

# Appendix 1

## Structure and Tasks of the 23rd ITTC Technical Committees

### 1. STRUCTURE OF THE TECHNICAL COMMITTEES

Commencing with the 22nd Conference the structure of the ITTC technical committees was changed. There are 4 General Technical Committees which are of a permanent nature. In addition, there are a number of Specialist Technical Committees dealing with detailed, well-defined tasks that can be completed in 3- or a maximum of 6-year periods. The organisation of General and Specialist Committees for the 23rd ITTC is shown in Fig. 1.

The Executive Committee will continue to establish Groups from time to time to carry out specific tasks for the Conference which are not technical issues; for example, the Quality Systems Group.

### 2. TERMS OF REFERENCE FOR THE GENERAL AND SPECIALIST TECHNICAL COMMITTEES

#### 2.1 General Committees

Each General Committee will be responsible for a general subject area. It will review the state-of-the-art, identify the need for research and development, and carry out longer term studies with broad impact.

The principal thrust of the work of the General

Committee will be to establish procedures and guidelines to help the ITTC member organisations maintain their institutional credibility with regard to quality assurance of products and services such as performance prediction and evaluation of designs. The committee will develop detailed technical plans in accordance with Conference recommendations and its work should be directed towards the techniques and understanding of physical and numerical modelling as a means of predicting full-scale behaviour. While maintaining an awareness of progress, fundamental theoretical studies and fundamental aspects of numerical fluid computation should be covered by other forum.

Each committee will submit a report on the results of its work to the Full Conference. The conclusions and the recommendations of the General Committee should be structured into three separate parts:

1. General technical conclusions.
2. Recommendations to the Conference on carrying out or reporting work requiring Conference action (e.g. testing techniques, symbols, prediction techniques, etc.)
3. Recommendations for future work of the General Technical Committee and identification of tasks which may be appropriate for Specialist Committees.

#### 2.2 Specialist Committees

Specialist Committees will be proposed by the ITTC Advisory Council. Each Specialist Committee will be responsible for studying a specific technical problem such as 'Prediction of Waterjet Performance'. The committees will be appointed for a limited duration; it is expected that they will complete their tasks within one or two ITTC periods, i.e. within 3 to 6 years. They should interact closely with the appropriate General Committees.

Each Specialist Committee will present a final report on the results of its work to the Full Conference and interim reports on progress if the duration of the committee spans more than one Conference. The conclusions and the recommendations of the Specialist Committee should be structured into three separate parts:

1. General technical conclusions.
2. Recommendations to the Conference on carrying out or reporting work requiring Conference action (e.g. testing techniques, symbols, prediction techniques, etc.)
3. Recommendations for future work and identification of tasks which may be appropriate for Specialist Committees.

### 2.3 Groups

Groups may be established from time to time by the Executive Committee to carry out specific tasks for the Conference which are not technical issues. Membership of a Group should not exceed three consecutive terms of three years, but the Executive Committee may make exceptions. Also, normally Groups shall have fewer members than the Technical Committees. Such Groups shall be disestablished upon completion of their respective task objectives.

### 3. MECHANISM FOR IDENTIFYING NEW SPECIALIST TECHNICAL COMMITTEES

As part of their terms of reference, the General Committees will be instructed to consider the need for new tasks and include appropriate recommendations in their technical reports. If the Advisory Council identifies a need for a new specialist committee when it reviews the draft recommendations of the general committees, the Council will prepare and agree a statement of the technical aims and objectives for the work of the Specialist Committee.

Independently of the recommendations of the General Committees, the Advisory Council will keep under continuous review the requirement for Specialist Committees.

When the need for a new Specialist Committee has been agreed by the Advisory Council, the draft statement of technical aims and objectives will be presented to the Executive Committee for endorsement. If the Executive Committee approves the formation of a new Specialist Committee, it will present the proposal to the Full Conference for endorsement.

### 4. TASKS OF TECHNICAL COMMITTEES AND GROUPS OF THE 23RD ITTC

#### 4.1 General Committees

##### Resistance Committee

Review the state-of-the-art, comment on the potential impact of new developments on the ITTC, and identify the need for research and development for resistance and flow. Monitor and follow the development of new experimental techniques and extrapolation methods.

Identify the requirements for new procedures, benchmark data, validation, uncertainty analyses and stimulate the necessary research for their preparation.

Develop procedures for model tests to measure sinkage and trim, wave profiles and elevations

and nominal wake, for both deep and shallow water.

Develop guidelines for model tests and extrapolation methods to predict far field waves and wash.

Procedures must be in the format defined in the Manual of ITTC Recommended Procedures and they should be included in the Committee report as separate appendices. Symbols and terminology should agree with those used in the 1999 version of the ITTC SaT List; if necessary, new symbols should be proposed.

Continue work on CFD uncertainty assessment methodology and examples, including further developments for error sources and solution techniques. Compare and evaluate the results of the application of codes of ITTC member institutes to selected examples, specifically those of the Gothenburg 2000 Workshop on CFD in Ship Hydrodynamics.

Review research and development and provide recommendations for extrapolation methods and turbulence treatment in EFD and in CFD.

Prepare an up-to-date bibliography of relevant technical papers and reports.

### **Propulsion Committee**

Review the state-of-the-art, comment on the potential impact of new developments on ITTC, identify the need for research and development in the areas of propulsors, cavitation and powering performance. Monitor and follow the development of new experimental techniques and extrapolation methods.

Review the ITTC recommended procedures, benchmark data, and test cases for validation and uncertainty analyses and update as required. In particular, the following procedures should be reviewed:

Model Scale Cavitation Pattern Tests

ITTC Procedure 4.9-0.3-03-03.1

Description of Cavitation Appearances  
ITTC Procedure 4.9-03-03-03.2.

Develop a procedure for predicting the performance of ships with azimuthing thrusters as the main propulsor.

Identify the requirements for new procedures, benchmark data, validation, uncertainty analyses and stimulate the necessary research for their preparation.

Procedures must be in the format defined in the Manual of ITTC Recommended Procedures and they should be included in the Committee report as separate appendices. Symbols and terminology should agree with those used in the 1999 version of the ITTC SaT List; if necessary, new symbols should be proposed.

Review methods for scale effects on the passive components of propulsors and for assessing screw propeller scale effects with emphasis on the occurrence of excessive laminar flow.

Review the development of numerical design and analysis methods for propulsors. Follow the developments in the modelling of unconventional and multi-component propulsors.

Review developments in experimental techniques and analytic methods for modelling the propulsive effects of propeller-rudder interaction including cavitation and cavitation effects.

Review developments in analytic and experimental methods for hydroelastic phenomena on propulsors and recommend procedures to account for hydroelastic effects in predicting and evaluating propulsor performance.

Prepare an up-to-date bibliography of relevant technical papers and reports.

## Manoeuvring Committee

Review the state-of-the-art, comment on the potential impact of new developments on ITTC, identify the need for research and development in the areas of manoeuvrability. Monitor and follow the development of new experimental techniques and extrapolation methods.

Review the ITTC recommended procedures, benchmark data, and test cases for validation and uncertainty analyses and update as required. In particular, the following procedures should be reviewed:

Manoeuvring Trials code including IMO criteria  
ITTC procedure 4.9-03-04-01

Captive Model Test Procedure  
ITTC procedure 4.9-03-04-03

Prepare a procedure for free running model manoeuvring tests including conventional and unconventional propulsion/manoeuvring devices such as Z drives and water jet propulsion.

Devise a validation procedure for manoeuvring simulation models obtained from model and/or full scale data.

Develop procedures for the evaluation and documentation of manoeuvring and control characteristics of HSMVs.

Identify the requirements for new procedures, benchmark data, validation, uncertainty analyses and stimulate the necessary research for their preparation.

Procedures must be in the format defined in the Manual of ITTC Recommended Procedures and they should be included in the Committee report as separate appendices. Symbols and terminology should agree with those used in

the 1999 version of the ITTC SaT List; if necessary, new symbols should be proposed.

Review methods for predicting manoeuvring in shallow and confined waters.

Prepare an up-to-date bibliography of relevant technical papers and reports.

## Loads and Responses Committee

Review the state-of-the-art, comment on the potential impact of new developments on ITTC, identify the need for research and development in the areas of seakeeping and offshore engineering. Monitor and follow the development of new experimental techniques and extrapolation methods.

Review the ITTC recommended procedures, benchmark data, and test cases for validation and uncertainty analyses and update as required. In particular, the following procedures should be reviewed:

Seakeeping Experiments  
ITTC Procedure 4.9-03-05-02.1

Predicting Power increase in Irregular Waves from Model Experiments in Regular Waves  
ITTC Procedure 4.9-03-05-02.2

Experiments on Rarely Occurring Events  
ITTC Procedure 4.9-03-05-02.3

Analysis Procedure for Regular Wave Tests  
ITTC Procedure 4.9-03-05-03.2

Model Testing on Tanker Turret Systems  
ITTC Procedure 4.9-03-05-03.3

Develop a procedure for the validation of seakeeping computer codes.

Identify which procedures could be developed for offshore testing.

Identify the requirements for new procedures, benchmark data, validation, uncertainty analyses and stimulate the necessary research for their preparation.

Procedures must be in the format defined in the Manual of ITTC Recommended Procedures and they should be included in the Committee report as separate appendices. Symbols and terminology should agree with those used in the 1999 version of the ITTC SaT List; if necessary, new symbols should be proposed.

Review progress in experimental and numerical hydroelastic problems including risers, very large floating structures and HSMVs.

Prepare an up-to-date bibliography of relevant technical papers and reports.

## 4.2 Specialist Committees

### Committee on Speed and Powering Trials

Review and update the following ITTC procedure based on the recommendations of the 22nd ITTC Trials and Monitoring Committee and given in Section 4 and Appendix 1 of the report of the Committee:

Guide for Speed/Powering Trials  
ITTC Procedure 4.9-03-03-01.3

Include instrumentation and environmental effects.

Take into account the recommendations of ISO TC8 SC9 WG2 committee's Committee Draft 15016.

The procedure must be in the format defined in the Manual of ITTC Recommended Procedures and it should be included in the Committee report as a separate appendix. Symbols and terminology should agree with those used in the 1999 version of the ITTC

SaT List; if necessary, new symbols should be proposed.

### Committee on Procedures for Resistance, Propulsion and Propeller Open-Water Tests

Update the following procedures (including validation and uncertainty analysis) for conventional ships and include high speed ships such as planing and semi-planing monohull and multi-hull vessels:

Ship Models

ITTC Procedure 4.9-02-01-01

Resistance Test

ITTC Procedure 4.9-03-02-01

Propulsion Test

ITTC Procedure 4.9-03-03-01.1

Open Water Test

ITTC Procedure 4.9-03-03-02.1

Resistance Test for HSMVs

ITTC Procedure 4.9-03-03-05.1

Procedures must be in the format defined in the Manual of ITTC Recommended Procedures and they should be included in the Committee report as separate appendices. Symbols and terminology should agree with those used in the 1999 version of the ITTC SaT List; if necessary, new symbols should be proposed.

### Committee on the Validation of Waterjet Test Procedures

Perform a series of standardisation experiments as presented in the report of the 22nd Waterjets Committee. This study would be performed on a voluntary basis, by participating ITTC experimental facilities and other interested parties such as waterjet manufacturers. The major goals of the study are to obtain cross validation of test techniques, correlation with numerical predictions, comparison of results

between laboratories, and to perform a comprehensive measurement uncertainty analysis.

Carry out three different types of experiments to investigate and validate the methods currently used to estimate the powering characteristics of a waterjet-propelled ship. These three experiments, the waterjet pump loop, the waterjet/inlet water tunnel, and towing basin self-propulsion tests using both the momentum flux and direct measurement methods, will be performed by the participants, as appropriate.

Document procedures and nomenclature for the performance of both the waterjet loop test and waterjet/inlet test. The successful estimation of powering performance of the waterjet is dependent upon these quasi open-water characteristics of the pump and inlet.

Procedures must be in the format defined in the Manual of ITTC Recommended Procedures and they should be included in the Committee report as separate appendices. Symbols and terminology should agree with those used in the 1999 version of the ITTC SaT List; if necessary, new symbols should be proposed.

### **Committee on Cavitation Induced Pressures**

Develop and validate practical experimental and numerical prediction procedures for unsteady hull pressure, including the method using propeller cavitation volume time-variation.

Procedures must be in the format defined in the Manual of ITTC Recommended Procedures and they should be included in the Committee report as separate appendices. Symbols and terminology should agree with those used in the 1999 version of the ITTC SaT List; if necessary, new symbols should be proposed.

### **Committee on Water Quality and Cavitation**

Review the development and recommend guidelines for the water quality measurements and conditions to minimise scale effects in cavitation.

Review the techniques and procedures for controlling and adjusting water quality characteristics in cavitation test facilities.

Review the development of new extrapolation methods for cavitation inception data with regard to water quality parameters.

Carry out a study of flow mechanisms and related physical parameters that affect cavitation intermittence and cavitation instability. Include the effect of off-design conditions.

Procedures must be in the format defined in the Manual of ITTC Recommended Procedures and they should be included in the Committee report as separate appendices. Symbols and terminology should agree with those used in the 1999 version of the ITTC SaT List; if necessary, new symbols should be proposed.

### **Ice Committee**

Update the following procedures for carrying out model tests in ice:

General Guidelines for Ice Model Testing  
ITTC Procedure 4.9-03-03-04.1

Ice Resistance Test in Level Ice  
ITTC Procedure 4.9-03-03-04.2.1.

If there is sufficient time, also update the existing ITTC Procedures concerning ice testing.

The updated procedures should include uncertainty analysis and validation.

Procedures must be in the format defined in the Manual of ITTC Recommended Procedures and they should be included in the Committee report as separate appendices. Symbols and terminology should agree with those used in the 1999 version of the ITTC SaT List; if necessary, new symbols should be proposed.

Review developments in ice model testing and prepare an up-to-date bibliography of relevant technical papers and reports.

### **Waves Committee**

Review and update recommended wave spectra including 2-parameter spectra, short crested seas, fetch limited, bi-modal spectra, and finite depth spectra.

Examine wave generating procedures with respect to wave quality in both deep and shallow water and develop guidelines for spectral quality during model tests.

Procedures must be in the format defined in the Manual of ITTC Recommended Procedures and they should be included in the Committee report as separate appendices. Symbols and terminology should agree with those used in the 1999 version of the ITTC SaT List; if necessary, new symbols should be proposed.

The compatibility of ITTC and coastal engineering practices for modelling shallow and finite water depth should be investigated. The committee must consult with IAHR.

### **Committee on Stationary Floating Systems**

Evaluate techniques and recommend procedures for the experimental and numerical simulation of stationary floating systems in wind, waves and currents including hybrid-testing techniques and deep-water current profiles.

Report on the progress of full dynamic positioning (DP) systems and DP assisted deep sea mooring and develop procedures for model testing DP systems.

Procedures must be in the format defined in the Manual of ITTC Recommended Procedures and they should be included in the Committee report as separate appendices. Symbols and terminology should agree with those used in the 1999 version of the ITTC SaT List; if necessary, new symbols should be proposed.

### **Esso Osaka Committee**

Continue the analysis of the Esso Osaka benchmark data in the following areas and organise a workshop to present the Esso Osaka benchmark data and the results of the analysis:

- a) Reduce the scatter in existing data either by eliminating suspect data sets, or by stimulating new, benchmark quality experiments.
- b) Compare propeller and rudder forces and propeller-hull-rudder interactions.
- c) Carry out a systematic series of simulations using one reference mathematical model (e.g. MMG with fixed propeller and rudder forces and interactions) using available sets of hull damping coefficients (linear and non-linear).
- d) Compare the results of these systematic simulations with available track data; and particularly the full scale trials data.

### **Committee on Prediction of Extreme Ship Motions and Capsizing**

Co-ordinate a comparative study of mathematical models for the prediction of intact and damaged stability in waves. The mathematical models will be compared to the results of benchmark tests for the two test ships, Ships A and B, as specified in Section 7.2 of

the report of the Stability Committee of the 22<sup>nd</sup> ITTC.

Present the guidelines for experimental testing of intact and damaged stability, as given in Appendix A of the report of the Stability Committee of the 22<sup>nd</sup> ITTC, in the format defined in the ITTC Quality Manual.

Procedures must be in the format defined in the Manual of ITTC Recommended Procedures and they should be included in the Committee report as separate appendices. Symbols and terminology should agree with those used in the 1999 version of the ITTC SaT List; if necessary, new symbols should be proposed.

### 4.3 Group

#### Quality Systems Group

Develop guidelines for carrying out benchmark tests.

Collect procedures for calibration of instrumentation and measuring equipment.

Adapt the ITTC Quality Manual to the new standard when ISO 9000 is updated.

Support the technical committees in the development of procedures.

Evaluate the implementation of procedures.

Incorporate changes to existing procedures as provided for in:

Procedure for Adoption or Modification of Recommended Procedures  
ITTC Procedure 4.5-01

Develop a procedure for updating the Symbols & Terminology List.

**Fig. 1 23rd ITTC TECHNICAL COMMITTEES AND GROUP**

**1999-2002**

<b>GENERAL COMMITTEES</b>
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<b>SPECIALIST COMMITTEES</b>
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<b>GROUP</b>
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Resistance	Speed and Powering Trials	Quality Systems
	Procedures for Resistance Propulsion and Propeller-Open-Water Tests	
Propulsion	Validation of Waterjet Test Procedures	
	Cavitation Induced Pressures	
Manoeuvring	Water Quality and Cavitation	
	Ice	
	Waves	
	Stationary Floating Systems	
Loads and Responses	Esso Osaka	
	Prediction of Extreme Ship Motions and Capsizing	



## Members of the 23rd ITTC Technical Committees

(\*: chair)

Committee	America	Central Europe	East Asia	Nothern Europe	Pacific Islands	Southern Europe
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