

REPORT OF THE INFORMATION COMMITTEE

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I. GENERAL

1. MEMBERSHIP AND MEETINGS

The committee appointed by the 16th ITTC consisted of the following members:

Dr.Ir. M.W.C. Oosterveld - Chairman
 Prof. B. Johnson
 Mr. G.K. Knight
 Dr. T. Koyama
 Prof. Dr. S. Marsich
 Dr. E. Nikolaev
 Dr. N.H. Norrbin
 Mr. M. Perez-Sobrin
 Prof. Dr.-Ing. M. Schmiechen.

At the end of the 16th ITTC an informal meeting of the committee was held and Mr. Knight was elected as secretary.

The committee has met 4 times since the 16th Conference:

Genoa	January 1982	8 attending
Tokyo	October 1982	7 attending
Madrid	Sept. 1983	9 attending
Annapolis	January 1984	6 attending.

2. RECOMMENDATIONS OF THE 16TH ITTC

The Conference made the following recommendations regarding the work of the committee.

2.1. The Information Committee should request all Technical Committees to prepare draft proposals for the revision and extensions of their respective sections of the Standard Symbols. The Information Committee should then revise the list of symbols accordingly and arrange for publication.

2.2 The Information Committee should request all Technical Committees to draft proposals for the revision and extension of their respective sections of the ITTC Dictionary of Ship Hydrodynamics. New sections are to be drafted where appropriate. The Information Committee should subsequently incorporate these drafts into a new edition of the dictionary.

2.3 The Information Committee should continue co-operation with other international organizations to achieve common agreement on symbols and terminology.

2.4 The Information Committee should keep the Catalogue of Facilities up to date.

2.5 A group discussion on new hydrodynamic test facilities and new instrumentation systems and techniques should be organised by the Information Committee and suitably documented by the Organising Committee for the next Conference.

2.6 The Catalogue of Computer Programs for the exchange of software should be maintained by the Information Committee.

2.7 The Information Committee should continue to monitor future developments in the field of data base management systems so that it can assist the Technical Committees in the exchange of data.

2.8 It is recommended that ITTC member organizations adopt the format described in Appendix 3 16th ITTC Proceedings as a standard for the exchange of seakeeping data on computer compatible media, between ITTC member organizations.

2.9 Standard formats for the exchange of other types of data on computer compatible media should be developed by the Technical Committees in co-operation with the Information Committee as specific requirements arise.

2.10 It is recommended that the Executive Committee considers

asking the Technical Committees to provide sufficiently detailed tables of contents for the subjects covered in their respective reports. The format for these should be specified by the Organising Committee for each Conference.

2.11 The Information Committee should consider the adoption of a keyword system for the indexing of publications in the fields of interest to ITTC member organizations.

2.12 The Information Committee should continue to publish the ITTC Newsletter.

II. REVIEW OF METHODS FOR THE PRESENTATION AND EXCHANGE OF INFORMATION OF IMPORTANCE TO THE ITTC

1. INTRODUCTION

The major work of the Information Committee consists of the development of the ITTC Standard Symbols and the ITTC Dictionary of Ship Hydrodynamics and the periodic revision of these documents in order to keep them up to date, the organisation of procedures for the exchange of information on towing tank systems and techniques, and the development of standard systems for the presentation of data.

Considerable effort has been spent in reviewing the current ITTC Standards Symbols and the Dictionary of Ship Hydrodynamics. Extensive changes are required to the former and proposals will be found later in this report. The Committee is pleased to report the translation of the dictionary into both Russian and Chinese by Krylov Ship Research Institute and China Scientific Ship Research Centre respectively, and

the development of multilingual indices. With regard to the exchange of information the Committee has continued publication of the Newsletter and updating the Catalogue of Facilities, but little interest has been forthcoming from ITTC member organizations for the Material of Interest section and the Catalogue of Computer Programs.

On the subject of standard systems for the presentation of data, the development of data bases for model test and ship trial data have been monitored, but due to rapid technological advances it is not possible for the Committee to recommend a particular format at this time. The Committee has also considered the development of a standard format for Hull Definition and some existing systems have been reviewed.

The Information Committee has considered

ways of providing more efficient access to the information stored in the Proceedings of the previous ITTC-Conferences. The conclusion was that the adoption of an INDEX OF ITTC-DOCUMENTS may be helpful in this respect. This index, which should be updated before each Conference, includes documents concerning the operation of the ITTC, ITTC-Proceedings, ITTC-Publications and ITTC-Addresses.

To assist in the exchange of technical information the Committee has arranged a two part group discussion for the 17th Conference. Part one will enable ITTC delegates to present short contributions describing their new facilities as at the 16th Conference. The second part will consist of two parallel sessions, each having two discussion topics and will be organized by invited chairmen. The topics have been selected from those suggested by the Technical Committees as being of the most pressing nature.

2. SYMBOLS AND PRESENTATION OF DATA

2.1 Submissions by Technical Committees

The following Committees have indicated that they are working on additions and changes to the Standard Symbols: Performance, Propeller, High Speed Marine Vehicle, Seakeeping, Ocean Engineering, Manoeuvring, Ice and Information Committees. The most extensive changes involve the High Speed Marine Vehicle Committee which has prepared a comprehensive list of symbols to cover the following categories: Semidisplacement Round-Bilge Vessels, Planing Hulls, Swath Ships, Air Cushion Vehicles and Surface Effect Ships, and Semi- and Fully-Submerged Hydrofoils. This list forms a separate document and

will be available as a SSPA publication. The Seakeeping and Ocean Engineering Committees have been in communication concerning the Seakeeping Committee's revised symbols list, Appendix 1. They have reached agreement on all items with the exception of how to distinguish between significant wave height as measured from a time history and as calculated from the spectrum ignoring the spectral width parameter. Also the higher order wave heights, such as $H_{1/10}$ can be quite different for extreme waves when measured from the time history as compared with assuming a Rayleigh distribution and calculating it from the area under the spectrum. The Seakeeping Committee strongly recommends that their symbols list contain primarily those symbols used in the presentation of data and that the symbols indicating geometric characteristics such as radius of gyration be moved to the Geometry of the Ship section. They would also like to have the manoeuvrability symbols moved to a separate section in the list. The Seakeeping Committee also requested that the Information Committee specify the computer compatible symbols.

In the field of manoeuvrability there has been submitted only a few changes which are enclosed in Appendix 2 of this report. A further review is scheduled for the next period by the manoeuvrability committee. The Ice Committee has not submitted its new symbols to the Information Committee for review. The Performance Committee has considered additions to the symbols list to make them compatible with the 1978 ITTC Standard Prediction Method. The proposed additions are given in Appendix 3. The proposed changes and additions relating to unsteady propeller forces by the Propeller Committee, appears as Appendix 4.

Appendices 1, 2, 3 and 4 are published for discussion purposes.

Since it does not fall under the responsibility of any of the other technical committees, the Information Committee has prepared a list of proposed changes and additions to the ITTC Standard Symbols for Hydrostatic Computations. This list appears as Appendix 5 to this report.

The principal changes involve the distinction between ship's weight, W , which acts vertically downward, and the displacement force, Δ , (buoyant force) which acts vertically upward. For ships and submersibles in static equilibrium, the ship's weight is numerically equal to its displacement (Archimedes law). In the case of submersibles, weight, W , may differ from the displacement, Δ , and this difference may be balanced by dynamic lift.

This distinction is not possible using the present symbols.

2.2 Restructuring of the ITTC Standard Symbols

Based on the extensive changes to the symbols list discussed in the previous section, the Information Committee recommends that a major restructuring of the symbols list should be carried out. This restructuring will become a major task for the 18th ITTC and will incorporate all the new symbols agreed upon by the various Technical Committees. The new standard symbols list should be published as a separate document.

The Information Committee proposes that the restructured symbols list follow the outline enclosed in Appendix 6. This

outline follows ISO standards and would include indices which would make it much easier to use. It incorporates the proposal made by the High Speed Marine Vehicles Committee except that the Semi-Displacement Round-Bilge Vessels symbols have been combined with conventional ship symbols.

2.3 ISO Activities

Of particular interest for the work of the ITTC Technical Committees is the work of the ISO Technical Committees:

TC 37: Terminology: principles and co-ordination.

TC 46: Documentation

TC 12: Quantities, units, symbols.

TC 8: Shipbuilding and marine structures

A noteworthy result in the present context of symbols in general is the ISO Draft Proposal ISO/DP 7463 of 1981, doc. nr. ISO/TC8/SC15 N 82: Shipbuilding-Symbols for computer application. After preparation of the French text this proposal will be forwarded to ISO/CS for publication as ISO/DIS 7463 according to resolution 38 (Oslo 1980) of ISO/TC8/SC15.

This International Standard specifies symbols for dimensional quantities used in shipbuilding and related branches of marine technology for use in computer applications where the available character set is restricted. The symbols are capable of being represented using the twenty six alphabetic and ten numeric characters of the standard FORTRAN character set (ISO 1539) and are also within the scope of the International Alphabet No. 2 (A12) of the International Tele-Communications Union.

The International Standard specifies the symbols to be used but does not attempt to provide definitions for the quantities represented. The notes and formulae in the column headed "Explanation" in the tables of symbols presented in the Annex, are provided as guidance to the application of the symbols. The use of standard symbols does not absolve authors from the need to define the quantities concerned.

The symbols are based on the list approved by the International Towing Tank Conference, Ottawa, 1975, and the corresponding list produced by the International Ship Structures Congress, dated August 1974.

In view of the proposed revised structure of the ITTC Standard Symbols early contacts with the ISO/TCS will be important.

3. DICTIONARY OF SHIP HYDRODYNAMICS

3.1 Revision of the Dictionary

Few proposals for revisions of the dictionary have been forthcoming from the Technical Committees. It is felt that a section on Hydrostatics should be included because for many problems hydrodynamic and hydrostatic definitions are inseparable. Consequently the title of the publication should be changed to The Dictionary of Ship Hydromechanics at the next revision.

In order to adapt ITTC nomenclature to common practice a proposal for a standard co-ordinate system was published in the Newsletter No. 7, March 1983, to generate discussion. The response was quite diverse. On the one hand it was suggested that instead

of the two orthogonal right handed systems with the positive x-axis forward and the positive z-axis either up- or downward as proposed only one system should be selected, in particular the one with the positive z-axis upwards. On the other hand the attention of the Information Committee was drawn to the fact that in ship flow calculations neither of the two systems proposed is customary. Normally the x-axis is directed in the main flow direction, i.e. backwards, the y-axis is taken positive to starboard and the z-axis is positive upwards. The origin of the co-ordinates in this case is usually in the undisturbed free surface half way between fore and aft perpendicular.

In view of this state of affairs the Information Committee may offer the following recommendations, if any:

Axes, co-ordinates (L)

Preferably, orthogonal right handed systems of Cartesian Co-ordinates
Origins and orientations in any particular case should be chosen for convenience.

Body Axes (x, y, z). Co-ordinate systems fixed in bodies or ships.

For the definition of hull forms, for structural deflections, and exciting forces usually the x-axis positive forward and parallel to the reference or base line used to describe the body's shape, the y-axis positive to port, and the z-axis positive upwards.
For seakeeping and manoeuvring problems usually the x-axis as before, the y-axis positive to starboard, and the z-axis positive downwards, the origin customarily at the centre of mass of the

vehicle or at a geometrically defined position. For ship flow calculations usually the x-axis positive in the main flow direction, i.e. backwards, the y-axis positive to starboard, and the z-axis positive upwards, the origin customarily at the intersection of the plane of the undisturbed free-surface, the centre plane, and the midship section.

Fixed or Space Axes (x_0, y_0, z_0). Co-ordinate systems fixed in relation to the earth or the water. For further reference see ISO Standard 1151/1 ... 6: Terms and symbols for flight dynamics.

The Information Committee is aware that there may be other co-ordinate systems in use and sees no possibility for the adoption of a single system for all purposes. Any problem requires an adequate co-ordinate system and transformations between systems are simple, provided that origin and orientation are completely and correctly documented for any particular case.

3.2 Multi-lingual indices

The Committee felt that since several translations are now available, a new document which includes translation of the index of the dictionary into several languages, would be a useful addition. Consequently, two new documents have been published and will be available at the Conference.

The first volume translated into French, German, Italian, Portuguese and Spanish is available from CETENA by request, alphabetised in the language of preference. A second volume alphabetised in English and translated into Chinese, Japanese, Korean and Russian is available from the University of Tokyo.

The editing, printing and data handling of the first volume was made in co-operation with Genoa University and CETENA with the active co-operation of professors S. Marsich and C. Podenzana, the same work for the second volume was carried out at Tokyo University by Professor T. Koyama.

The Information Committee appreciated the contributions made by the following:

CHINESE:

Professor M.X. Gu
China Ship Scientific Research Centre,
Wusih

FRENCH:

Mr. J. Boada-Ayroulet
Chantiers de Nord et de la Méditerranée,
La Ciotat, France

GERMAN:

Prof. M. Schmiechen and
Dipl. Ing. V. Goetz
VWS, Berlin Model Basin

ITALIAN:

Prof. S. Marsich and
Prof. C. Podenzana
Bonvino University of Genoa/CETENA

JAPANESE:

Prof. T. Koyama
University of Tokyo

KOREAN:

Prof. J.H. Hwang
Seoul National University

PORTUGUESE:

Eng. F.R. Castro
Escola Naval Portuguesa, Lisboa

RUSSIAN:

Dr. E. Nikolaev
Krylov Shipbuilding Research Institute,
Leningrad

SPANISH:

Mr. M. Perez-Sobrino
El Pardo Tank, Madrid

The items of the dictionary index are recorded in two data bases so new versions of the multilingual indices can be readily available even if the dictionary is updated.

Examples of both indices are given in Appendix 7.

Enquiries for the multi-lingual indices should be made to the following addresses:

VOLUME 1: Ms. Vera Murialdi
CFEENA SpA
4, Viale Novembre 6 - 16121
Genova - ITALY

VOLUME 2: Prof. T. Koyama
Department of Naval
Architecture
University of Tokyo
9-3-1 Hongo, Bunkyo-ku
Tokyo, JAPAN

A related document, which apparently never has been finalised is the draft ISO/TC8...(Italy-14) 5.12 IE/F in English and French of December 1971. This is based on the work of the ITTC Presentation Committee, but in a way is quite independent of the accepted ITTC Standard Symbols. The interesting thing about this document is an appendix giving translations of terms into other languages, Italian, French, English, Dutch, Spanish and German, ordered by the item numbers of the symbols.

4. COLLABORATION WITH OTHER ORGANIZATIONS

In accordance with recommendation 3 of the 16th ITTC the Information Committee has kept in contact with other relevant

international organizations, in particular with the International Ship Structures Congress (ISSC), and the International Standards Organization (ISO) during the preparation of the revised symbols list.

5. CATALOGUE OF FACILITIES

Additions and corrections to the Catalogue of Facilities have been submitted to the Information Committee and published in the ITTC Newsletter. The current Table of Contents of the ITTC Catalogue of Facilities has also been updated and is included as Appendix 8 of this report. Copies of the new table of contents and the new facilities descriptions which were forwarded to Professor Johnson, were sent to those possessing copies of the complete catalogue, in the summer of 1984. Twenty four updates for the catalogue were received during the period and these can be found in Appendix 9.

6. ORGANIZATION OF THE GROUP DISCUSSION ON FACILITIES AND INSTRUMENTATION

The following proposal was made to the Executive Committee regarding the structure and content of the Group Discussion Session, and was subsequently adopted for the 17th Conference. The session will be in two parts the first allowing short papers of not more than 5 minutes on new facilities, and the second consisting of two parallel sessions organized by invited chairmen.

The topics of sessions 1a and 1b are Full Scale Measurement, B. Della Loggia, Chairman, and New Wave Maker Design and Experience, B. Johnson, Chairman.

The topics of sessions 2a and 2b are Stability Testing and Correlation, O. Krappinger, Chairman and Full Scale Wave Data Acquisition and Analysis, N. Hogben, Chairman.

7. DATA BANKS FOR MODEL TESTS AND SHIP TRIAL DATA

7.1 Relational data base systems

A new development has been made in the field of data base management during the conference period. Relational data bases, which were not in common use are now available for many applications. A complex tree or plex data structure can be difficult for users to comprehend. However, it can be reduced to a group of two dimensional flat files, with some redundancy, which is the most easily understood way to represent data in application programs. The concept of a flat file is the main feature of a relational data base. A flat file or table in this sense is called a "Relation".

Relational data bases provide a very flexible way of manipulating these relations. Operations "project" and "join" enable cut and paste of the columns in the relational tables to form

new relations. Thereby any table (relation) required from a group of many tables in a data base, may be selected. Relational data base software is now available for personal computer systems as well as larger computers. Some examples are shown in Table 1. The use of relational data bases is highly recommended because they can be adapted to almost any applications and data exchange with other systems.

7.2 Data storage media

Data storage hardware continues to be improved at an increasing rate. In particular, the development of Winchester-type discs provide a low cost and high speed mass storage device. The typical capacity of Winchester-type disc at this moment is 5 to 10MB but, it is increasing towards 100 MB. The largest units at present has a capacity of 825 MB. The availability of this hardware makes it worthwhile to re-evaluate what sort of tankery data is stored in data banks and how to manage it.

A cartridge tape device is becoming a standard device for saving and exchanging data on Winchester-type disc systems. The storage capacity of cartridge tape is increasing at a similar rate to the disc systems.

Table 1 Examples of Relational Data Bases

Supplier	Name of DBMS	Operating System
IBM	QBE	VM
	SQL/DS	VM or DOS/VSE
	DB2	MVS
Ashton-Tate Condor Comp.	dBASE II S-20	CP/M-80, -86, MS-DOS do.
Relational Tech Oracle Corp. North Am Tech. Convergent Tech.	Ingress Oracle Unify CT-DBMS	UNIX(VAX-11, 68000) do. UNIX (68000) do.

8. STANDARD FORMAT FOR SHIP HULL DEFINITION

The format for the exchange of seakeeping data having been established, the Information Committee with reference to Recommendation 9 of the 16th ITTC, has considered a standard format for the exchange of data on hull form geometry. Specific standards pertinent to the topic that are being proposed by the International Standards Organization (ISO/TC8/SC15/WG2) include:

ISO/DP 7460:

Shipbuilding-Shiplines-Identification of geometric data

ISO/DP 7461:

Shipbuilding-Shiplines-Numerical representation of elements of the hull geometry

ISO/DP 7462:

Shipbuilding-Terminology and definitions
- Principal ship dimensions

ISO/DP 7838:

Shipbuilding-Shiplines-Formats and data organization

Work on these standards started as early as 1974 with the declared goal to facilitate the exchange between shipyards, design offices, classification societies, ship model basins, etc. Three working groups are still active:

WG1: Terminology and definitions

WG2: Communications and data transfer

WG3: Numerical control

Detailed formats for hull form description have been surveyed in Germany by a group of experts, and a

standardised description of 14 different systems in use has been established and has been made available to the Information Committee. The necessity to standardise the formats has been felt by the experts, but considered outside the scope of their working group.

In view of this state of affairs the Information Committee felt that it was beyond its expertise to make a proposal or even recommendation for a standard format. It rather suggests that in future the Information Committee should continue to monitor the relevant developments.

9. DETAILED TABLES OF CONTENTS AND FORMATS OF TECHNICAL COMMITTEE REPORTS

As a result of the discussions on indexing past and future ITTC Proceedings the 16th ITTC recommended that the Executive Committee should consider asking the Technical Committees to provide sufficiently detailed tables of contents of the subjects covered in their respective reports. The format of these should then be specified by the Organizing Committee for each Conference.

With reference to this recommendation the Information Committee immediately asked the Secretary of the Executive Committee to incorporate a section on "Numbering of Divisions and Table of Contents" into the Instructions for the Preparation of the Reports of the Technical Committees, and to send these Instructions to the Technical Committees as soon as possible. Essentially the proposal was as follows:

"Numbering of Divisions and Table of Contents"

Division and subdivisions of the three parts of a report and of appendices should be numbered according to the International Standard ISO 2145 "Numbering of Divisions and Subdivisions of Written Documents".

In addition each Report should be accompanied by a detailed Table of Contents.

The Secretary of the Executive Committee has acted correspondingly and included the proposal into the guidelines for the Preparation of the 17th ITTC Proceedings.

During the past Conferences fairly standard guidelines for the preparation of the ITTC Proceedings have evolved and the Information Committee is further proposing a Standard Guideline to be based on past experience. This is shown in Appendix 10.

The idea to include, for reference, relevant international standards, had to be dropped in view of the cost of the copyright. Basic references are the ISO Standards Handbooks 1: Information Transfer and 9: Data Processing: Software, both published in 1982.

10. DOCUMENTATION SYSTEMS

The Information Committee has considered different ways to provide more efficient access to the wealth of information stored in the Proceedings of the previous ITTC Conferences.

The preparation of overall author and subject indices for the proceedings of the previous conferences was considered, but it would require a prohibitive amount of work and was rejected. The preparation of a guide including the

tables of contents of the previous ITTC Proceedings was also abandoned because in a number of cases these tables of contents were inadequate. The development of a keyword system by the ITTC was considered but since a number of these systems were commercially available for bibliographical purposes, a new system was thought to be superfluous.

The Information Committee came to the conclusion that the adoption of an index of ITTC documents may provide better access to the information stored in the ITTC Proceedings. This has been strengthened by the fact that the Information Committee has had requests from member organizations as to where information about the ITTC can be found.

Therefore, the Information Committee has prepared an INDEX OF ITTC-DOCUMENTS with information on where those documents can be found or can be obtained. This index includes:

1. ITTC-ORGANIZATION
(Rules of organization, Selection of ITTC-Technical Committee members, etc.)
2. ITTC-PROCEEDINGS
3. ITTC-PUBLICATIONS
(ITTC-Standard Symbols, ITTC-Dictionary of Ship Hydrodynamics, Catalogue of Facilities, etc.)
4. ITTC-ADDRESSES
(Member organizations, members of Advisory Council, etc.)

The INDEX OF ITTC-DOCUMENTS for categories 1, 2, 3 and 4 has been given in Appendix 11.

The Information Committee is aware of the fact that for most of the categories the information given in the appendix is not complete. It therefore proposes that the INDEX OF ITTC-DOCUMENTS should be completed for the next conference based on information to be obtained from the member organizations. Further the INDEX OF ITTC-DOCUMENTS should be updated in the future for each ITTC Conference with the new material which has become available.

11. ITTC-NEWSLETTER

An ITTC-Newsletter has been issued by the Information Committee during two Conference periods. The idea behind this Newsletter was to improve the exchange of technical information between the member organizations and to disseminate information concerning the forthcoming Conference. The Newsletter has been published approximately twice a year. Four Newsletters were published between the 15th and 16th Conferences (October 1979, June 1980, December 1980 and June 1981) and six Newsletters between the 16th and 17th Conference (November 1981, June 1982, November 1982, June 1983, January 1984 and June 1984).

The Newsletters consisted of two parts. The first part dealt with the forthcoming Conference and included the following items:

- news from the Executive Committee,
- news from the Advisory Council,
- news from the Technical Committees
- news from the ITTC-member organizations,
- a calendar of events including symposia sponsored by the member organizations and international meetings related to the aims of the ITTC,

The second part of the Newsletter dealt with the exchange of technical information including:

- material of interest: information from the member organizations on technical topics in the form of short contributions,
- Catalogue of Facilities: this section contained updates which have been submitted for the catalogue since its initial distribution in November 1980,
- Catalogue of Computer Programs: this section contained program descriptions submitted for the ITTC software exchange.

The Newsletter has fulfilled its task concerning information for the forthcoming Conference, but the response with respect to the exchange of information on technical topics has been rather poor.

Therefore the Information Committee proposes that the contents of the Newsletter in future will be limited to the exchange of information concerning the forthcoming Conference. In that case the publishing of the Newsletter is not thought to be a task for the Information Committee. It seems to be more logical that the Newsletter should be prepared under the auspices of the Executive Committee. The secretaries of the Executive Committee and the Advisory Council and a member of the Information Committee could act as an editorial board for the Newsletter, and this should be considered by the Executive Committee. The host country for the following ITTC Conference should publish the Newsletter.

The present general format of the ITTC Newsletter can be used as outlined in Appendix 12.

Further, the Executive Committee should

give thought to the distribution of the Newsletter. The Newsletter has to be sent to all member organizations of the ITTC, to all members of Technical Committees and panels and to a limited group of additional organizations and persons to be nominated by the Executive

Committee. It is proposed that the Newsletter should continue to be published twice a year.

In Appendix 9 a list is given of updates for the Catalogue of Facilities since its initial distribution in November 1980.

III DRAFT RECOMMENDATIONS TO THE CONFERENCE

1. The Information Committee should continue to monitor and co-ordinate the development of new symbols by the Technical Committees.

2. The Conference should adopt the new symbols for hydrostatics included in Appendix 4 and the Information Committee should then include these in the ITTC Standard Symbols.

3. The Information Committee should restructure the ITTC Standard Symbols according to the outline proposal in Appendix 5 and include new symbols agreed by the Technical Committees.

4. The Information Committee should continue to revise the Dictionary of Ship Hydrodynamics as required.

5. The Information Committee should continue co-operation with other organizations to achieve a common agreement on symbols and terminology.

6. The Information Committee should continue to update the ITTC Catalogue of Facilities.

7. The Information Committee should plan a group discussion on new hydrodynamic test facilities and new instrumentation systems and techniques for the next Conference. The discussion should be suitably documented by the Organizing Committee.

8. The Information Committee should monitor the development of standard formats for the exchange of data as specific requirements arise.

9. The Conference should adopt the guidelines for the preparation of ITTC Proceedings as given in Appendix 9.

10. The Information Committee should further develop the Index of ITTC Documents, and should update it before each Conference.

11. The ITTC Newsletter should be prepared under the auspices of the Executive Committee according to the outline proposal in Appendix 12.

Appendix 1

PROPOSED CHANGES TO THE ITTC STANDARD SYMBOLS RELATING TO SEAKEEPING AND OCEAN ENGINEERING

<u>Symbol</u>	CC <u>Symbol</u>	<u>Title</u>	<u>Definition</u>	<u>Dimensions</u>
F		Frequency	1/T	T ⁻¹
F _e		Frequency of wave encounter	1/T _e	T ⁻¹
F _Z		Natural frequency of heave	1/T _Z	T ⁻¹
F _θ		Natural frequency of pitch	1/T _θ	T ⁻¹
F _φ		Natural frequency of roll	1/T _φ	T ⁻¹
F _H (F _L)		Wave excited instantaneous horizontal (lateral)	$F_H = F_{Ha} \cos(\omega_e t + \epsilon_{FH})$, F _L =... etc. in regular waves. Upper and lower signs indicate phase lead or lay respectively.	MT ⁻²
F _{Ha} (F _{La})		Wave excited horizontal (lateral) shear force amplitude		LMT ⁻²
F _V (F _N)		Wave excited instantaneous vertical (normal) shear force		LMT ⁻²
F _{Va} (F _{Na})		Wave excited vertical (normal) shear force amplitude		LMT ⁻²
L _ω , λ		Wave length		L
$\tilde{L}_\omega, \tilde{\lambda}$		Apparent wave length (according to zero crossings)	The horizontal distance between two successive upward (downward) zero crossings	L

<u>Symbol</u>	<u>CC</u> <u>Symbol</u>	<u>Title</u>	<u>Definition</u>	<u>Dimensions</u>
m_n		Spectrum moment (n an integer)	$\int_0^{\infty} \omega^n S(\omega) d\omega$	-
$M_H(M_L)$		Wave excited instantaneous horizontal (lateral) bending moment		L^2MT^{-2}
$M_{Ha}(M_{La})$		Wave excited horizontal (lateral) bending moment amplitude	$M_H = M_{Ha} \cos(\omega t + \epsilon - \frac{M_{Lz}}{M_H^2})$	-
$M_V(M_N)$		Wave excited instantaneous vertical (normal) bending moment	$M_L = \dots$ etc. in regular waves. Upper and lower signs indicate phase lead or lag respectively.	L^2MT^{-2}
$M_{Va}(M_{Na})$		Wave excited vertical (normal) bending moment amplitude		L^2MT^{-2}
M_T		Wave excited instantaneous torsional moment		L^2MT^{-2}
M_{Ta}		Wave excited torsional moment amplitude		L^2MT^{-2}
R_{aw}		Mean resistance increase due to waves	Mean resistance in waves minus resistance in still water	LMT^{-2}
S		Relative motion	Relative vertical distance of location on hull in waves with respect to wave surface	L
$S(\omega, \mu)$		Directional wave spectra		-
$S_{\zeta}(\omega), S_{\zeta\zeta}(\omega)$		Auto spectral in density		-
$S_o(\omega), S_{\theta\theta}(\omega)$				

<u>Symbol</u>	CC <u>Symbol</u>	<u>Title</u>	<u>Definition</u>	<u>Dimensions</u>
$S_{\theta_S}(\omega)$		Cross spectral density		-
T		Wave period		T
T_e		Wave encounter period		T
\tilde{T}		Apparent wave period (according to zero crossings)	Time between occurrence of two successive upward or downward zero crossings	T
T_z		Natural period of heave		T
T_θ		Natural period of roll		T
T_ϕ		Natural period of pitch		T
T_{-1}, T_{-10}		Estimated energy average period from spectral density distribution	$Z_\pi (m_{-1}/m_a)$	T
T_o, T_p		Modal period	Period of peak of wave spectral density distribution in ω space, $2\pi/\omega_o, 2\pi/\omega_p$.	T
T_1, T_{o1}		Estimated mean period from spectral density distribution	$2\pi (m_o/m_1)$	T
T_2, T_{o2}		Estimated zero crossing period from spectral density distribution	$2\pi (m_o/m_2)^{\frac{1}{2}}$	T
x, y, z		Instantaneous surge, sway and heave respectively	$x = x_a \cos(\omega_e t + \epsilon - x\zeta), y = \dots$ etc. in regular waves. Upper and lower signs indicate phase lead or a lag respectively	L

<u>Symbol</u>	<u>CC</u> <u>Symbol</u>	<u>Title</u>	<u>Definition</u>	<u>Dimensions</u>
x_a, y_a, z_a		Surge, sway and heave amplitude respectively		L
$Y_z \zeta(\omega),$ $A_z \zeta(\omega)$		Amplitude of frequency response function	$z_a(\omega)/\zeta_a(\omega)$	-
$Y_\theta \zeta(\omega),$ $A_\theta \zeta(\omega)$ etc.			$\theta_a(\omega)/\zeta_a(\omega)$ or $\theta_a(\omega)/[\frac{\omega^2}{g}\zeta_a(\omega)]$	L^{-1} or -
$\epsilon_{z\zeta}(\omega)$		Phase angle of frequency response	Phase angle between any two harmonic variables indicated by subscripts. First subscript leads or lags second depending on definition. Wave defined by crest or trough at origin at time $t = 0$. Precise definition re-quired when phase data is presented.	-
$\epsilon_{\theta\zeta}(\omega)$ etc.		function		-
$(\tilde{\zeta}_u)_{1/n}, H_{1/n}$			Average apparent height of the one-n'th highest waves	L
$h, \bar{\zeta}_a$		Apparent wave amplitude	h_c from zero or mean level to crest h_t from zero or mean level to trough	L
$H, \bar{\zeta}_w$		Apparent wave height		
$H_{1/3}, (\zeta_w)_{1/3}$		Significant wave height	Average apparent of the one-third highest waves	L
$H_{1/n}, (\bar{\zeta}_w)_{1/n}$			Average apparent height of the one-'nth highest waves	L
		Instantaneous wave elevation		L

CC				
<u>Symbol</u>	<u>Symbol</u>	<u>Title</u>	<u>Definition</u>	<u>Dimensions</u>
ζ_a		Regular wave amplitude		L
ζ_w		Regular wave height	$2\zeta_a$ in linear waves	L
$\bar{\zeta}_a, h$		Apparent wave amplitude	h_e from zero or mean level to crest h_T from zero or mean level to trough	L
$\bar{\zeta}_w, H$		Apparent wave height		L
$(\bar{\zeta}_{w1/3})_{H1/3}$		Significant wave height	Average apparent height of the one-third highest waves	L
$(\bar{\zeta}_{w1/3})$				
θ, ϕ, ψ		Instantaneous pitch, roll and yaw respectively	$\theta = \theta_n \cos(\omega_e t + \epsilon_{\theta})$, $\phi = \dots$ etc. in regular waves. Upper and lower signs indicate lead or lag respectively.	-
θ_a, ϕ_n, ψ_a		Pitch, roll and yaw amplitude respectively		-
K		Wave number	$2\pi/\lambda$	L^{-1}
λ, L_w		Wave length		L
$\tilde{\lambda}, \tilde{L}_w$		Apparent wave length	See definitions of \tilde{L}_w	L
μ		Component wave direction of directional wave spectra encounter angle	Angle between ship positive x-axis and positive direction of waves (long crested) or dominant wave direction (short crested).	-
X		Component wave direction of directional wave spectra		
ω		Circular frequency	$2\pi f$	T^{-1}
ω_e		Circular frequency of encounter	$2\pi f_e$	T^{-1}

<u>Symbol</u>	<u>CC</u> <u>Symbol</u>	<u>Title</u>	<u>Definition</u>	<u>Dimensions</u>
ω_z		Natural circular frequency of heave	$2\pi f_z$	T^{-1}
ω_θ		Natural circular frequency of pitch	$2\pi f_\theta$	T^{-1}
ω_ϕ		Natural circular frequency of roll	$2\pi f_\phi$	T^{-1}
ω_o, ω_p		Circular modal frequency		

Proposal for changes in/additions to the ITTC list of symbols.

1. Fn and Rn should be listed under "General", not under "Resistance and Propulsion".
2. The axis system for wave motions should be changed so that it conformed with the more common industry practice of having z upwards and y to port.
3. Waves - the terminology on wave elevation, amplitude and height are confusing and the following changes and additions are recommended:

delete ζ_w [$\zeta(t)$ would continue to be wave elevation, and ζ_a would continue to be wave amplitude].

add:

σ = $\sqrt{m_o}$ (standard deviation or rms about mean)
H (= $2\zeta_a$) regular wave height
 H_s significant waveheight (calculated as $4\sqrt{m_o}$)
 $H_{1/3}$ and $H_{1/10}$ (mean 1/3 and mean 1/10 highest wave heights)
 T_n = $(m_o/m_n)^{1/n}$ wave period
 T_p = Peak or modal period

4. Additions which are specific for the field of Ocean Engineering:

K Keulegan Carpenter Number
S Strouhal Number
 f_r reduced frequency (Hz)

Appendix 2

PROPOSED CHANGES TO THE ITTC STANDARD SYMBOLS RELATING TO MANOEUVRABILITY

Symbol in list	Suggested new symbol	Title	Definition	Dimensions	Note
	A_R^*	Nominal area of rudder	$\frac{1}{2}(A_R + A_{RM})$	L^2	Suitable for statistics (corresp. to class soc spec)
	A_{RM}	Movable area of rudder		L^2	
Q_R		Rudder torque with respect to axis parallel to shaft		$L^2 MT^{-2}$	
ψ_0		Reference heading or course to steer			
ω_c	r_c	Steady rate of turn		T^{-1}	$r_c = \dot{\psi}_c$ in case $\phi = \theta = 0$

Appendix 3

PROPOSED CHANGES TO THE ITTC STANDARD SYMBOLS TO PERFORMANCE

<u>Symbol</u>	<u>Symbol</u>	<u>Title</u>	<u>Definition</u>	<u>Dimensions</u>
CC				
P.2 after k		(i) <u>GENERAL</u>		
k_p	KPl	Roughness height of propeller blade surface	The same as k	L
k_s	KS1	Roughness height of hull surface	The same as k	L
(ii) <u>GEOMETRY OF SHIP AND PROPELLER</u>				
P.13 after S				
S_{BK}	SBK	Wetted surface area of bilge keels		L^2
(iii) <u>RESISTANCE AND PROPULSION</u>				
P.15 after ΔC_F				
ΔC_{FC}	DELFCFC	Ship-model correlation factor with respect to ΔC_F formula of ITTC 1978 method.		-
P.16 after C_L				
C_N	CN	Trial correction for propeller rate of revolutions at speed identity	n_T/n_S	-
C_{NP}	CNP	Do. at power identity		-
after C_p				
C_p	CP	Trial correction for delivered horse power	P_{DT}/P_{DS}	-

<u>Symbol</u>	<u>Symbol</u>	<u>Title</u>	<u>Definition</u>	<u>Dimensions</u>
P.17 after J				
J_T	JT	Advance coefficient of propeller determined from thrust identity		-
P.17 after J				
K_{QO}	KQ	Torque coefficient of propeller converted from behind to open-water condition	$K_{QO} = K_Q \cdot \eta_R$	-
K_{QT}	KQ	Torque coefficient of propeller determined from thrust identity		-
P.20				
R_C	RC	Resistance corrected for difference in temperature between resistance and self-propulsion tests	$\frac{(1+k)C_{FMC} + C_R}{(1+k)C_{FM} + C_R} \cdot R_{TM}$ where C_{FMC} is the frictional coefficient at the temperature of the self-propulsion test	-
P.22 after				
Δw	DELWC	Ship-model correlation factor for wake fraction	$W_{TM} - W_{TS}$	-
Δw_C	DELWC	Ship-model correlation factor with respect to W_{TS} formula of ITTC 1978 method		-

Appendix 4

PROPOSED CHANGES TO THE ITTC STANDARD SYMBOLS RELATING TO UNSTEADY PROPELLER FORCES

CC				
<u>Symbol</u>	<u>Symbol</u>	<u>Title</u>	<u>Definition</u>	<u>Dimensions</u>
$i=x,y,z$	$I=X,Y,Z$	Cartesian co-ordinates	Right hand orthogonal system of axes with the origin O coinciding with the centre of the propeller. The longitudinal axis x coincides with the shaft axis, positive forward; the transverse axis y, positive port; the third axis z, positive upward.	L
$i=x,\theta,r$	$I=X,TET,R$	Cylindrical co-ordinates	Cylindrical system with origin O and longitudinal axis x as defined before, angular co-ordinate, positive (clockwise looking forward) measured from the z-axis.	L,l,L
$V_i(r,\theta)$	$V(I,R,TET)$	Components of the velocity vector field of the wake	$i = 1,2,3$ or $i = x,y,z$ or $i = x,\theta,r$ positive in the direction of positive co-ordinates. Fourier representation: $V_i = \sum_{j=0}^{\infty} V_{ij} \cos(j\theta - \phi_{vij}) =$ $= \sum \{ a_{ij}(r) \cos(j\theta) + b_{ij}(r) \sin(j\theta) \}$	LT^{-1}
$V_{ij}(r)$	$VA(I,J,R)$	Amplitudes of jth harmonic components of V_i	$V_{ij}(r) = [a_{ij}^2(r) + b_{ij}^2(r)]^{1/2}$	LT^{-1}
$V_{i0}(r)$	$VM(I,R)$	Circumferential means of V_i	according to the above definition	LT^{-1}
$\phi_{vij}(r)$	$VP(I,J,R)$	Phase angles of jth harmonic components of V_i	$\phi_{vij}(r) = \arctan[b_{ij}(r)/a_{ij}(r)]$	1

<u>Symbol</u>	<u>CC</u> <u>Symbol</u>	<u>Title</u>	<u>Definition</u>	<u>Dimensions</u>
F_i	F(I)	Components of the force vector	$i = x, y, z$ or $i = x, \theta, r$	MLT^{-2}
M_i	M(I)	Components of the moment vector	i as before	ML^2T^{-2}
F_i	FG(I)	Components of the generalized force vector	$i = 1, \dots, 6$ $i = 1, 2, 3$: force $i = 4, 5, 6$: moment	MLT^{-2} ML^2T^{-2}
R_i	R(I)	Components of the generalized bearing reactions	i as before	
p	PR	Pressure		$ML^{-1}T^{-2}$
K_{Fi}	KF(I)	Components of the force vector coefficient	$K_{Fi} = F_i / \rho n^2 D^4$	1
K_{Mi}	KM(I)	Components of the moment vector KFG(I) coefficient	$K_{Mi} = M_i / \rho n^2 D^5$	1
K_{Fi}		generalized force coefficients		
K_p	KPR	Pressure coefficients	$K_R = p / \rho n^2 D^2$	1
$\delta_i, \dot{\delta}_i, \ddot{\delta}_i$	DISPL(I)	Components of the linear displacement, velocity, acceleration vectors, resp.	$i = x, y, z$ or $i = x, \theta, r$	L, LT^{-1}, LT^{-2}
$\phi_i, \dot{\phi}_i, \ddot{\phi}_i$	DISPA(I)	Components of the angular displacement, velocity, acceleration vectors, resp.	i as before	$1, T^{-1}, T^{-2}$
$\delta_i, \dot{\delta}_i, \ddot{\delta}_i$	DISPG(I)	Components of the generalized displacement, velocity, acceleration vectors, resp.	$i = 1, \dots, 6$ $i = 1, 2, 3$: linear $i = 4, 5, 6$: angular	

<u>Symbol</u>	<u>CC Symbol</u>	<u>Title</u>	<u>Definition</u>	<u>Dimensions</u>
Q_i e.g. V_i , F_i, M_i, R_i, k_{Ti} , K_{Mi}, δ_i, ϕ_i etc.		Quantities depending on angular position	$Q_i = \sum_{j=0}^n Q_{ij} \cos(j\theta - \phi_{Q_{ij}})$ $= \sum A_{ij} \cos(j\theta) + B_{ij} \sin(j\theta)$	
Q_{ij}	QA(I,J)	Amplitudes of jth harmonic components of Q_i	$Q_{ij} = (A_{ij}^2 + B_{ij}^2)^{1/2}$	
Q_{i0}	QM(I)	Mean values of Q_i	according to the above definitions with $\phi_{Q_{i0}} = 0$	
$\phi_{Q_{ij}}$	QP(I,J)	Phase angles of jth harmonic components of Q_i	$\phi_{\theta_{ij}} = \arctan (B_{ij}/A_{ij})$	

Appendix 5

PROPOSED CHANGES TO THE ITTC STANDARD SYMBOLS RELATING TO
HYDROSTATICS

Page	Symbol	CC Symbol	Title	Definition	Dimensions
4	δ	D (prefix to other symbol)	Finite increment in...		-
8	\overline{AG}_T	YAG	Transverse distance from assumed centre of gravi- ty A to actual centre of gravity, G		L
8	\overline{AG}_V	ZAG	Vertical distance from assumed centre of gravi- ty, A to actual centre of gravity, G		L
8	AP	-	Aft perpendicular	-	-
8	\overline{AZ}	YAZ	Righting arm based on horizontal distance from assumed centre of gravi- ty A, to Z		L
9	C_{MTL}	CMTL	Longitudinal trimming coefficient	$\frac{\overline{BM}_L}{L}$ or <u>trimming moment</u> $\Delta \delta_{trim}$	-
10	b	-	Mean centre of flota- tion of added buoyant layer		-
10	\overline{FF}	XFF	Longitudinal centre of flotation from forward perpendicular	Distance of centre of flotation from forward perpendicular	
10	FP	-	Forward perpendicular		-
10	g	-	Centre of gravity of an added or removed weight (mass)		-

<u>Page</u>	<u>Symbol</u>	<u>CC</u> <u>Symbol</u>	<u>Title</u>	<u>Definition</u>	<u>Dimensions</u>
10	\overline{GZ}	GZ	Righting Arm or lever	$\overline{AZ} - \overline{AG}_V \sin\phi$ $-\overline{AG}_T \cos\phi$	L
4	x,y,z	X Y Z	Body axes and Cartesian co-ordinates	"change dynamic to seakeeping and manoeuvring"	L
12	\overline{Kg}	ZKAG	Vertical Centre of gravity or removed weight above moulded base or keel, K	Distance from centre of gravity, g, to the moulded base of keel, K	L
12	l	XTA	Longitudinal trimming arm	$\overline{OO}_b - \overline{OO}_g = x_{cb} - x_{cg}$	L
12	m	MA	Ship mass	W/g	M
12	M_{TC}	MTC	Moment to trim one centimeter	$\Delta C_{MTL} / 100$	LMT^{-2}
12	M_{TM}	MTM	Moment to trim one meter	ΔC_{MTL}	LMT^{-2}
13	t	YHA	Transverse heeling arm		L
13	W	WT	Ship weight	mg	LMT^{-2}
14	Δ	DISF	Displacement force (buoyancy)	$\rho g \nabla$	LMT^{-2}
14	∇	DISV	Displacement volume	$\nabla / \rho g$	L^3
14	\overline{OO}_b, x_{cb}	XACB	Longitudinal mean centre of flotation	Longitudinal distance from amidships to the centre of the added buoyant layer $\frac{\overline{OOF}_1 + \overline{OOF}_n}{2} = \frac{x_{CF1} + x_{CF0}}{2}$	L
14	\overline{OOB}, x_{CB}	XCB	Longitudinal centre of buoyancy, "mid B"	Longitudinal distance from amidships to the centre of buoyancy, B	L

<u>Page</u>	<u>Symbol</u>	<u>CC</u> <u>Symbol</u>	<u>Title</u>	<u>Definition</u>	<u>Dimensions</u>
14	\overline{QQF}, x_{CF}	XCF	Longitudinal centre of flotation, "mid F"	Longitudinal distance from amidships to the centre of flotation, F	L
14	\overline{QQg}, x_{cg}	XACG	Longitudinal centre of gravity of added weight (mass)	Longitudinal distance from amidships to the centre of gravity, g, of an added or removed weight (mass)	L
14	\overline{QQG}, x_{CG}	XCG	Longitudinal centre of gravity, "mid G"	Longitudinal distance from amidships to the centre of gravity, G	L

Appendix 6

PROPOSED REVISION OF ITTC STANDARD SYMBOLS

1. GENERAL

(Common to all areas: Areas, axes, coefficients, flow characteristics, foils, forces, fundamental quantities, kinematics, moments of inertia, non-dimensional parameters, etc.)

2. DESCRIPTION OF SHIPS, VEHICLES AND STRUCTURES

(Geometric and mass distribution properties)

2.1 Conventional Ships (Displacement and Semi-Displacement)

2.2 Special Vehicles

2.2.1 Air Cushion Vehicles and Surface Effect Ships

2.2.2 Planing Hulls

2.2.3 Swath Ships

2.2.4 Semi and Fully Submerged Hydrofoils

2.3 Ocean Structures

3. DESCRIPTION OF PROPULSION AND CONTROL DEVICES

(propellers, control surfaces, lifting surfaces)

4. RESISTANCE AND PROPULSION

4.1 Conventional Ships

4.2 Special Vehicles

4.2.1 Air Cushion Vehicles and Surface Effect Ships

4.2.2 Planing Hulls

4.2.3 Semi and Fully Submerged Hydrofoils

4.3 Ice Effects

4.4 Cavitation Effects

4.5 Unsteady Propeller Effects

5. DYNAMICS OF SHIPS AND VEHICLES

5.1 Manoeuvrability

5.2 Seakeeping and Ocean Engineering

INDEX BY TITLE

INDEX BY SYMBOL

Appendix 7

EXAMPLES OF MULTILINGUAL INDICES FROM THE DICTIONARY OF SHIP HYDRODYNAMICS

Translation from English into French, German, Italian, Portuguese and Spanish.

SECT.	ENGLISH	FRENCH	GERMAN	ITALIAN	PORTUGUESE	SPANISH	PAGE
Geo	Appendage	Appendice	Anhang	Appendice	Appendice	Appendice	5
Geo	Baseplane	Plan de base	Basisflaeche	Piano di riferimento	Plano base	Plano base	5
Geo	Baseline	Ligne de base	Basislinie	Linea di riferimento	Linha base	Linea base, linea de agua cero	5
Geo	Bilge	Bouchain	Bilge	Ginocchio	Encolamento	Pantoque	6
Geo	Block coefficient	Coefficient de bloc	Blockkoeffizient, Voelligkeitsgrad der Verdraengung	Coefficiente di finezza totale	Coefficiente bloco ou total	Coefficiente de bloque	6
Geo	Beam	Largeur	Breite auf Spanten	Larghezza	Roca	Manga	5
Geo	Beam, midlength	Largeur a la section milieu	Breite a. d. Wasserlinie der Hauptspantflaeche	Larghezza a meta' lunghezza	Roca a meio na flutuacao	Manga de la seccion media	5
Geo	Beam, maximum section	Largeur a la maistrasse section	Breite a. d. Wasserlinie der groessten Spantflaeche	Larghezza della sezione maestra	Roca maxima na flutuacao	Manga en la cuaderna maxima	5
Geo	Beam, extreme	Largeur extreme	Breite, groesste	Larghezza massima	Roca maxima	Manga maxima del buque	5

Translation from English into Chinese, Japan, Korean and Russian.

ENGLISH		CHINESE	JAPANESE	KOREAN	RUSSIAN
Acceleration zone	35 Cav	加速区	加速域	가속영역	Зона ускорения
Active rudder	23 Pro	主动舵	アクティブラダー	능동아	Активный руль
Added mass	41 Sea	附加质量	附加質量	부가질량	Присоединенная масса
Added mass coefficient	41 Sea	附加质量系数	附加質量係數	부가질량계수	Коэффициент присоединенной массы
Admiralty coefficient	55 Per	海军系数	アドミラルティ係數	해군계수	Адмиралтейский коэффициент
Advance (in turning)	49 Man	纵距 (在回转时)	縦距	전진거리(선회시)	Будвиг (на циркуляции)
Advance, maximum (in stopping)	49 Man	停船冲程	最大進出距離	최대정지거리	Максимальный выбег (при торможении)
Advance (in Propeller context)	23 Pro	Advance (在推进器部分)	前進距離	전진 ~	Поступь гребного винта
Advance angle	23 Pro	进角	前進角	전진각	Угол поступи
Advance angle, effective	23 Pro	实效进角	有効前進率	유효전진각	Эффективный угол поступи
Advance coefficient	23 Pro	进速系数	前進係數	전진계수	Относительная поступь
Advance coefficient, Taylor's	23 Pro	直径系数	テイラー의前進係數	Taylor 의 전진계수	Коэффициент относительной поступи по Тейлору
Advance ratio	23 Pro	进速比	前進率	전진비	Относительная поступь
Advance, speed of	23 Pro	进速	前進速度	전진속도	Скорость поступательного движения
	55 Per	进速		전진속도	
Afterbody (see under body)	7 Geo	后体	船体後半部	선체후반부	Кормовая часть
Air content	35 Cav	空气含量	空氣含量	공기함유량	Воздухосодержание

APPENDIX 8

CURRENT TABLE OF CONTENTS OF
THE ITTC CATALOGUE OF FACILITIES

CATEGORIES

- A - ITTC member organizations which have submitted descriptions of facilities.
- B - ITTC member organizations which have not yet submitted descriptions of facilities.
- C - ITTC member organizations which do not have experiment facilities. (Research Associations)
- D - organizations outside the ITTC which have submitted descriptions of facilities

COUNTRY	CITY	ORGANIZATION	C A T E G O R Y	T O W I N G O W T A N K S	S H A L L O W W A T E R B A S I N S	S E A K E O P P O R T A M A R S	R O T A T I O N G A R M S	I C E T A N K S	W A V E T A N K S	C A V I T A T I O N S	C I R C U L A R T U N N E L S	W I N D T U N N E L S	O T H E R F A C I L I T I E S
ARGENTINA	Buenos Aires	University of Buenos Aires	B										
AUSTRIA	Vienna	Vienna Model Basin	A	1									
BRAZIL	Sao Paulo	Cidade Universitaria	A	1						1			
BULGARIA	Varna	Bulgarian Ship Hydrodynamics Centre	A	1	1	1				1			
CANADA	Kanata	Arctec Canada, Ltd.	B										
CANADA	Ottawa	National Research Council	A	1		1				1			
CHINA	Harbin	Harbin Shipbuilding Engineering Institute	D	1									
CHINA	Shanghai	Shanghai Chaio-Tung Univ.	A	1						1			
CHINA	Shanghai	Marine Design and Research Institute of China	A	1		2				1		1	
CHINA	Shanghai	Shanghai Ship and Shipping Research Institute	A	2							1		
CHINA	Wusih	China Ship Scientific Research Center	A	1		1	1			1		1	
DENMARK	Lyngby	Danish Maritime Institute	A	1						1		1	
FED. REP. OF GERMANY	Berlin	Berlin Model Basin (VWS)	A	1	1					1	1	2	1
FED. REP. OF GERMANY	Berlin	Technical University of Berlin	A								2		
FED. REP. OF GERMANY	Duisburg	Versuchsanstalt fuer Binnenschiffbau	A	1	2	1							
FED. REP. OF GERMANY	Hamburg	Hamburg Ship Model Basin (HSVA)	A	1	1		1			3			
FED. REP. OF GERMANY	Hamburg	Institut fuer Schiffbau University of Hamburg	D	1								1	1
FINLAND	Helsinki	Helsinki University of Technology	A	1		1							

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COUNTRY	CITY	ORGANIZATION	C A T E G O R Y	T A N K S	S H A L L O W P L E T A N K S	S E A K E I N G P L A T F O R M S	R O T A T I N G A R M S	I C E T A N K S	W A V E T A N K S	C A V I T Y T A N K S	C I R C U L A R T A N K S	W I N D T U N N E L S	O T H E R F A C I L I T I E S
JAPAN	Fukuoka	Kyushu University	A	3	1								
JAPAN	Nanagawa	Hiratsuka Research Laboratory (Sumitomo)	A	1	1								
JAPAN	Hiroshima	Hiroshima University	A	1				1		1			
JAPAN	Nagasaki	Nagasaki Technical Institute (Mitsubishi)	A	2	1				1				
JAPAN	Osaka	Technical Research Institute (Hitachi)	D								1		
JAPAN	Osaka	Osaka University	A	1	1						1		
JAPAN	Osaka	University of Osaka Prefec.	D	1							1		
JAPAN	Tokyo	Akishima Laboratory, Mitsui	A	2				1		1	1		
JAPAN	Tokyo	National Research Institute of Fisheries Engineering	A	1							1		
JAPAN	Tokyo	Meguro Model Basin	A	3	1								
JAPAN	Tokyo	Shipbuilding Research Centre of Japan	A	2	1				1	2			
JAPAN	Tokyo	Ship Research Institute	A	3	2	1	1		1				
JAPAN	Tokyo	University of Tokyo	A	2	2				3	1			
JAPAN	TSU-City	TSU Research Laboratories (Nippon Kokan K.K.)	A	1				1		1			
JAPAN	Yokohama	Yokohama National University	A	1									
JAPAN	Yokohama	Research Institute (IHI)	A	1	1			2	2			1	
THE NETHERLANDS	Delft	Delft University of Technology	A	2				1					
THE NETHERLANDS	Wageningen	Netherlands Ship Model Basin	A	3	1	1		1	3			1	
NORWAY	Trondheim	Norwegian Hydrodynamic Laboratories	A	3	1				1				
POLAND	Gdansk	Ship Design and Research Centre	A	2					1				

APPENDIX 8

CURRENT TABLE OF CONTENTS OF
THE ITTC CATALOGUE OF FACILITIES

CATEGORIES

- A - ITTC member organizations which have submitted descriptions of facilities.
- B - ITTC member organizations which have not yet submitted descriptions of facilities.
- C - ITTC member organizations which do not have experiment facilities. (Research Associations)
- D - organizations outside the ITTC which have submitted descriptions of facilities

COUNTRY	CITY	ORGANIZATION	C A T E G O R Y	T O W I N G O R Y	S H I P I N S T R U C T U R E	S E A K E E P I N G	R O T A T I O N A L M A C H I N E R Y	I C E T A N K S	W A V E T A N K S	C A V I T Y T A N K S	C I R C U L A R T U B U L A N C E	W I N D T U R B U L A N C E	O T H E R F A C I L I T I E S
POLAND	Gdansk	Polish Academy of Science	D							1			
SOUTH KOREA	Busan	Busan National University	D	1									
SOUTH KOREA	Daejon	Ship Research Station Korea Inst. of Mach. and Metals	A	1									
SOUTH KOREA	Inchon	Inha University	D	1									
SOUTH KOREA	Seoul	Seoul National University	A	2									
SPAIN	Madrid	Canal de Experiencias Hidrodinamicas, El Pardo	A	1	1					1			
SWEDEN	Goeteborg	Swedish Maritime Research Centre (SSPA)	A	1	1					2			
SWEDEN	Kristine- hamn	KaMeWa Marine Laboratory	A							1	1		
UNITED KINGDOM	East Cowes	British Hovercraft Corp.	A	3	1				1		1		
UNITED KINGDOM	Edinburgh	University of Edingburgh	D						1				
UNITED KINGDOM	Feltham	National Maritime Institute	A	2	1	2			1	2	1		1
UNITED KINGDOM	Haslar	Admiralty Marine Technological Establishment	A	2	1	1				2	1		1
UNITED KINGDOM	Liverpool	University of Liverpool	D								1		
UNITED KINGDOM	Newcastle- upon-Tyne	University of Newcastle Dept. of Naval Architecture	A	1						1			
UNITED KINGDOM	Portsmouth	Vosper Thornycroft Ltd.	A							1			
UNITED KINGDOM	St. Albans	British Shipbuilders Hydro- dynamics Ship Model Experiment Tank	B										
UNITED KINGDOM	Southampton	Wavepower, Ltd.	D						2				

APPENDIX 8

CURRENT TABLE OF CONTENTS OF
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- A - ITTC member organizations which have submitted descriptions of facilities.
- B - ITTC member organizations which have not yet submitted descriptions of facilities.
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COUNTRY	CITY	ORGANIZATION	C A T E G O R Y	T O W I N G T A N K S	S H A L L O W W A T E R T E S T I N G	S E A K E E P I N G A R M S	R O T A T I O N A L T E S T I N G A R M S	I C E T A N K S	W A V E T A N K S A N D F L U M E S	C A V I T A T I O N S A N D T U N N E L S	C I R C U L A R T E S T I N G A N D F L U M E S	W I N D T U N N E L S	O T H E R F A C I L I T I E S
UNITED KINGDOM	Wallsend	British Ship Research Association	C										
U.S.A.	Annapolis	U.S. Naval Academy	A	2						1			
U.S.A.	Ann Arbor	University of Michigan	A	1									
U.S.A.	Berkeley	University of California	B										
U.S.A.	Bethesda	David Taylor Naval Ship Research & Development Centre	A	3	1	1	1			3	1		
U.S.A.	Cambridge	Massachusetts Institute of Technology	A	1									
U.S.A.	Columbia	Arctec, Incorporated	A					1					
U.S.A.	Escondido	Offshore Technology Corp.	A						2				
U.S.A.	Hanover	U.S. Army Cold Regions Research & Engineering Lab.	A					3					
U.S.A.	Hoboken	Stevens Institute of Technology	A	1		1	1						
U.S.A.	Iowa City	University of Iowa	B										
U.S.A.	Laurel	Tracor Hydronautics, Inc.	A	1							1		
U.S.A.	Plainfield	Chicago Bridge and Iron Co.	D						1				
U.S.A.	San Diego	Lockheed Missiles & Space Co	D	2									
U.S.A.	State College	Pennsylvania State University	A							4		2	2
U.S.S.R.	Leningrad	Krylov Shipbuilding Research Institute	A	3	1	3	1			6			1
U.S.S.R.	Leningrad	Leningrad Shipbuilding Institute	B										
U.S.S.R.	Moscow	Central Aero-Hydrodynamic Institute	B										
YUGOSLAVIA	Zagreb	Brodarski Institute	A							2			

Appendix 9

LIST OF CATALOGUE OF FACILITIES UPDATES

The following list includes all contributions received up to January 1984. It does not include items which may have been submitted for Newsletter No. 10 in June, 1984.

CATALOGUE OF FACILITIES

- | | |
|---|---|
| <p>0001 ICE MODEL BASIN
Ship Research Institute
Ministry of Transport
Tokyo, JAPAN</p> <p>0002 DEPRESSURIZED TOWING TANK
Netherlands Ship Model Basin
Wageningen, THE NETHERLANDS</p> <p>0003 MARINE PROPELLER CAVITATION
TUNNEL, 1980
University of Tokyo
Department of Naval Architecture
Tokyo, JAPAN</p> <p>0004 TOWING TANK No. 1, 1978
Korea Research Institute of Ships
Daejeon, KOREA</p> <p>0005 HIGH-SPEED CARRIAGE OF SEAKEEPING
BASIN, 1978
Krylov Shipbuilding Research
Institute
Leningrad, U.S.S.R.</p> <p>0006 3-DIMENSIONAL WAVE TANK, 1980
Wavepower Ltd.
Southampton, U.K.</p> <p>0007 2-DIMENSIONAL WAVE FLUME, 1979
Wavepower Ltd.
Southampton, U.K.</p> | <p>0008 EDINBURGH No. 2 WIDE TANK, 1978
University of Edinburgh
Department of Mechanical
Engineering
Edinburgh, U.K.</p> <p>0009 FREE SURFACE CAVITATION TUNNEL 2,
1966
Technische Universität Berlin
Institut für Schiffs- und
Meerestechnik
Berlin, FRG</p> <p>0010 FREE SURFACE CAVITATION TUNNEL 1,
1968
Technische Universität Berlin
Institut für Schiffs- und
Meerestechnik
Berlin, FRG</p> <p>0011 TOWING TANK, 1981
Shanghai Ship and Shipping
Research Institute (SSSRI)
Ministry of Communications
Shanghai, CHINA</p> <p>0012 TOWING TANK, 1963
Shanghai Ship and Shipping
Research Institute (SSSRI)
Ministry of Communications
Shanghai, CHINA</p> <p>0013 MANOEUVRING POND
Canal de Experiencias
Hidrodinamicas de El Pardo
Madrid, SPAIN</p> <p>0014 CALM WATER TOWING TANK
Canal de Experiencias
Hidrodinamicas de El Pardo
Madrid, SPAIN</p> <p>0015 CAVITATION TUNNEL, 1950
Canal de Experiencias
Hidrodinamicas de El Pardo
Madrid, SPAIN</p> |
|---|---|

- 0016 SHIP MANOEUVRING SIMULATOR
Ishikawajima-Harima Heavy
Industries Co. Ltd.
Control Engineering House
Tokyo, JAPAN
- 0017 CIRCULATING WATER CHANNEL (also
Cavitation Channel and Tunnel),
1965
University of Liverpool
Department of Mechanical
Engineering
Liverpool, U.K.
- 0018 CIRCULATING WATER CHANNEL, 1982
Shanghai Ship and Shipping
Research Institute (SSSRI)
Ministry of Communications
Shanghai, CHINA
- 0029 LOCKHEED OCEAN LABORATORY and
TOWING BASIN (LOLTB)
Lockheed Missiles and Space Comp.,
Inc.
San Diego, U.S.A.
- 0020 LOCKHEED UNDERWATER MISSILE
FACILITY (LUMF)
Lockheed Missiles and Space Comp.,
Inc.
San Diego, U.S.A.
- 0021 CAVITATION TUNNEL, 1959 test
section No. 2/medium speed section
Institute of Fluid Flow Machinery
Polish Academy of Science
Gdansk, POLAND
- 0022 TOWING TANK
Institut für Schiffbau der
Universität Hamburg,
FRG
- 0023 WIND TUNNEL
Institut für Schiffbau der
Universität Hamburg,
FRG
- 0024 LARGE LASER DOPPLER VELOCIMETRY
(LDV) SYSTEM
Institut für Schiffbau der
Universität Hamburg,
FRG

Appendix 10

GUIDELINES FOR THE PREPARATION OF ITTC PROCEEDINGS

1. GENERAL

1.1 SUBDIVISION OF THE PROCEEDINGS

The Proceedings will consist of two parts:

Part 1 containing the Technical Committee Reports and Invited Papers, should be published and distributed before the Conference.

Part 2 containing written contributions, discussions, and final recommendations will be published after the Conference.

1.2 CONTENTS OF THE TECHNICAL COMMITTEE REPORTS

Each Technical Committee Report must reflect the opinion of the complete Committee, even if individual members are made responsible for compiling separate parts.

Any member of the Conference on his own behalf or on behalf of any other individual, may contribute material of possible value to the Report of a Technical Committee.

Such contributions must be sent to the Chairman of the Committee concerned. They should not exceed 1000 words. The Technical Committees may include parts of those contributions which they consider important in their Reports. These contributions will not be published separately in the Proceedings.

1.3 STRUCTURE OF THE TECHNICAL COMMITTEE REPORTS

Each Report must include the

following parts:

- Table of Contents
- General
- Review of research on ... of importance to the ITTC
- Conclusions and Recommendations
- Appendices

These parts should include:

General:

- Membership and meetings
- Recommendations of the past Conference

Review of research on ... of importance to the ITTC:

- Introduction
-
-
- Conclusions
- Acknowledgements
- References

Conclusions and Recommendations:

- Conclusions of the Committee
- Draft Recommendations to the Conference.

The complete Committee Report including illustrations should not exceed 50 pages or 15000 words.

1.4 NUMBERING OF DIVISIONS

Divisions and subdivisions of each report and appendices, if any, shall be numbered according to the international standard ISO 2145 "Numbering of divisions and subdivisions of written documents".

1.5 INVITED PAPERS

Authors may be invited to present papers within the Conference Session on selected topics related to "tankery". These papers will be included in Part 1 of the Proceedings.

They should not exceed 15 pages including illustrations or 4500 words.

2. GUIDELINES FOR PREPARATION OF TECHNICAL COMMITTEE REPORTS AND INVITED PAPERS

2.1 PAPER AND TYPING

Manuscripts should be typed in black preferably with 1 $\frac{1}{2}$ spaces between lines on the sheets of paper supplied to Secretaries and authors. If possible IBM Courier letter type (10 pitch) should be used.

The text should extend up to, but not beyond, the preprinted frames.

The text should be typed with two columns to a page, on one side of the sheets only. The style to be followed for headings as well as other details of the lay-out are shown on the sample manuscript. Clean manuscript pages ready for photographic reproduction have to be provided. The pages will be photographed and printed exactly as received, reduced by 20% to the standard size A4 (210mm x 297mm). The bottom right-hand corner should be used for identification and preliminary pagination. The pagination must not be used for reference purpose since consecutive pagination will be inserted by the organizers. All text below the preprinted frames will be masked.

2.2 EQUATIONS

If possible, equations should be typed. Otherwise they should be carefully handlettered in Indian ink. Numbers of equations should be within round brackets at the right-hand margin. Refer to equations as Eqn. (1) etc. in the text.

2.3 ILLUSTRATIONS

Illustrations should be traced in Indian ink and should be inserted in the text. Photographs submitted must be black and white matt print and they should be supplied in duplicate. Refer to the illustrations as Fig. 1 etc. in the text.

2.4 REFERENCES

A list of references, either numbered in the sequence of appearance or arranged in alphabetical order by author's name and year of publication, must be provided after the text. Refer to the references as Ref. 1 etc. in the text, or by author's name, year of publication, and, page numbers.

2.5 TABLE OF CONTENTS

Each Committee Report shall include a Table of Contents, preferably within one page length, including the divisions and sub-divisions.

Appendix 11

INDEX OF ITTC-DOCUMENTS

1. ITTC Organisation

<u>Document:</u>	<u>Where to obtain:</u>
1.1 Rules of organization as adopted by 13th ITTC 1972	Proceedings of 13th ITTC, Volume 2
1.2 Geographical areas and composition of Executive Committee	17th ITTC Newsletter No. 8, July 1983
1.3 Selection of ITTC Technical Committee members	Proceedings of 16th ITTC, Volume 2, Recommendations of Executive Committee
1.4 Guidelines for preparation of ITTC-proceedings	Letter of Secretary of Executive Committee to Technical Committees
1.5 Standard format for Catalogue of Test Facilities	Proceedings of 15th ITTC, Volume 1, Report of Information Committee
1.6 General format of ITTC-Newsletter	Proceedings of 16th ITTC Volume 1, Report of Information Committee
1.7 Standard format for exchange of seakeeping data on computer compatible media	Proceedings of 16th ITTC, Volume 1, Report of Information Committee
1.8 Guidelines for the application of organizational membership of the International Towing Tank Conference (ITTC)	Proceedings of 13th ITTC Extract from Rules of Organization

2. PROCEEDINGS

<u>Proceedings:</u>	<u>Where to obtain:</u>
2.1 International Conference of Tank Superintendents The Hague, 13-14 July, 1933 Collected Papers and Notes Ed. L. Troost	Wageningen: Maritime Research Institute Netherlands (Photostatic copies, price Hfl. 50,--).

- 2.2 Summer Meetings of the Seventy-fifth Session and International Conference on Experiment Tank Work
London, 10-13 July, 1934
London: Institution of Naval Architects, 1934
Trans. INA 76 (1934)
(not available)
- 2.3 Congrès International des Directeurs des Bassins
Paris, Octobre, 1935
Mémoires présentés et résumés des discussions
Ed. MM. Barrilon, Pelabon et Guntzberger
Paris: Bassin d'Essais de Carènes de Paris, 1935
(not known)
- 2.4 Internationale Tagung der Leiter der Schleppversuchsanstalten
Berlin, 26-28 Mai, 1937
Berichte, Beiträge u. Entschliessungen
Ed. H.M. Weitbrecht
Berlin: Preussische Versuchsanstalt für Wasserbau und Schiffbau, 1937
(Loose leave copies, price DM 60,00).
- 2.5 Fifth International Conference of Ship Tank Superintendents
London, 14-17 September, 1948
Papers and Discussions
Ed. G. Hughes
Teddington: Ship Division, National Physical Laboratory, 1949
(out of print)
- 2.6 Sixth International Conference of Ship Tank Superintendents
Washington, 10-15 September, 1951
International Committee Reports, Introductory Remarks, Discussions and Conclusions.
Ed. H.E. Saunders
New York: Society of Naval Architects and Marine Engineers, 1953
(unbound copies, price SNAME members US\$56,00--, non SNAME members US \$76,00,--).
- 2.7 Seventh International Conference on Ship Hydrodynamics
Oslo, 10-20 August, 1954
General Lectures with Discussions
Ed.
Trondheim, Skipsmodell-tanken, Norges Tekniske Høgskole (Norwegian Ship Model Experiment Tank, Publ. No. 32-37, out of print)
- Seventh International Conference on Ship Hydrodynamics
Göteborg, 20-31 August, 1954
International Committee Reports,
Göteborg: Statens Skeppsprovvningsanstalt, 1955
(SSPA Publ. No. 34, price S.kr. 125.00).

Discussions and Conclusions

Ed. H.F. Nordström and

H.E. Edstrand

- | | |
|--|---|
| <p>2.8 Eighth International Towing Tank Conference
Madrid, 15-23 September, 1957
Proceedings
Ed. M.L. Acevedo and L. Mazarredo</p> | <p>El Pardo/Madrid: Canal de Experiencias Hidrodinamicas, 1959
(Proceedings, price Pts. 5000,00).</p> |
| <p>2.9 Ninth International Towing Tank Conference
Paris, 8-17 September, 1960
Proceedings
Ed. R. Brard and S. Bindel</p> | <p>Paris: Bassin d'Essais des Carènes
(not known)</p> |
| <p>2.10 Tenth International Towing Tank Conference
Teddington, 3-12 September, 1963
Proceedings, 2 Volumes
Ed. G.J. Goodrich</p> | <p>Teddington: National Physical Laboratory
(Proceedings, price £10.00 plus £7.50 overseas postage)</p> |
| <p>2.11 Eleventh International Towing Tank Conference
Tokyo, 10-20 October, 1966
Ed. M. Kinoshita and K. Yokoo</p> | <p>Tokyo: Society of Naval Architects of Japan
(Proceedings, price ¥ 5000 plus ¥ 1620 seammil, ¥ 9140 air mail).</p> |
| <p>2.12 Twelfth International Towing Tank Conference
Rome, 22-30 September, 1969
Proceedings</p> | <p>Ed. Istituto Nazionale per Studi ed Esperienze di Architettura Navale
Roma: INSEAN
(Proceedings, price It. lire 100.000,-- + 2% tax + postage)</p> |
| <p>2.13 Thirteenth International Towing Tank Conference
Berlin/Hamburg, 4-14 September, 1972
Materials for Reports, Materials of Interest
Proceedings, 2 Volumes
Ed. S. Schuster and M. Schmiechen</p> | <p>Berlin: Versuchsanstalt für Wasserbau und Schiffbau, 1972/73
(Material for Reports, material of interest, price DM 60,--
Proceedings, price DM 120,--)</p> |

- | | |
|--|---|
| <p>2.14 Fourteenth International Towing Tank Conference
Ottawa, 2-11 September 1975
Proceedings, 4 Volumes</p> | <p>Ottawa: National Research Council of Canada, 1975/76
(Proceedings, price Can.\$140).</p> |
| <p>2.15 Fifteenth International Towing Tank Conference
The Hague, 3-10 September 1978
Proceedings, 2 Volumes
Ed. M.W.C. Oosterveld</p> | <p>Wageningen: Maritime Research Institute
Netherlands, 1978/79
(Proceedings, price Volume 1, Hfl. 80,--
price Volume 2, Hfl. 40,--).</p> |
| <p>2.16 Sixteenth International Towing Tank Conference
Leningrad, September 1981
Proceedings, 2 Volumes
Ed.</p> | <p>Leningrad: Krylov Ship Research Institute
(Proceedings, price Volume 1..., price price Volume 2...)</p> |

3 - ITTC Publications

Publication:

- 3.1 International Towing Tank Conference. Standard Symbols, 1976

Translations into:

Chinese

CSSRC - Wusih

French

Association Française de Normalisation (AFNOR)

German

Collatz, G., Schiff und Hafen 27 (1975) No. 10.
International Vereinbarte Buchstabensymbole und Bezeichnungen auf dem Gebiet der Schiffshydrodynamik.

Italian

Proceedings of 14th ITTC, vol. 4, Report of Presentation Committee, Ap. II.

Japanese

Transactions of the Society of Naval Architects of Japan, No. 538, April 1974

Russian	Brodarski Institute Publica- tion No. 28, Zagreb 1974
Spanish	Simbols Internacionals en Arquitectura Naval, AICN Publication No. 7/75, July 1975, Madrid.
3.2 ITTC-Dictionary of Ship Hydrodynamics	RINA Maritime Technology Monograph No. 6, 1978
Translations into:	
Chinese	CSSRC, Wusih
Russian	KSRI, Leningrad
Translation of Overall Index of Titles of Dictionary of Ship Hydrodynamics	
Volume 1,	CETENA, Genova
1A French in alphabetic order	
1B German " " "	
1C Italian " " "	
1D Portugese " "	
1E Spanish " "	
Volume 2,	
Chinese	University of Tokyo,
Japanese, Korean	Tokyo
Russian	
3.3 Catalogue of Facilities	Prof. Bruce Johnson, US Naval Academy Annapolis, Md. U.S.A.
3.4 ITTC-Newsletter Nos. 1-10	MARIN - Wageningen
<u>4. ITTC Addresses</u>	
<u>List:</u>	<u>Where to obtain:</u>
4.1 Member organizations of ITTC	Secretary of ITTC Executive Committee
4.2 Member organizations represented in Advisory Council	Secretary of ITTC Advisory Council

4.3 Executive Committee and
Technical Committee members

Secretary of ITTC Executive
Committee

4.4 Distribution of ITTC
Newsletter

Secretary of ITTC Executive
Committee

Appendix 12

GENERAL FORMAT OF THE ITTC-NEWSLETTER

CONTENTS:

- List of Contents
- News from the Executive Committee
- News from the Advisory Council
- News from the Technical Committees
- News from the member organizations
- Calendar of events
- List of Catalogue of Facilities updates

GENERAL NOTES

- (1) The first page should have an ITTC logotype at the top. Each issue should be numbered and dated.
- (2) The Editor's address, and telephone and telex numbers should be listed at the bottom of the first page of each issue.
- (3) News from member organizations should include prominent personnel changes, special lectures, progress notes on the implementation of new facilities, etc.
- (4) The Newsletter should be typed in the same two-column format which is used for the Conference Proceedings and the pages should be numbered.

PROPOSED PUBLICATION SCHEDULE FOR THE 18th ITTC NEWSLETTER

NEWSLETTER NO.	DEADLINE FOR SUBMISSION OF MATERIAL	DATE OF ISSUE
18-1	November 15, 1984	December 15, 1984
18-2	May 15, 1985	June 15, 1985
18-3	November 15, 1985	December 15, 1985
18-4	May 15, 1986	June 15, 1986
18-5	November 15, 1986	December 15, 1986
18-7	May 15, 1987	June 15, 1987