventional Vessels
8. Confined Waters
9. IMO Standards and Safety
10. Physics
11. Conclusions
12. Recommendations

QM Procedures:

- 7.5-02-01-04 Certification or Estimating Biases of Facilities
- 7.5-02-05-05 Maneuverability HSMV
- 7.5-02-06-01 Free Model Test
- 7.5-02-06-01-01 UA for Free Model Test
- 7.5-02-06-02 Captive Model Test: Static
- 7.5-02-06-02-01 UA for Static Captive Model Test
- 7.7-02-06-03 Captive Model Test: Dynamic
- 7.5-02-06-03-01 UA for Dynamic Captive Model Test
- 7.5-02-06-04 Validation Systems-Based Simulations
- 7.5-04-02-01 Full Scale Maneuvering Trials

***Ocean Engineering Committee***

A number of changes have taken place within the Committee in 2003. Dr. Carl Trygve Stansberg, MARINTEK, Norway, is the new Chairman from 1 June 2003, after Dr. Bruce Colbourne, IMD (IOT), Canada, who has resigned from the Committee. Mr. Fraser Winsor, IOT, Canada, is appointed new member from the Americas. Dr. Claudio Lugni, INSEAN, Italy, has also resigned, and a new member from South Europe is to be appointed. Dr. Martin Downie, University of Newcastle, UK, has agreed to be the Committee Secretary.

The first ordinary meeting was held in Nantes, France, 16-17 June, 2003, hosted by Ecole Centrale de Nantes. The tasks assigned to the Committee were organized into three groups:

- I. State of the Art Review
- II. Develop New Documentation or Procedures
- III. Review Existing Documentation

in the areas defined previously by the Executive Committee (EC). The Committee work will be carried out mainly in that order.

Within Task Group I - State of Art Review – the following specific topics were identified:

- 1 Predicting the behaviour of bottom founded structures
- 2 Predicting the behaviour of stationary floating structures
- 3 Predicting the behaviour of dynamically positioned ships
- 4 Modelling/simulation of wind environments
- 5 Modelling/simulation of wave and current environments in deep and shallow water
- 6 Active wave absorption and reduction of parasitic laboratory waves
- 7 Laboratory wave kinematics
- 8 Validation, and integration of model tests with numerical modelling
- 9 Prediction of roll of floaters with risers and mooring systems, including sloshing

The topics were allocated to the different members. Reviews are to be made during the fall 2003.

Activities within Task Group II – New documentation and procedures - were also discussed at the meeting. One benchmark study has already been defined by the EC, on the assessment of uncertainties in the modelling of nonlinear wave effects in a 100-year steep sea state. Whether or not other benchmark studies can be carried out is more uncertain, due to the limited time available. It is recommended that the Committee also looks into related activities carried out by other groups and projects.

Task Group III – Review of existing documentation - is well-defined and more straightforward to carry out.

It is realized by the Committee that the total amount of tasks assigned to it is probably too large within the time available, and that one must concentrate most efforts on some of the activities. In agreement with the Advisory Council (AC), a revised task list is being worked out, in line with the conclusions from the meeting in Nantes.

On the topic of Dynamic Positioning (DP), the Committee has been in communication with the ITTC Propulsion Committee / Prof. Tony Molland. It is agreed that the modelling of DP within offshore engineering falls reasonably within the area of the Ocean Engineering Committee. The two Committees will keep in touch as the work progresses.

***Committee on Stability in Waves***

The Committee had its second meeting at the Polytechnical University of Madrid, Spain, on 20 September 2003. This meeting was held in

conjunction with the 8th International Conference on Stability of Ships and Ocean Vehicles (STAB 2003).

Progress reports have been made by each task coordinator. In terms of the restructured tasks (in line with the terms of reference), the following progress has been made.

- (1) Prediction of extreme motions and capsizing of intact ships: coordinated by Dr. N. Umeda

A new intact stability benchmark study will be conducted. An inventory of available data on free-running and captive model experiments has been made. Data are available for different ship types, e.g. a purse seiner and a ro-ro vessel. The benchmark test will start in Spring 2004 with guidance for member organisations, with completion by the end of 2004. In addition, model test data and (preliminary) experimental procedures were reviewed in relation to wind effects and capsizing in breaking beam seas.

- (2) Prediction of dynamics of damaged ships: coordinated by Prof. A. Papanikolaou

A new damage stability benchmark study will be conducted. An inventory of available data on model experiments has been made. The benchmark study of numerical models will focus on roll decay, capsize and transient flooding for different ships. The benchmark test will start in April 2004 and end before the end of 2004.

- (3) Stability safety assessment: coordinated by Prof. A. Francescutto

Issues related to deterministic versus probabilistic methods for conducting stability assessment (intact and damaged) have been reviewed. The development of criteria is not an ITTC task, but relevant developments with respect to stability criteria and assessment were monitored and reviewed. This task will focus on how (ITTC) stability research will fit current trends toward performance based criteria and increasing reliance on model testing and simulation.

- (4) IMO matters: coordinated by Prof. D. Vassalos

An initial review of the IMO Guidelines for model tests for high speed craft ro-ro ferries has been carried out. Comparisons between the IMO and ITTC test procedures have been made. In a meeting in 2004, the group will finalize the review and make recommendations for improvements.

- (5) Evacuation in waves: coordinated by Prof. J. Matusiak

A review has been made of different types of life-saving appliances and systems that are relevant to ship evacuation. A literature survey has been started, which includes model testing issues.

- (6) ITTC Member survey: coordinated by Prof. S. Fan

A member survey is planned to include numerical modelling techniques and implementation of the current experimental procedures for both intact and damage stability.

The next Stability meeting will be held in Trieste, Italy, in February or March 2004 in conjunction with the intersessional meeting of the IMO Intact Stability Correspondence Group.

#### ***Committee on Assessment of Ocean Environmental Issues***

The Committee on the Assessment of Ocean Environmental Issues will hold its second meeting on January 8 and 9, 2004, at Kyushu University in Fukuoka. We will be joined at that time by a new committee member, Dr. Nishimoto of the University of Sao Paulo.

#### ***Committee on Cavitation Erosion on Propellers and Appendages on High Powered/High Speed Ships***

The committee met for the second time at the Gdansk Model Basin on the 13th and 14th of October 2003. The meeting was hosted by Leszek Wilczynski of CTO and all members of the committee were able to attend.

A productive meeting occurred with the work focusing on the three main tasks in hand with regard to the fundamental physics and scaling, requirements for a new procedure and development of guidance for designers. A literature survey indicated that most of the recent research on cavitation erosion has been on the material response to cavitation damage. Of particular interest to other members of the IttC is a workshop organized through the committee to be held at Val de Reuil, France on the 27th and 28th May 2004. The workshop will concentrate on all aspects of Cavitation Erosion and a call for contributions will be distributed shortly with a deadline for abstracts of 1st February 2004. Anyone interested should contact committee member Laurence Briancon-Marjollet (briancon@bassin.fr). A questionnaire will be distributed to members shortly survey-

ing the current practice of cavitation erosion testing. As always the committee would be grateful for responses from members.

The next committee meeting will be held immediately before the workshop on the 25th and 26th May 2004.

### ***Committee on Azimuthing Podded Propulsion***

The Committee had their second meeting in Italy, hosted by Dr Antonio Traverso of CETENA (Centro Per Gli Studi Di Tecnica Navale Spa) in October 2-3, 2003. During this meeting, which had full attendance from 9 members, the five main tasks of the committee have been studied in detail as well as other world-wide developments on Podded Propulsors in general.

As main activities of the Committee's Task 1 and 3, the existing model test procedures and extrapolation methods were reviewed and discussed for further improvements within the framework of the tentative proposal made in the 23<sup>rd</sup> ITTC Propulsor Committee report. The effect of gap on model tests is being explored paying further attention to typical values of the gap sizes in full-scale. Some new developments in pod dynamometers and alternative boat housing have been reported and discussed. The Committee felt that ITTC-78 based method can be further improved to come up with more detailed flowchart and algorithm. Since the method heavily hinges on the scaling effect correction for the pod housing, this has been explored in detail to quantify its effect. Other methods of extrapolation are also under investigation.

In Task 2, the Committee has been studying necessary amendments for podded propulsors to include in the current ITTC Recommended Procedures on "Model-Scale Cavitation Tests" and "Description of Appearances". The important issues, such as wake simulation, effect of azimuthing angle, inception, reporting patterns dedicated to podded propulsors are being amended.

In Task 4, the off design conditions in manoeuvring and other circumstances were discussed in details. These included extreme steering including cavitation effect, crash stop, acceleration, bollard pull, crabbing, operations with newly introduced CRP units and operations in ice. Particular attention has been paid to CFD based investigations.

The Committee has been reviewing the fundamental differences between the podded propulsors and conventional drives within the framework of the IMO manoeuvring criteria (Task 5). These were discussed in details by referring to some in-house

full-scale test data available with the Committee members with a view to include in the Committee report.

The Committee noticed and decided to review the studies to be presented in the 1<sup>st</sup> International Conference on the Technological Advances in Podded Propulsion (T-POD) to be held in 14-16 April, 2004 at Newcastle University. This would be extremely useful contribution to the Committee's activities since there are around 36 technical papers, which are directly related to the Committee's activities.

The next meeting of the Committee has been scheduled in June 29-30, 2004 to be hosted by Institute for Marine Dynamics, in St John's, Canada.

### ***Committee on Powering Performance Prediction***

The second meeting of the specialist Committee was held from the 1st to 3rd October, 2003 in Vienna, hosted by the Vienna Model Basin. All eight members of the Committee attended.

The tasks of the Committee entail updating ITTC procedures 7.5-04-01.1 to 7.5-04-01.6 and establishing a sea trials analysis procedure taking ISO 15016 into account. After discussing, the Committee decided to combine procedures 7.5-04-01.1 to 7.5-04-01.6 into a single procedure to remove repetitive content of the procedures.

A limited number of replies to the questionnaire on new extrapolation techniques, including use of RANS, have been received. A report of current status was discussed and the committee decided to seek further replies.

Typical extrapolation techniques have been described by the members to be utilised in the analysis of model/trial results. A spreadsheet was prepared and distributed to a number of established tanks in order to accumulate trials data. However very limited number of trials data were received by the committee in response. A substantial amount of trials data will be submitted by the Vienna model basin to be utilised in the validation analysis of the extrapolation techniques. Variations of extrapolation techniques shall be tested on this database. A procedure for direct calculation of Grigson's frictional line was prepared. An example for the uncertainty analysis of extrapolation procedures will be prepared by the committee.

Good progress is being made on the review of powering margins. The Committee continues to liaise with the Propulsion and Seakeeping Committees on areas of mutual interest. It will also be liaising with the Quality Systems Group

regarding the content, structure and final layouts of the recommended procedures.

The next meeting of the Committee will be held at CSSRC in Shanghai on the 1st, 2nd and 3th March, 2004.

### **23<sup>rd</sup> ITTC Proceedings**

The final version of the 23rd ITTC Proceedings including volume III can now be found on the website [http:// www.ittc-2002.insean.it](http://www.ittc-2002.insean.it)

CD-Rom including the Proceedings will be sent to all participants.

### **News from Member Organisations**

#### ***National Research Council, Canada***

On October the 23rd the name Institute for Marine Dynamics (IMD) was changed to Institute for Ocean Technology (IOT). The website has been changed to <http://iot-ito.nrc-cnrc.gc.ca>

The Institute for Ocean Technology and Memorial University will be joint hosts of the 27<sup>th</sup> American Towing Tank Conference (ATTC) and 25<sup>th</sup> ONR Symposium on Naval Hydrodynamics which are to be held in St. John's, Newfoundland, Canada in August 2004. The ATTC, which will be in the form of a workshop on "tankery" will be held on August 6<sup>th</sup> and 7<sup>th</sup> and the ONR Symposium from August 8<sup>th</sup> to 13<sup>th</sup>. Further information may be found at <http://www.housing.mun.ca/attc/> and <http://www.housing.mun.ca/snh/>

#### ***University of Newcastle, UK***

University of Newcastle will arrange T-pod - the 1st International Conference on Technological Advances in Pod Propulsion - April 14-16, 2004. Information and registration forms can be found at <http://tpod.ncl.ac.uk>

### **Member Organisations**

All member organisations can be found on the ITTC website. In order to maintain a correct and complete lists all members are urged to inform the AC secretary ([willem.van.berlekom@sspa.se](mailto:willem.van.berlekom@sspa.se)) of any corrections and/or updates.