

Appendix 8

List of Representatives (R), Members of Committees and Group (M) and Observers (O) Invited for the 25th ITTC

ARGENTINA

Universidad de Buenos Aires

- Prof. M.A. Colpachi (R)

AUSTRALIA

Australian Maritime College*

- Dr. Giles Tomas (O)
- Prof. Gregor Macfarlane (M)
- Mr. Jinzhu Xia (M)
- Dr. Martin Renilson (O)
- Prof. Neil Bose (R)
- Dr. Paul Brandner (O)

Curtin UT

- Dr. Kim Klaka (O)
- Dr. Tim Gourlay (O)

International Maritime Organisation

- Mr. Rob Gehling (O)

University of New South Wales

- Dr. Tracie Barber (O)

AUSTRIA

Schiffbautechnische Versuchsanstalt in Wien*

- Prof. Gerhard Strasser (R, M)
- Dipl.Ing. Richard Anzbok (M)

BELGIUM

Flanders Hydraulics Research

- Prof. dr. ir. Katrien Eloot (O)

Universiteit Gent

- Prof. dr. ir. Marc Vantorre (R)

University of Liege

- Prof. Jean Marchal (R)

BRAZIL

LabOceano, Brazilian Ocean Technology Laboratory, COPPE, University of Rio de Janeiro

- Prof. Antonio Carlos Fernandes (R, M)
- Prof. Carlos Antonio Levi (O)
- Mr. Joel Sena Sales Jr. (O)
- Prof. Marcelo de Almeida Santos Neves (O)
- Prof. Paulo de Tarso T. Esperanza (O)
- Prof. Sergio Hamilton Sphaier (O)

Brazilian Society of Naval Architects & Ocean Engineers

- Mr. Almirante Armando de Senna Bittencourt (O)

Instituto de Pesquisas Tecnológicas do Estado de Sao Paulo (IPT)

- Dr. Carlos Daher Padovezi (R)
- Mr. Carlos Hisayuki Umeda (O)

PETROBRAS

- Dr. JosAlfredo Ferrari Jr. (O)
- Dr. Luiz Augusto Petrus Levy (O)

University of Campina

- Prof. Celso Kazuyuki Morooka (O)

University of San Paulo

- Prof. Kazuo Nishimoto (O)
- Prof. Toshi-ichi Tachibana (O)



BULGARIA

Bulgarian Ship Hydrodynamics Centre*

- Dr. Kostadin Yossifov (R)
- Dr. Rumén Kishev (M)

CANADA

Memorial University of Newfoundland

- Dr. Brian Veitch (R)
- Dr. Heather Peng (O)
- Prof. Wei Qui (M)

National Research Council of Canada*

- Dr. Ahmed Derradji Aouat (M)
- Mr. David C. Murdey (R)
- Dr. F. Mary Williams (O)
- Dr. Greg Hermanski (M)
- Dr. M. Lau (M)

Oceanic Consulting Corporation

- Dr. Dan Walker (O)
- Dr. Don Spencer (M)

University of British Columbia

- Prof. Sander Calisal (O)

CHINA

China Ship Scientific Research Center (CSSRC)*

- Prof. Bao Shan Wu (M)
- Prof. De Xiang Zhu (M)
- Prof. Feng Zhao (O)
- Prof. Kai Yan (R)
- Prof. Wei Xin Zhou (M)
- Prof. Zhen Ping Weng (O)

Dalian University of Technology

- Prof. Q.J. Yue (M)
- Prof. Wang Yanying (O)
- Prof. Zong Zhi (R)

Harbin Engineering University

- Prof. De Bo Huang (R, M)
- Prof. Duan Wen Yang (O)
- Prof. Su Yu Min (O)
- Prof. Xiong-Liang Yao (M)
- Prof. Zhang Liang (O)

Huazhong University of Science and Technology

- Prof. Weibin Liu (O)
- Prof. Yao Zhao (R)

Jiangsu University of Science & Technology

- Mr. Da Ming Yang (O)
- Prof. Lin Wang (O)
- Prof. Ren Qing Zhu (R)
- Prof. Zhi Dong Wang (O)
- Prof. Zhi Yong Jiang (O)
- Prof. Zi Li Wang (O)

Marine Design and Research Institute of China (MARIC)

- Dr. Jinbao Wang (O)
- Prof. Sheming Fan (R, M)

Shanghai Jiao Tong University (SJTU)*

- Prof. C.J. Yang (M)
- Prof. Gang Chen (R)
- Prof. Jianmin Yang (M)
- Prof. Ning Ma (O)
- Prof. Xuefeng Wang (O)
- Prof. Zao Jian Zou (M)

Shanghai Ship and Shipping Research Institute (SSRI)

- Prof. Guoxiang Dong (R)
- Prof. Xiaping Chen (O)

Wuhan University of Technology

- Prof. Tingshou Tan (O)
- Prof. Xiaofei Mao (R)

Zhejiang Ocean University

- Prof. Yang Yu (O)

CROATIA

Brodarski Institut*

- Mr. Zeljko Djigas (R)

DENMARK

A.P. Moller-Maersk

- Mr. Jakob Buus Petersen. (O)
- Dr. Jan-Otto de Kat (O)

Clipper Group

- Mr. Kurt Damkjaer (O)

Dampskibsselskabet NORDEN A/S

- Mr. Søren Westergaard (O)

Danish Maritime

- Mr. Thorkil H. Christensen (O)

Danish Maritime Administration

- Mr. Mogens Bech (O)

Danish Shipowners Association

- Mr. Hans Henrik Petersen (O)

DFDS

- Mr. Claus Kruse (O)

Force Technology, Division for Maritime Industry*

- Mr Aage Damsgaard (M)
- Dr. Anton Minchev (M)
- Mr. Christian Schack (O)
- Dr. Kristian Agdrup (M)
- Dr. Stig Sand (R)

MAN Diesel A/S

- Mr. Thomas Knudsen (O)

Maritime Development Center of Europe

- Mr. Steen Sabinsky (O)

Odense Steel Shipyard Ltd.

- Mr. Christian D. Schmidt (O)
- Mr. Kjell Harr (O)

Technical University of Denmark

- Dr. Jørgen Juncher Jensen (O)
- Dr. Poul Andersen (O)
- Prof. Preben Terndrup Petersen (O)

The Danish Maritime Fund

- Mr. Erik Bastiansen (O)

FINLAND

ABB

- Mr. Tomi Veikonheimo (O)

Aker Arctic Technology Inc.

- Mr. Goran Wilkman (R, M)

Aker Yards

- Mr. Kari Kyyrö (O)
- Mr. Raimo Hämäläinen (O)

Deltamarin Contracting Ltd

- Mr. Mikko Mattila (O)

Helsinki University of Technology, Ship Laboratory

- Prof. Jerzy Matusiak (R)
- Mr. Tommi Mikkola (M)

VTT*

- Dr. Antonio Sanchez-Caja (M)
- Dr. Harri Soininen (R)
- Mr. Ilkka Saisto (O)

FRANCE

Bassin d'Essais des Carenes*

- Dr. Christian Helou (R)
- Mr. Erwan Jacquin (M)
- Dr. Laurence Briancon-Marjollet (M)
- Dr. Pierre Perdon (M)

Ecole Centrale de Nantes

- Dr. Bertrand Alessandrini (O)
- Dr. Pierre Ferrant (R, M)

GERMANY

Bundesministerium für Wirtschaft und Technologie

- Dr. Stephan Hesselmann (O)

Development Centre for Ship Technology and Transport Systems*

- Mr. Cornel Thill (R)
- Dr.-Ing. Tao Jiang (R)

Hamburgische Schiffbau Versuchsanstalt GmbH (HSVA)*

- Dr.-Ing. Andre Cura Hochbaum (M)
- Dipl.-Ing. Christia Johannsen (M)
- Dipl.-Ing. Jens-Holger Hellman (M)
- Dipl.-Ing. Juergen Friesch (R)

MPC Münchmeyer Petersen Marine GmbH

- Dipl.-Ing. Andreas Naujeck (O)



Schiffbau Versuchsanstalt Potsdam GmbH*

- Dipl.-Ing. Barbara Guenther (M)
- Dr. Manfred Mehmel (R)

Technical University of Hamburg

- Prof. G. Jensen (O)

Technische Universität Berlin

- Prof. Günther F. Clauss (O)

ThyssenKrupp Marine Systems, Blohm+Voss GmbH

- Mr. Stefan Deucker (O)

GREECE

National Technical University of Athens

- Prof. Apostolos Papanikolaou (M)
- Prof. George D. Tzabiras (R)
- Dr. Gregory Grigoropoulos (M)

INDIA

Naval Science and Technological Laboratory (NSTL)

- Mr. Manu Korulla (R)

INDONESIA

UPT BPPH Indonesian Hydrodynamic Laboratory

- Dr. Ika Prasetyawan (R)

IRAN

Sharif University of Technology

- Dr. Mohammad Saeed Seif (R, M)

ITALY

Centro Esperienze Idrodinamiche Marina Militare (CEIMM)

- Cdr. Massimo Soave (R)

Centro per gli Studi di Tecnica Navale (CETENA)

- Dr. Giovanni Caprino (R)
- Dr. Paolo Becchi (M)

Istituto Nazionale per Studi ed Esperienze di Architettura Navale (INSEAN)*

- Dr. Daniele Ranocchia (O)
- Dr. Elena Ciappi (M)
- Dr. Emilio F. Campana (M)
- Dr. Enrico De Bernardis (R)
- Dr. Fabio Di Felice (M)
- Dr. Francesco Salvatore (M)
- Mr. Lanfranco Benedetti (O)
- Dr. Riccardo Broglia (M)
- Dr. Ulderico Bulgarelli (M)

Universita di Genova

- Prof. Carlo Podenzana-Bonvino (R)
- Prof. Marco Ferrando (M)
- Dr. Paola Gualeni (O)

Universita di Napoli

- Dr. Ermina Begovic (O)
- Prof. Guido Boccadamo (R)
- Prof. Pasquale Cassella (O)

Universita di Trieste

- Prof. Alberto Fransescutto (M)
- Prof. Antonio Cardo (R)
- Dr. Gabriele Bulian (O)
- Dr. Giorgio Contento (O)

JAPAN

Akashi Ship Model Basin Co. Ltd.

- Dr. Kazuyuki Ebira (O)
- Dr. Yasunroi Iwasaki (R)

Akishima Laboratories (Mitsui Zosen) Inc.

- Dr. Akihito Hirayama (O)
- Dr. Norio Ishii (R)

Hiroshima University

- Prof. Hidetsugu Iwashita (O)
- Prof. Hironori Yasukawa (M)
- Prof. Yasuaki Doi (R)
- Prof. Yasushi Higo (O)

Hokkaido University

- Prof. Yasuo Yoshimura (O)

IHI Corporation*

- Dr. Akio Ito (R, M)
- Dr. Akira Masuko (O)
- Dr. Takuya Omori (O)

IHI Marine United Inc

- Dr. Tuyoshi Ishiguro (O)
- Dr. Yasuhiko Inukai (O)
- Dr. Yukio Koshiha (O)

Imabari Shipbuilding Co., Ltd.

- Mr. Hitoshi Fujita (O)
- Mr. Yoshifumi Tai (O)

Kobe University

- Prof. Eiichi Kobayashi (R)
- Prof. Hiroyuki Sadakane (O)
- Prof. Shigeru Nishio (M)

Kyushu University, Department of Naval Architecture

- Prof. Jun Ando (R, M)
- Prof. Satoru Yamaguchi (O)
- Prof. Akiji Shinkai (O)
- Prof. Katuru Kijima (O)
- Prof. Kuniharu Nakatake (O)
- Prof. Yoshitaka Furukawa (O)

Kyushu University, Research Institute for Applied Mechanics

- Prof. Changhong Hu (O)
- Dr. Makoto Sueyoshi (O)
- Prof. Masahiko Nakamura (R)
- Prof. Yuusaku Kyozuka (O)

Meguro Model Basin*

- Director Kazuhisa Kuda (O)
- Dr. Kazuyuki Yamakita (R)
- Dr. Takayuki Mori (O)

Mitsubishi Heavy Industries Ltd.*

- Mr. Akira Yamamoto (O)
- Mr. Chiharu Kawakita (O)
- Mr. Isao Satoh (O)
- Mr. Kenji Tsumura (O)
- Dr. Kin-ya Tamura (O)
- Dr. Naoji Toki (R, M)
- Mr. Satoru Ishikawa (O)
- Mr. Shigetomo Fujita (O)
- Mr. Tohru Kitamura (O)
- Mr. Yuusuke Takagi (O)

Mitsui Engineering & Shipbuilding Co., Ltd.

- Mr. Akihiko Fujii (O)
- Dr. Yoshihisa Takekoshi (O)

Nagasaki Institute of Applied Science

- Prof. Chaniku Shin (R)
- Prof. Tsutomu Hori (O)

National Maritime Research Institute*

- Mr. Harukuni Taguchi (O)
- Dr. M. Hinatsu (M)
- Dr. Noriyuki Sasaki (M)
- Dr. Shigesuke Ishida (M)
- Dr. Takanori Hino (O)
- Dr. Yoshiaki Kodama (R)
- Dr. Yoshitaka Ukon (O)

National Research Institute of Fisheries Engineering

- Mr. Akihiko Matsuda (O)
- Mr. Toshihiko Kawashima (O)
- Mr. Toshikazu Masuya (R)

Nippon Kaiji Kyokai

- Dr. Ryuji Miyake (O)
- Dr. Tingyao Zhu (O)

ONR Global, Tokyo

- Dr. Cho Peter (O)
- Capt. Nannettes Roberts (O)
- Dr. Hitoshi Narita (O)

Osaka Prefecture University

- Prof. Toru Katayama (O)
- Prof. Yoshiho Ikeda (R)
- Prof. Yusuke Tahara (M)

Osaka University

- Prof. Hiroyoshi Suzuki (O)
- Prof. Kazuhiko Hasegawa (O)
- Prof. Masashi Kashiwagi (M)
- Dr. Munehiko Minoura (O)
- Prof. Naoya Umeda (M)
- Prof. Shigeru Naito (O)
- Prof. Toshio Suzuki (O)
- Prof. Yasuyuki Toda (R, M)
- Dr. Yugo Sanada (O)

Oshima Shipbuilding Co., Ltd.

- Dr. He Qing (O)

Saga University

- Prof. Shuji Nagata (M)



Sanoyas Hishino Meisho Corporation

- Mr. Kenta Koike (O)

Shipbuilding Research Centre of Japan

- Dr. Kazunori Sato (O)
- Mr. Ken Kanai (O)
- Mr. Shoji Shingo (O)
- Dr. Yushu Washio (R)

Sumitomo Heavy Industries Ltd.

- Mr. Kyoji Murakami (O)
- Dr. Michio Takai (R)

The Japan Society of Naval Architects and Ocean Engineers

- Dr. Hironori Arai (O)
- Dr. Seiko Ogiwara (O)

Tokyo University of Marine Science and Technology

- Prof. Atsushi Ishibashi (O)
- Prof. Hiroaki Kobayashi (O)
- Prof. Kuniaki Shoji (R)

Tsuneishi Shipbuilding Company

- Dr. Jian Gang Shi (O)
- Mr. Makoto Soejima (O)

Universal Shipbuilding Corporation

- Dr. Koichiro Matsumoto (M)
- Dr. Mitsuyasu Nagahama (R)

University of Tokyo*

- Prof. Chang-Kyu Rheem (M)
- Prof. Hajime Yamaguchi (O)
- Prof. Hiroharu Kato (O)
- Prof. Hiroshi Kagimoto (O)
- Prof. Hisaaki Maeda (O)
- Prof. Masataka Fujino (O)
- Prof. Takafumi Kawamura (M)
- Prof. Takeo Koyama (O)
- Prof. Takeshi Kinoshita (R, M)

Yokohama National University

- Prof. Hajime Maruo (O)
- Prof. Hisashi Kai (O)
- Prof. Kazuo Suzuki (O)
- Prof. Motohiko Murai (O)
- Prof. Seiji Tazawa (O)
- Prof. Tsugukiyo Hirayama (R)

KOREA

Chosun University

- Prof. K. J. Lee (O)

Chungnam National University

- Prof. Hyoung Tae Kim (O)

Daewoo Shipbuilding & Marine Engineering Co., Ltd.

- Mr. Young-Bok Choi (O)

Hanjin Heavy Ind. & Construction Co., Ltd.

- Mr. Noh-Jun Park (O)

Hongik University

- Prof. Museok Song (O)

Hyundai Heavy Industries Co. Ltd.*

- Dr. Bong Jun Chang (M)
- Mr. Heung-Won Seo (O)
- Dr. Hong-Gi Lee (R)
- Dr. Keh-Sik Min (O)
- Dr. Seon-Hyung Kang (O)
- Dr. Young Jae Sung (O)

Inha University

- Prof. Hyochul Kim (O)
- Prof. Sung-Wan Hong (O)
- Prof. Young-Gill Lee (R)

Korea Maritime University

- Prof. Beom-Soo Hyun (O)

Maritime and Ocean Engineering Research Institute (MOERI)*

- Dr. Chun Joo Lee (M)
- Dr. Jin Kim (M)
- Dr. Sa Young Hong (M)
- Dr. Seok-Won Hong (R)
- Dr. Seung-Il Yang (M)
- Dr. Suak-Ho Van (M)
- Dr. Sun Young Kim (M)

National Fisheries Research & Development Institute

- Dr. Jong Kun Shin (O)

Pohang University of Science & Technology

- Prof. Sang J. Lee (O)

Pukyong National University

- Prof. Yong Jig Kim (O)

Pusan National University

- Prof. Ho-Hwan Chun (R, M)

Samsung Heavy Industries Co. Ltd.

- Dr. Jinho Jang (M)
- Dr. Se-Eun Kim (M)
- Mr. Seung Myun Hwangbo (R)
- Dr. Sung-Yong Han (O)

Seoul National University

- Prof. Hang S. Choi (O)
- Prof. Jung-Chun Suh (M)
- Prof. Key Pyo Rhee (R)
- Prof. Kwang-June Bai (O)
- Prof. Shin Hyung Rhee (O)
- Prof. Yonghwan Kim (M)

University of Ulsan

- Prof. Hyun-Kyoung Shin (R)

MALAYSIA

Universiti Teknologi Malaysia

- Dr. Mohamad Pauzi Abdul Ghani (O)
- Dr. Omar bin Yaakob (R)

THE NETHERLANDS

Bosch Rexroth B.V.

- Ir. Lambert N. G. Romijnders (O)

Delft University of Technology

- Dr.ir. J.A.Keuning (O)
- Prof. Johan A. Pinkster (O)
- Prof.dr.ir. R.H.M.Huijsmans (R)

IHC Dredgers B.V.

- Ing. C.H.M. Kramers (O)

Maritime Research Institute Netherlands (MARIN)*

- Ir. A.H.Hubregtse (R)
- Dr.ir. F. van Walree (M)
- Ir. F.H.H.A. Quadvlieg (M)
- Ir. G.F.M. Remery (O)
- Ir. H.C.J. van Wijngaarden (M)
- Ir. J.H. Allema (M)

- Ir. Jaap de Wilde (M)

- Dr. M.W.C. Oosterveld (O)

Wartsila Propulsion Netherlands

- Ir. J.Th. Ligtelijn (O)

NORWAY

Norwegian Marine Technology Research Institute (MARINTEK)*

- Dr. Carl Trygve Stansberg (R)
- Mr. Darius Fathi (O)
- Mr. Frank Wettland (O)
- Mr. Halvor Lie (M)
- Mr. Kjell Olav Holden (O)
- Dr. Kouros Koushan (O)
- Dr. R. Baarholm (M)

Norwegian University of Science and Technology

- Prof. Knut Minsaas (O)
- Prof. Odd M. Faltinsen (O)
- Prof. Sverre Steen (M)

POLAND

Gdansk Shiprepair Yard Remontowa S.A

- Mr. Piotr Soyka (O)

Gdansk Shipyard

- Mr. Boshidar Metschkow (O)
- Mr. Antoni Poziomski (O)

New Szczecin Shipyard

- Mr. Artur Trzeciakowski (O)

Northern Shipyard

- Mr. Jaroslaw Flont (O)

Polish Register of Shipping

- Mr. Jan Jankowski (O)

Ship Design and Research Centre (CTO)*

- Dr. Leszek Wilczynski (R)
- Dr. T. Bugalski (M)

Technical University of Gdansk

- Prof. Jan Szantyr (R)
- Prof. Marek Dzida (O)



The Association of Polish Maritime Industries

- Mr. Jerzy Czuczman (O)

The Szewalski Institute of fluid -flow machinery

- Prof. Jarosław Mikielewicz (O)

PORTUGAL

Instituto Superior Tecnico Portugal

- Dr. Nuno Fonseca (M)

ROMANIA

ICEPRONAV SA

- Dr. Alina Florea (R)

RUSSIA

Krylov Shipbuilding Research Institute*

- Dr. Alexander Pustoshnyy (R)
- Dr. Elena Ya Semionicheva (M)
- Dr. Valery Borusevich (M)

SINGAPORE

Becker Marine Systems Asia Pte. Ltd.

- Dr. Teng Kiat Lim (O)

SPAIN

Canal de Experiencias Hidrodinamicas de El Pardo (CEHIPAR)*

- Dr. Jesus Valle (M)
- Adm. Jose M. Sevilla (R)
- Dr. M.J. Bobo de la Pena (M)

Escuela Tecnica Superior de Ingenieros Navales (ETSIN)

- Prof. Luis Perez-Rojas (R)

SWEDEN

Rolls-Royce Hydrodynamic Research Centre

- Mr. Mickey Lindevall (O)
- Mr. Reima Aartotarvi (R)

SSPA Sweden AB*

- Mr. Jan Hallander (M)
- Dr. Jianbo Hua (M)
- Mr. Lars T. Gustafsson (O)
- Dr. Sofia Werner (O)

- Dr. Susanne Abrahamsson (R)
- Dr. Willem van Berlekom (O)

TURKEY

Istanbul Technical University

- Prof. Emin Korkut (R, M)
- Prof. Mustafa Insel (M)

UNITED KINGDOM

BMT SeaTech Ltd.

- Dr. Ian W. Dand (R)

Cussons technology Ltd.

- Mr. Peter Hughes (O)
- Mr. Shaun Ross (O)
- Mr. Steven Curtis (O)

Dstl, Naval Systems Department

- Dr. Chris Jenkins (O)

International Paint Ltd.

- Dr. John Sinclair-Day (O)

Lloyd's Register

- Mr. John Carlton (O)
- Mr. P. Fitzsimmons (O)

QinetiQ*

- Mr. Andrew J. Peters (M)
- Mr. James Anderson (O)
- Dr. Jon Bayliss (R)
- Dr. Paul Crossland (M)

Universities of Glasgow and Strathclyde

- Prof. Atilla Incecik (R)
- Prof. Dracos Vassalos (O)
- Dr. Sandy Day (M)
- Dr. Shan Huang (M)

University of Newcastle upon Tyne*

- Prof. Martin J Downie (M)
- Prof. Mehmet Atlar (R)
- Dr. Michael D. Woodward (O)
- Mr. Roderick Sampson (M)

University of Southampton

- Prof. Anthony F. Molland (O)
- Dr. Dominic Hudson (O)
- Dr. Stephen R. Turnock (M)

- Prof. W.G. Price (R)

VT Shipbuilding

- Mr. Paul Tucker (R)

USA

American Bureau of Shipping

- Dr. Y.S. Shin (O)

Naval Surface Warfare Center*

- Dr. Arthur M. Reed (M)
- Mr. G. Karafiath (M)
- Dr. In-Young Koh (R)
- Dr. Joel T. Park (M)
- Dr. Joseph J. Gorski (M)
- Dr. S. Gowing (M)
- Dr. Stuart Jessup (O)
- Dr. T. Fu (M)
- Dr. Terence R. Applebee (M)
- Dr. William B Morgan (O)

Office of Naval Research

- Dr. Ki-Han Kim (M)
- Dr. Patrick Purtell (O)
- Dr. Ronald Josline (O)

Pennsylvania State University, Applied Research Laboratory

- Dr. William C. Zierke (R)

Stevens Institute of Technology, Davidson Laboratory

- Dr. Raju Datla (R)

Texas A & M University

- Prof. Jeffrey M. Falzarano (O)

United States Merchant Marine Academy

- Prof. Haruzo Eda (O)

United States Naval Academy

- Dr. Bruce Johnson (O)
- Prof. G. J. White (R)
- Prof. Rameswar Bhattacharyya (O)

University of California, Barkley

- Prof J.R. Paulling (O)

University of Iowa, Institute of Hydraulic Research

- Prof. Frederick Stern (R)

University of Michigan*

- Prof. Robert F. Beck (R)

University of New Orleans

- Prof. Robert G. Latorre (R)

Webb Institute, Robinson Model Basin

- Dr. Roger H. Compton (R)