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Message from the Chairman

September is coming and the organisational arrangement for the 23rd General Meeting is coming to the final point.

We are still working on it, and working hard to give Members and Accompanying Persons the best during their stay, because Venice offers many advantages and opportunities from the historic, artistic and tourist points of view. On the other hand, September is the top month for Venetian events and exhibitions, and it generates difficulties in making good choices and clear programs.

The Venice Admiralty and Morosini Naval School are giving us total support, and I am confident you will enjoy your stay.

This is the last ITTC newsletter for which I will write the introductory paragraph, and I will thank all Members, and in particular Executive Committee, Advisory Council, Technical Committees and Group for their co-operation and the hard work accomplished in the field of Marine Hydrodynamics: I am sure that the Full Conference will appreciate the results and that not only the towing tank operators, but also designers, builders and ship operators will take advantage of it.

I will be waiting for you in Venice and I hope you will get the best in the scientific field as well as in the tourist and social ones.

Ulderico Grazioli, Chairman
23rd ITTC Executive Committee

News from the Executive Committee

The 4th meeting of the ITTC Executive Committee was held, at Panorama Hotel, Gothenburg (Sweden), on the 13th March 2002, hosted by SSPA. The Chairman thanked Dr. Georges Thiery for accepting to replace, as deputy representative for the Southern Europe, Prof. Aláez who passed away last November (a silent moment was held for him at the beginning of the Advisory Council meeting, Monday, 11th March).

The following matters were discussed during the meeting.

ITTC Memberships Approval

The Executive Committee approved the application received from the Webb Institute – Robinson Model Basin, USA. It is the 115th ITTC Member Organisation. The list of ITTC MOs will be updated to include the complete reference of Webb Institute as follows:

Webb Institute
Robinson Model Basin
298 Crescent Beach Road
Glen Cove, NY 11542-1398
Attn.: Dr. Roger H. Compton
Tel.: +1 516 671 2215; Fax: +1 516 674 9838
E-mail: rcompton@webb-institute.edu
URL: <http://www.webb-institute.edu>

The ITTC Catalogue of Facilities sheet of Robinson Model Basin is published as an annex to the present issue of *ittc - news*.

Review of Advisory Council Membership

The EC Secretary distributed to the AC members the report on review of Advisory Council membership, accomplished by the EC during the last meeting in Washington, DC.

According to the Rules of the Organisation, seventeen member organisations of the ITTC Advisory Council were chosen and reviewed for reconfirmation of their membership. All the seventeen member organisations have been confirmed.

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Arrangements for the 23rd ITTC in 2002

A short discussion took place on arrangements for the 23rd ITTC meeting in Venice, next September. Few changes were proposed to the programme appeared in *itc - news* No. 43 (December 2000), and the final conference programme was approved as follows:

September 8 (Sunday)

- 14:45-16:30 Advisory Council meeting
- 17:00-18:00 Executive Committee meeting
- 18:00-20:30 Registration – Reception

September 9 (Monday)

- 08:00-08:30 Registration
- 08:30-09:00 Welcome
- 09:00-09:30 Opening
- 09:30-10:15 Executive Committee Report
- 10:45-12:15 Resistance Committee
- 13:30-14:45 Speed and Powering Trials Committee
- 15:15-16:30 Committee on Procedures for Resistance, Propulsion and POW Tests
- 16:30-18:00 Group Discussions (Parallel):
 - A.1. New Experimental Techniques and Facilities
 - A.2. Accuracy of CFD Predictions

September 10 (Tuesday)

- 09:00-10:15 Committee on Validation of Waterjet Test Procedures
- 10:45-12:15 Propulsion
- 13:30-14:45 Cavitation Induced Pressures Committee
- 15:15-16:30 Water Quality and Cavitation Committee
- 16:30-18:00 Group Discussions (Parallel):
 - B.1. Model Manufacturing and Accuracy
 - B.2. IMO Standards and ITTC (Particular to Manoeuvring and Capsizing)

September 11 (Wednesday)

- 08:00-20:30 Conference Tour 1

September 12 (Thursday)

- 09:00-10:15 Waves Committee
- 10:45-12:15 Loads and Responses Committee
- 13:30-14:45 Stationary Floating Systems Committee
- 15:15-16:30 Committee on Prediction of Extreme Ship Motions and Capsizing
- 16:30-18:30 Advisory Council meeting

September 13 (Friday)

- 09:00-10:15 Quality Systems Group
- 10:15-10:45 Conference Photo
- 10:45-12:15 Manoeuvring Committee
- 13:30-14:45 Esso Osaka Committee
- 15:15-16:30 Ice Committee
- 16:30-17:30 Executive Committee meeting
- 20:30-24:00 Banquet

September 14 (Saturday)

- 09:00-10:15 Plenary Session and Closing
- 10:45-12:15 Meetings of the Executive Committee and the new Technical Committees
- 13:30-20:30 Conference Tour 2

The main change in the Technical Programme is represented by the parallel Group Discussions on specific topic areas to be held on September 9 and 10. Details are given in the Announcement circulated with the invitation letter.

Further details on Technical and Social Programmes of the 23rd Conference (including forms for conference registration and hotel reservation) are given in the General Information pamphlet circulated with the invitation letter to delegates and observers. This may be requested to the Executive Committee Secretariat or downloaded (in PDF format) from the ITTC 2002 web site (URL: <http://www.ittc-2002.insean.it>), where up-to-date information on hotel room availability in Venice may also be found.

ITTC Web Sites

The EC decided to follow the recommendation from the Advisory Council to go on with the arrangement of a permanent ITTC web site and accept the offer from SNAME to host it at their site. The EC secretary will discuss details with the AC Secretary and then they will contact SNAME for the final arrangement.

Changes in Technical Committees Membership

This topic was not discussed during the Executive Committee meeting. However, since the present is the last issue of *itc - news* before the 23rd conference, a summary of changes in the membership of Technical Committees occurred during the 23rd ITTC period is reported in the following.

Propulsion Committee

Dr. Francesco Salvatore (INSEAN) replaced Dr. Pier Giorgio Esposito (INSEAN).

Manoeuvring Committee

Prof. Kazuhiko Hasegawa (Osaka University) resigned with no replacement.

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

Mr. Han Ji (CSSRC) replaced Mr. Mo-Qin He (CSSRC).

Committee on Validation of Waterjet Test Procedures

Mr. Reima Aartojärvi (Rolls-Royce Hydrodynamics Research Center) replaced Mr. Niclas Olofsson (Rolls-Royce HRC).

Water Quality and Cavitation Committee

Dr. In-Haeng Song (Samsung Ship Model Basin) replaced Dr. Young-Gi Kim (SSMB).

Waves Committee

Dr. Richard S. Mercier (Offshore Technology Research Center) replaced Dr. Mehernosh Irani (OTRC).

Next Meeting

The next meeting of the Executive Committee will be held in Venice (Italy), on September 8, 2002.

News from the Advisory Council

A meeting of the Advisory Council was held in Gothenburg, Sweden on March 11 and 12, 2002. At the meeting the main items discussed were:

23rd ITTC Recommendations

The Council reviewed the draft conclusions, recommendations to the Conference and recommendations for future work.

As regards the draft conclusions and recommendations to the Conference the Council noted that the distinction between conclusions and recommendations were not clear in many cases. The Council decided that the recommendations to the Conference should be concrete and in general restricted to recommendations to adopt developed and proposed ITTC Procedures.

It was further decided that the proposed future tasks for the technical committees of the 24th ITTC would be included in the AC report to the Conference (thus published in the Conference Proceedings Vol. I). The future tasks will be further discussed at the Conference prior to that the Conference decides on the final tasks and committees of the 24th ITTC. The Technical Committee reports shall thus not include the tasks for future work, as they are included in the AC report.

Proposed Technical Committees

The Council meeting discussed at length the tasks and structure of the technical committees for the 24th ITTC and the following committees are proposed:

General Committees

- Resistance
- Propulsion
- Manoeuvring
- Seakeeping
- Ocean Engineering

Specialist Committees

- Stability in Waves
- Assessment of Ocean Environmental Issues
- Ice
- Validation of Waterjet Test Procedures
- Cavitation-Erosion on Propellers and Appendages on High Powered/High Speed Ships
- Azimuthing Podded Propulsion
- Powering Performance Prediction

Group

- Quality Systems Group

It may be noted that the Seakeeping and Ocean Engineering committees substitute the Loads and Responses committee of the 23rd ITTC. This change was mainly introduced due to the workload and wide range of topics to be covered by the Loads and Responses committee.

A main guideline in the setting up of the tasks for the committees was the development of ITTC Procedures.

ITTC Web site

At the last Council meeting it was decided to have two ITTC web sites one permanent and one alternating site linked to the host for the current conference.

The Council was informed that SNAME is willing to host the permanent ITTC web site at the SNAME server at no cost for the ITTC.

The Council decided to accept the offer from SNAME to host the permanent web site at the SNAME server. The organiser for the current conference will host a separate web site. The two web sites shall be linked to each other. The idea is that the permanent web site shall be the collective memory of the ITTC.

News from the Technical Committees

Resistance Committee

A final 5th RC meeting was held on 18-19 March at Inha University, Department of Naval Architecture & Ocean Engineering, Incheon, South Korea and hosted by Prof. Seung-Hee Lee. Motivation for the meeting was the need of carefully analysing draft versions of all the sections and the remaining work to complete the report.

The structure of the final report is as follows:

1. Introduction;
2. New developments in modelling of relevance to resistance;
3. Trends in experimental fluid dynamics;
4. Trends in computational fluid dynamics;
5. Far-field waves and wash;
6. Uncertainty analysis for towing tank tests: sinkage and trim, wave profiles, and wave elevations;
7. Uncertainty analysis for computational fluid dynamics;
8. Uncertainty analysis for extrapolation methods;
9. Recommendations.

After a detailed analysis of recent international published literature, more than 250 papers have been referenced, which mostly have appeared in the last three

years. Attention has also been devoted to the examination of the proceedings of the Gothenburg 2000 Workshop on CFD. The RC has recommended for adoption by the 23rd ITTC the following QM Procedures for towing tank tests:

- 4.9-03-02-03 Uncertainty analysis spreadsheet for resistance measurements
- 4.9-03-02-04 Uncertainty analysis spreadsheet for speed measurements
- 4.9-03-02-05 Uncertainty analysis spreadsheet for sinkage and trim measurements
- 4.9-03-02-06 Uncertainty analysis spreadsheet for wave profile measurements

The RC has also recommended for interim adoption by the 23rd ITTC a revised QM Procedure for uncertainty analysis in CFD:

- 4.9-04-01-01 Verification and Validation methodology and procedures for CFD simulations.

Loads and Responses Committee

The 23rd ITTC Loads and Responses Committee had its fourth and last meeting at January 18 and 19, 2002, at Helsinki University of Technology in Espoo (Finland) under chairmanship of Wataru Koterayama (e-mail: Kotera@riam.kyushu-u.ac.jp).

Progress has been made since the third meeting in September 2001; the members of the Committee had carried out a lot of work. The secretary made a concept-report available for a final discussion at the meeting, which include:

- A description of new developments in the field of experimental facilities, such as an unmanned tank facility.
- A review of four ITTC procedures, applied to experiments on seakeeping, rarely occurring events, analysis of regular wave tests and prediction of power increase in irregular waves from model experiments in regular waves.
- Concepts of two new procedures, one on model testing of offshore structures and one on the validation of seakeeping computer codes in the frequency domain.
- A description of a "quasi-uncertainty-analyses" procedure for experimental data of vertical ship motions, to be carried out for obtaining reliable additional benchmark data for seakeeping computer codes.
- A review of the progress made in experimental and numerical hydro-elastic problems, including vortex-induced vibrations of marine risers and hydro-elastic responses of very large floating structures and high-speed marine vehicles.
- An up-to-date bibliography on new information (as far as available) about loads and responses.
- Proposals for conclusions and recommendations of this Committee and proposals for the future tasks of the next Committee.

Discussions in the Committee about the contents of the procedures and the report were performed by

electronic mail already. Mainly, aspects with respect to grammar and size of the report have been discussed at the last meeting.

The secretary has included all comments and editorial modifications in the amended and new procedures and in the report. Also, the format of the concept-report has been transformed into an ITTC required printing format of the final report.

All intended tasks of the LRC have been finished before the deadlines. Amended and new procedures, recommendations and conclusions were submitted to the Secretary of the Advisory Committee at early February 2002. The final report, the recommendations for future work and the reviewed procedures have been submitted at early April 2002.

It was appointed in Espoo that the contributions of the LRC members for the oral presentation of the report at the Conference in Venice would be mailed to the chairman before August 2002.

Committee on Procedures for Resistance, Propulsion and POW Tests

The Committee has completed its tasks and is recommending to Conference the following amended and updated test procedures:

- Ship Models (which will include Spacing and Numbering of Displacement Stations and Waterlines, which was formerly a separate procedure)
- Resistance Test
- Propulsion Test
- Open Water Test
- Resistance Test for HSMVs
- together with the amended procedure:
- Uncertainty Analysis, Example for Resistance Test
- and the new procedures:
- Uncertainty Analysis, Example for Propulsion Test
- Uncertainty Example, Example for Open Water Test

These recommended procedures will be contained in the ITTC Quality Manual.

Finally, the Committee would wish to acknowledge the co-operation and help of the many people and member organisations that supported its activities by commenting on the drafts of the recommended procedures and for providing other relevant information.

Committee on Water Quality and Cavitation

The committee had their 4th and final meeting, with the core members' attendance, at the Royal Institution of Naval Architects (RINA) in London, on 6-7 December 2001. The meeting was hosted jointly by Dr. Billet of Pennsylvania State University and Prof. Atlas of Newcastle University with the objective of drafting a first copy of the Committee report.

Following this meeting the first draft of the committee report was put together according to the recommended format and circulated amongst the committee members for their final comments in February 02. This was followed by the submission of 35 pages of the final draft report to the ITTC Secretariat at the end of April 02.

The members of the committee have agreed to provide appropriate support documents to the Chairman for the presentation of the committee report at the conference in September 02.

Cavitation Induced Pressures

Since the last meeting in Japan all members worked on the report and the procedures. Extensive reviews and discussions via e-mail took place during the last three months. The final report covers all the tasks assigned by the 22nd ITTC. The detailed evaluation of the questionnaires is part of this report. Two procedures were developed and given to the ITTC Quality Group for approval.

The Committee kept the April deadline for the final report and the procedures.

Waves Committee

The Waves Committee had its 4th and last meeting at OTRC, College Station, TX, USA, during 21-22 March 2002, hosted by our new member Dr. Richard S. Mercier, Director at OTRC. The main subject at the meeting was the completion of the Committee Report and the Conclusions and Recommendations from the Committee, which were, later on, finally submitted to the ITTC Secretariat. In the resulting report, the definition, measurement and documentation of the quality of generated waves have been emphasised, with regard to various wave characteristics. Therefore the definition of relevant reference models is important, including spectral formulations and others. In this context, the connection to actual applications has been highlighted. In addition, special topics on numerical modelling relevant to model testing, and on wave generation in finite water depths, have been addressed.

It was found that the topic of wave generation covers a wide range, with respect to technical matters, applications as well as to different laboratory practices and layouts. Therefore, the Committee has not recommended particular procedures for the ITTC, but has still arrived at conclusions and pointed out specific items that should be considered in further ITTC work, with the possibility to achieve some common standards or platforms in the (near) future.

To illustrate methods and practices in use, an exercise on the experimental, numerical and theoretical modelling of a given storm sea state, highlighting possible non-linear effects, was planned as one activity of the Committee. Field data were also made available. However, although this would have been a valuable contribution to our work, it was defined as a secondary pri-

ority task of the Committee. Compared to our priority tasks defined by the 22nd ITTC, it was found that it became impossible to complete the exercise within the available time, as everybody is constantly occupied with duties in their daily work and it is often hard to find enough time to Committee work. Some initial work has still been done, and it is the aim to complete it in one way or the other.

Committee for Prediction of Extreme Ship Motions and Capsizing

The editorial meeting to finalise the report was held in Glasgow in early February.

The 6th INTERNATIONAL SHIP STABILITY WORKSHOP will be held in New York in October 2002. This will be hosted by the WEBB INSTITUTE.

For further details contact: Prof. Stefan Grochowalski, Chairman of the Organising Committee, WEBB INSTITUTE, e-mail: sgrochow@webb-institute.edu.

News from Member Organisations

SSPA Sweden AB

SSPA regrets to inform that Dr. Hans Edstrand died on April 18, 2002. Dr. Edstrand was employed at SSPA from 1947 and as SSPA's Director General from 1955 to 1982. He was actively engaged in the work of ITTC during this period. Hans Edstrand was a strong supporter of a ITTC which fulfilled its primary aims to support the towing tank directors in their work to serve their customers.

Universities of Glasgow and Strathclyde

The Universities of Glasgow and Strathclyde have formed a new joint department of Naval Architecture and Marine Engineering, creating a unique provider of Naval Architecture education in Scotland. The two institutions have a proud history of offering high-quality courses in Naval Architecture and its related subjects for over one hundred years. The resources of Glasgow's Department of Naval Architecture and Ocean Engineering are to be combined with those of Strathclyde's Department of Ship and Marine Technology to create a world-class centre with staff expertise covering all areas of Naval Architecture, Ship Design, Marine Engineering, Ocean Engineering, High-Speed and Small Craft Design. The joint department enjoys unparalleled laboratory facilities, large high-calibre student and staff populations, and an extensive research portfolio. It inherits Glasgow's long and illustrious traditions as one of the ancient universities of Scotland and Europe, as well as Strathclyde's worldwide reputation in Engineering.

Offshore Technologies Research Center

In the summary of changes in membership of Technical Committees (Section "News from the Executive Committee") it is noticed the replacement of Dr. Mehnosh Irani with Dr. Richard Mercier (both from Offshore Technology Research Center) in the Waves Committee.

As reported in the news from the Waves Committee, Dr. Mercier has also replaced Dr. Irani as Director of OTRC. So the complete reference of OTRC in the list of ITTC Member Organisations is updated as follows:

Offshore Technology Research Center
1200 Mariner Drive, Texas A&M Research Park
College Station, TX 77845-3400
Attn.: Dr. Richard S. Mercier, Director
Tel.: +1 979 845 7252; Fax: +1 979 845 9273
E-mail: rsmercier@tamu.edu
URL: <http://otrc.tamu.edu>

National Maritime Research Institute

The Ship Research Institute of Japan – ITTC member organisation represented in the Advisory Council – has undergone important changes in its organisation. On 1st April 2001, the institute became The National Maritime Research Institute, as an independent organisation, that is an autonomous governmental agency from The Ship Research Institute belonged to The Ministry of Transport.

Therefore, the new name of the former SRI-MoT is: National Maritime Research Institute. The complete reference of NMRI in the list of ITTC Member Organisations is updated as follows:

National Maritime Research Institute
6-38-1 Shinkawa, Mitaka-City
Tokyo 181-0004
Attn.: Dr. Yoshitaka Ukon
Tel.: +81 422 41 3047; Fax: +81 422 41 3053
E-mail: ukon@nmri.go.jp
URL: <http://www.nmri.go.jp>

Centro per gli Studi di Tecnica Navale (CETENA)

Dr. Bruno Della Loggia, ITTC delegate and representative within the Advisory Council, informed the chairmen of the Executive Committee and the Advisory Council of his resignation from the AC.

In replacement of Dr. Della Loggia, CETENA will be represented in the AC by Dr. Giovanni Caprino.

Centro Esperienze Idrodinamiche Marina Militare (CEIMM)

Former Director, Cdr. Mauro Elefante, left CEIMM last February. He has been replaced by Cdr. Massimo Soave. In the meanwhile, the CEIMM web site URL address has changed. Then, the reference in the list of ITTC Member Organisations is updated as follows:

Centro Esperienze Idrodinamiche Marina Militare (CEIMM)
Ministero Difesa Marina
Via di Vallerano 149
I-00128 Roma
Attn.: Cdr. Massimo Soave
Tel.: +39 06 5077 0920; Fax: +39 06 5077 0921
E-mail: ceimm@insean.it
URL: <http://www.marina.difesa.it/attivita/index.htm>

Address Corrections

In the following some corrections are reported, which refer to addresses appeared in the previous issues (Nos. 41 to 45) of *itc - news*.

According to the notice concerning the National Maritime Research Institute, the e-mail addresses of NMRI have changed. The address of Dr. Yoshitaka Ukon, ITTC delegate and representative within the Advisory Council, is given above. For the three NMRI members of Technical Committees, new addresses are:

Shigesuke Ishida (Waves Committee)
E-mail: ishida@nmri.go.jp

Koh Izumiyama (Ice Committee)
E-mail: koh@nmri.go.jp

Yoshiaki Kodama (Resistance Committee)
E-mail: kodama@nmri.go.jp

In case addresses stated in this issue of *itc - news* or used in sending this newsletter are incorrect, please inform the editor so that corrections will be implemented.

Catalogue of Facilities

The ITTC Catalogue of Facilities is updated in this issue of *itc - news*.

Notices have been received from several member organisations, asking to appear in this section of the newsletter with their new or renewed facilities. The corresponding descriptions are pictured in the annexes to this issue.

A comprehensive notice has been provided by the **Shanghai Jiao Tong University**, China, concerning the update or new development of the four following facilities at their site:

- ◆ **Towing Tank (1958, remodelled 1998)**
- ◆ **Underwater Engineering Tank (1991)**
- ◆ **Ocean Engineering Basin (1992)**
- ◆ **Cavitation Tunnel (1977, remodelled 1998)**

As announced in the "News from the Executive Committee", the **Webb Institute – Robinson Model Basin**, USA, has been accepted as a new ITTC Member Organisation. Their facility is also proposed as an annex:

- ◆ **Towing Tank (1950)**

A request has been sent by **Centro Esperienze Idrodinamiche Marina Militare (CEIMM)**, Italy, in order to refresh information concerning their facilities, although already included in the ITTC Catalogue of Facilities. Thus, the last annex is devoted to their:

- ◆ **Cavitation Tunnel (1962)**

Organisations changing or extending their facilities, as well as those that have never provided relevant information, are kindly requested to send a description of their facilities in the standard format to the Executive Committee Secretariat.

Note from the Secretary

With the present issue of *ittc - news*, I have finished my job as the newsletter editor. I would like to thank all members of the Executive Committee, who assisted and supported me in the preparation of the newsletter, and all the Technical Committee Chairmen and Member Organisations delegates, who provided their contributions to guarantee a proper circulation of information within the ITTC Community.

Last (but definitely not least) task in editing ITTC documentation, is now the preparation of the Conference Proceedings. It has been a long, quite complicated path, walked along with a significant delay, but I still hope to achieve a final result of good quality within a reasonable time. I asked the TC Chairmen to send their Committee's final reports in electronic format, according to a given pattern circulated few months ago. Also, a deadline was established on April 30, 2002, in order to leave time enough to assemble and edit all the reports within the two volumes of conference proceedings.

Unfortunately, few committees met the deadline, and most of them followed the formatting instructions only approximately, thus leading to twofold reason for delay. On the other hand, regardless the format, the content of the committee final report is to be sent to participants as soon as possible in order to allow them reading and formulating comments and written contributions to conference the discussion.

Thus, while going on in editing the proceedings to prepare the printed version (to be ready for the Conference), PDF files will be produced from all TCs reports in a preliminary version. PDF files of the reports will then be uploaded on the ITTC 2002 Web Site (URL: <http://www.ittc-2002.insean.it>) around July 30, 2002 (the deadline for receiving written contributions to the conference discussion is shifted, accordingly, to August 30, 2002). At the same time, this version of the final reports will be circulated on CD-Rom to all delegates and observers. The final form of the reports will also be delivered on CD-Rom, after the Conference, along with the third volume of the proceedings. This is planned to be issued on February 2003.

Deadline of Next Newsletter

The deadline for submitting material to the December 2002 issue (No. 47) is 15 November 2002.



Programme of the 23rd International Towing Tank Conference

Scuola Navale Militare "F. Morosini", Venice (Italy), 8-14 September, 2002

The 23rd ITTC
Executive Committee

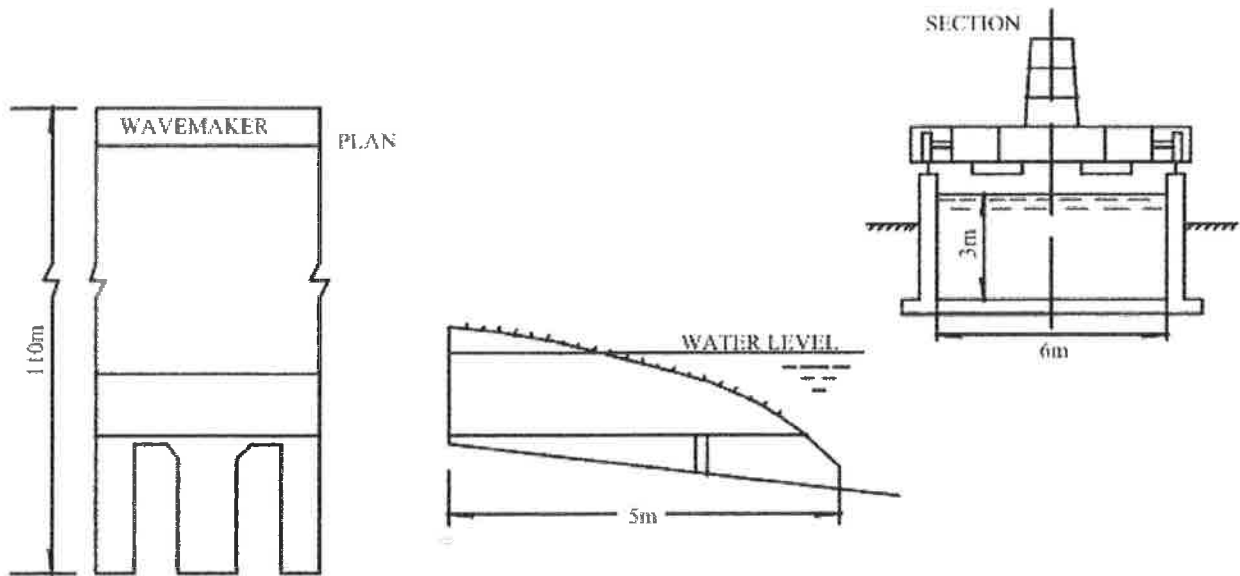
	SUNDAY September 8	MONDAY September 9	TUESDAY September 10	WEDNESDAY September 11	THURSDAY September 12	FRIDAY September 13	SATURDAY September 14
08:00-08:30		Registration		CONFERENCE TOUR 1			
08:30-09:00		Welcome					
09:00-09:30		Opening	Validation of Waterjet Test Procedures		Waves	Quality Systems Group	Plenary Session and Closing
09:30-10:15		Executive Committee Report					
10:15-10:45		Coffee Break	Coffee Break		Coffee Break	Coffee Break and Photo	Coffee Break
10:45-11:15		Resistance	Propulsion		Loads and Responses	Manoeuvring	Executive Committee and new Technical Committees meetings
11:15-11:45							
11:45-12:15							
12:15-13:30		Lunch	Lunch		Lunch	Lunch	Lunch
13:30-14:45		Speed and Powering Trials	Cavitation Induced Pressures		Stationary Floating Systems	Esso Osaka	
14:45-15:15	Coffee Break	Coffee Break					
15:15-16:30	Advisory Council meeting	Procedures for Resistance, Propulsion and POW Tests	Water Quality and Cavitation	Prediction of Extreme Ship Motions and Capsizing	Ice		
16:30-17:00	Coffee Break	Group Discussion A.1 Group Discussion A.2 (Parallel)	Group Discussion B.1 Group Discussion B.2 (Parallel)	Advisory Council meeting	Executive Committee meeting	CONFERENCE TOUR 2	
17:00-17:30	Executive Committee meeting						
17:30-18:00							
18:00-18:30	Registration Reception						
18:30-19:00							
19:00-19:30							
19:30-20:00							
20:00-20:30							
20:30-24:00					Banquet		

**INTERNATIONAL TOWING TANK CONFERENCE CATALOGUE OF FACILITIES
TOWING TANKS, SEAKEEPING AND MANOEUVRING BASINS**

SHIP HYDRODYNAMICS LABORATORY
SHANGHAI JIAO-TONG UNIVERSITY
Shanghai, 200030, CHINA
TEL +86-21-62933079; FAX +86-21-62932948
Web URL: "http://www.sjtu.edu.cn"

CHINA

TOWING TANK (1958, remodeled 1998)



Description of tank: length=110 m, breadth=6 m, water depth=3 m
Description of carriage: 1 manned platform construction, motor driven
Drive system and power:
Maximum carriage speed: 6 m/s
Other capabilities: Vertical PMM or LAHPMM can be mounted

Wave generation capability: Regular, length 1.5 m ÷ 12 m, height 2 cm ÷ 24 cm
Wavemaker type and extent: Parabolic wedge type plunger, 6 m wide
Beach type and length: 3 perforated panels with gratings on parabolic arc, length 5 m
Wind generation capability: Resistance type probes on carriage or tank walls

Instrumentation: Resistance dynamometer, propeller dynamometers with different measuring capacities, devices for measuring wake survey, wave probes; auto-data acquisition and on line analysis system, high-speed film and video recording equipment
Model size range: Ship length from 3 m to 5 m
Model tracking techniques: propeller rpm adjusted manually
Tests performed: resistance and self-propulsion in calm water and waves; open water propeller tests and blade spindle torque of CPP; wake survey and longitudinal cut wave measurement; hydrodynamic forces on submerged bodies, foils, etc.; wave induced motions and loads on ships and fluctuating structures

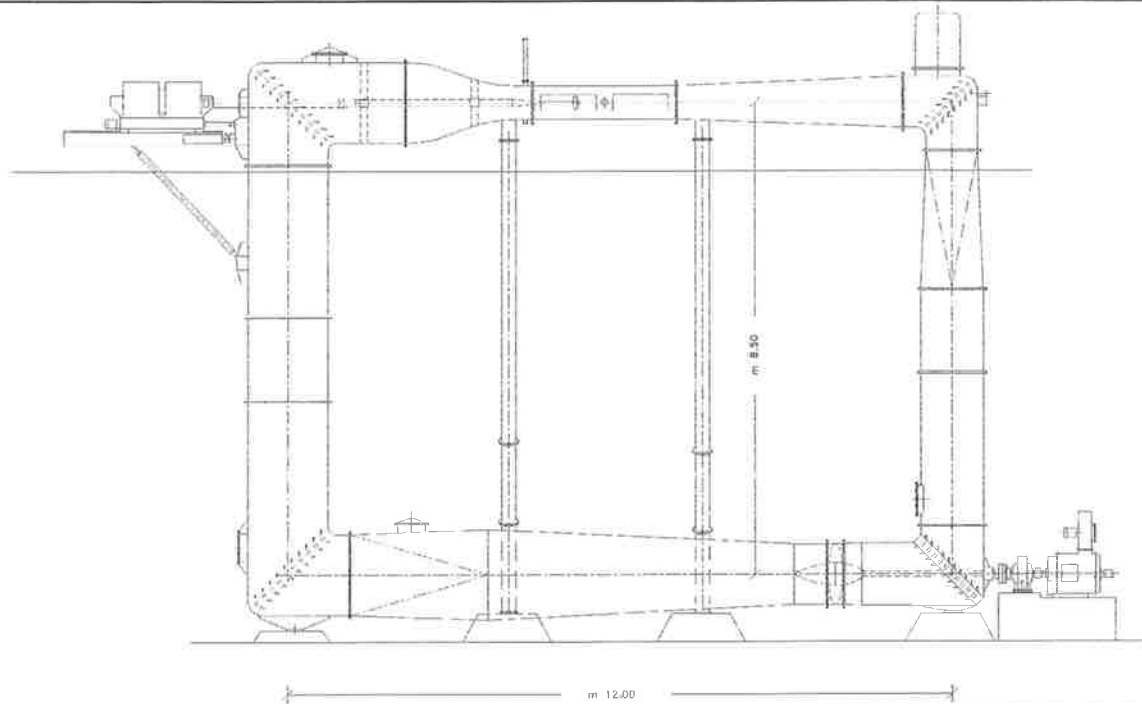
Published description: 23rd ITTC (annex to *itc - news* no. 46, June 2002)

INTERNATIONAL TOWING TANK CONFERENCE CATALOGUE OF FACILITIES
CIRCULATING WATER CHANNELS AND CAVITATION TUNNELS

ITALIAN NAVY
CHIEF OF STAFF – 4TH DEPARTMENT
CENTRO ESPERIENZE IDRODINAMICHE MARINA MILITARE (CEIMM)
Via di Vallerano 149, I-00128, Roma, Italy
TEL +39-06-5077091; FAX: +39-06-50770921
Web URL: "http://www.marina.difesa.it/attivita/ceimm.htm"

ITALY

CAVITATION TUNNEL (1962)



Description of facility: Vertical plane, closed recirculating cavitation tunnel Kempf & Remmers K15

Type of drive system: four bladed axial flow impeller, 1.00 m diameter fixed pitch

Total impeller motor power: 213 kW

Working section maximum velocity: 12 m/sec

Working section dimensions: 0.6 × 0.6 m.

Nozzle contraction: 5.96:1

Maximum and minimum absolute pressures: 150 kPa, 10 kPa

Instrumentation: five components balance, three components balance, stroboscope, digital photo and video system, laser doppler velocimetry (LDV) and particle image velocimetry (PIV).

Type and location of torque and thrust dynamometers:

J15 – horizontal, fixed dynamometer – max thrust 2450 N, max torque 98 Nm, max rpm 4000

H40 – variable inclination dynamometer – angle $[-8^{\circ}, +12^{\circ}]$, max thrust 1960 N, max torque 98 Nm, max rpm 3000

Propeller and model size range: maximum propeller diameter 300 mm; maximum profile span 350 mm

Test performed: Hydrodynamic and cavitation tests of propellers; cavitation and flow visualisation studies of submerged bodies; measurement of forces and noise levels for dummy models and profiles

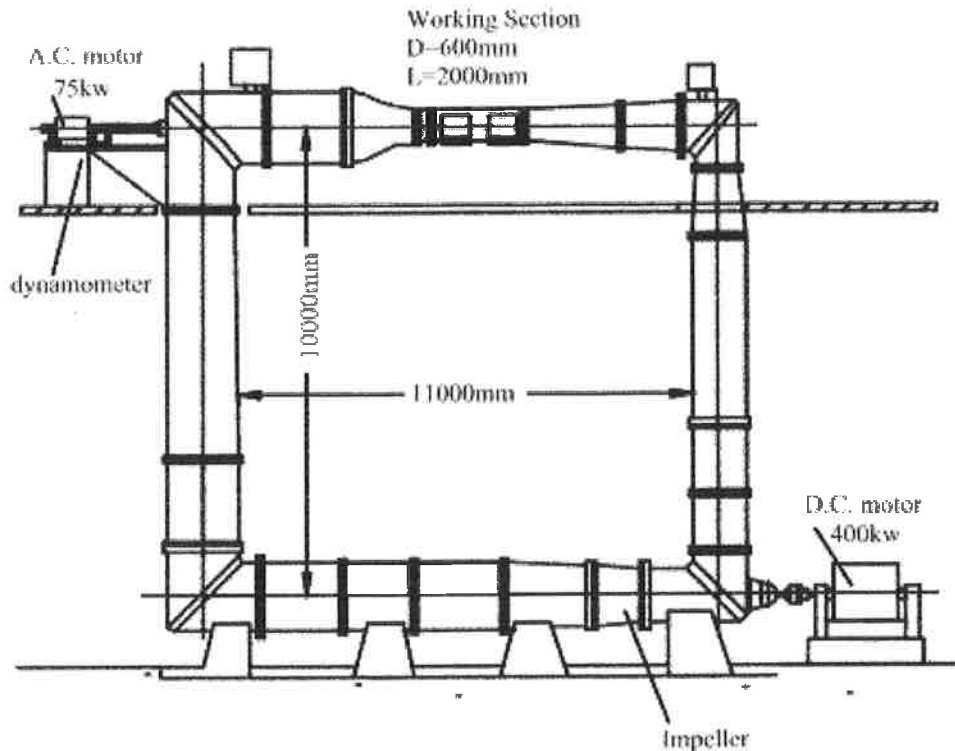
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**INTERNATIONAL TOWING TANK CONFERENCE CATALOGUE OF FACILITIES
CIRCULATING WATER CHANNELS AND CAVITATION TUNNELS**

SHIP HYDRODYNAMICS LABORATORY
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CHINA

CAVITATION TUNNEL (1977, remodelled 1998)



Description of facility: Vertical plane, closed recirculation; cylindrical working section, with 0.6 m diameter and 2 m length

Type of drive system: 5-bladed axial flow impeller

Total impeller motor power: 400 kW for impeller DC rpm regulator, 75kW for propeller model, frequency modulation

Working section maximum velocity: 15 m/s

Working section dimensions: length = 2 m, diameter = 0.6 m

Maximum and minimum absolute pressures: 101 kPa, 1 kPa

Range of cavitation number: $\sigma < 0.15$

Instrumentation: Propeller dynamometer; device for measuring spindle torque of CPP and duct forces, Pitot tubes, pressure sensors, hydrophones; auto-data acquisition and on line analysis system, high-speed film and video recording equipment

Type and location of torque and thrust dynamometers: A mechanical type upstream horizontal shaft dynamometer and a strain gauge type downstream inclined shaft ($\pm 12^\circ$) can be mounted on the top of working section

Propeller size range: 0.2 m \div 0.3 m

Test performed: Cavitation tests in uniform axial flow, inclined flow as well as in simulated wake field; propeller noise, unsteady propeller blade forces; propeller-induced fluctuating pressure on hull; cavitation erosion, hydrodynamic performance of hydrofoils, underwater objects

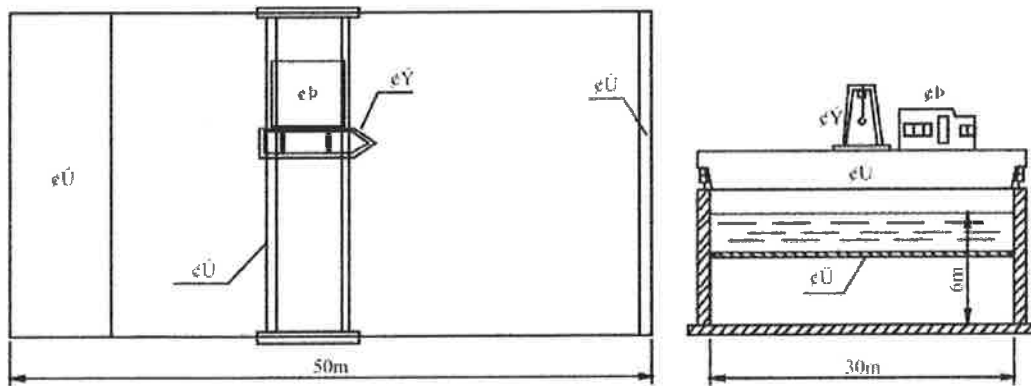
Published description: 23rd ITTC (annex to *ittc - news* no. 46, June 2002)

**INTERNATIONAL TOWING TANK CONFERENCE CATALOGUE OF FACILITIES
TOWING TANKS, SEAKEEPING AND MANOEUVRING BASINS**

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CHINA

OCEAN ENGINEERING BASIN (1992)



eU dual-flap wave maker
eY XY carriage
eU wave beach
eU large area false bottom
eY 3t crane
eB Control, data acquisition and on-line computer cabin

Description of tank: length=50 m, breadth=30 m, water depth=6 m
Description of carriage: Manned platform girder construction XY carriage
Drive system and power: DC motor driven, 11.0 kW for X direction, 3.0 kW for Y direction, silicon controlled rectifier
Maximum carriage speed: 1.0 m/s for X carriage, 0.6 m/s for Y carriage
Other capabilities: Vertical PMM or LAHPMM can be mounted

Wave generation capability: Regular and irregular long crest waves; wave period 0.5 s ÷ 3.5 s; maximum wave height 0.5 m
Wavemaker type and extent: Hydraulic dual-flap type, 30 m wide
Beach type and length: Solid cement gratings on parabolic arc, length 11 m
Method of irregular wave generation: Irregular drive signal input by micro-computer
Wave measurements: Portable electric resistance type wave probe

Sea environment modeling systems (excluding waves)

Water depth: From 0 m to 5.0 m by adjusting the position of large area (28 m × 26 m) false bottom up or down
Current generating system: Current speed in whole basin above false bottom generated by high-pressure water jet type current generating system, maximum speed 0.2 m/s, direction -90° ÷ 90° relative to wave direction; portable local current generating device can be equipped promptly when a higher current speed is required
Current measurement: Micro acoustic Doppler velocimeter; vane wheel type anemometer for measuring mean speed
Wind generating system: Regular and irregular winds can be generated by the portable array of axial fans; maximum speed 10 m/s, direction 0° ÷ 360°
Wind measurement: Hot wire anemometer; vane wheel type anemometer for measuring mean speed

Instrumentation: Non-contact optical 6-DOF motions measuring apparatus, accelerometers, 6-component force transducers, different type strain gauge load cells; auto-data acquisition and on line analysis system, high-speed film and video recording equipment

Model size range: Ship length from 3 m to 6 m; offshore structures ranging from 0.5 m to 4.0 m
Tests performed: Motions and dynamic loads on moored or floating structures under the action of wind, current and waves, dynamic positioning of floating structures, launching, transporting, positioning and assembling processes of offshore platforms; Vertical PMM or LAHPMM for captive model tests; free-running model turning circle, zig-zag, spiral and stopping tests in deep water and shallow water

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