The ClassNK Mission

ClassNK is dedicated to ensuring the safety of life and property at sea, and to preventing pollution of the marine environment. To achieve this mission, ClassNK will:

- Focus on delivering the highest quality classification services, by the highest quality personnel while maintaining its totally independent third party, non-profit status;
- Focus on the development of relevant rules, guidances and procedures, and maintain and develop its commitment to scientific and technological research and development; and
- Maintain and develop its global operations in line with the needs of those using its services.

Profile

Founded on 15 November 1899, Nippon Kaiji Kyokai, better known as ClassNK or simply NK, is a ship classification society dedicated to safeguarding life and property at sea and to preventing marine pollution. ClassNK offers a broad spectrum of services as a totally independent third party, non-profit organization. The principal work of the Society’s expert technical staff is to conduct surveys of new and existing ships and other marine structures, including hull structures, propulsion systems, electrical and electronic systems, safety equipment, and cargo handling gear, among numerous other areas, to ensure their full compliance with classification rules developed by the Society. It also conducts a wide range of statutory surveys on behalf of more than 100 flag States around the world. Other activities include the auditing and registration of ship safety management systems, as well as certification of quality, environmental and occupational health management systems and seafarer training, technical consulting, and an extensive range of cutting-edge R&D projects.
I would like to take the publishing of ClassNK’s 2012 Annual Report as an opportunity to express my warm gratitude to everyone for their continued support of our activities here at ClassNK.

Even within the context of our 113-year history, 2012 was a year that deserves special mention for two very significant reasons.

• At the end of May 2012, ClassNK became the first classification society in the world to exceed 200 million gross tons under class. In addition, newbuilding registrations set a new record of 692 vessels and 20,320,000 gross tons. By the end of the year, our register reached 8,202 vessels, totaling 211,126,849 gross tons.

• With the establishment of exclusive survey offices in Doha (Qatar), Muscat (Oman), and Lianyungang (China), the number of exclusive survey offices outside of Japan exceeded 100 locations.

The achievement of these two milestones has further strengthened the Society’s foundations, but I would also like to highlight the major initiatives that ClassNK took in 2012 to improve our survey structure, strengthen our research and development activities, and expand our business ventures.

Survey Structure
In 2012, we continued to expand our service network to meet the changing needs of our clients, topping 100 exclusive survey offices overseas for the first time. As of the end of 2012, we conduct classification and survey operations in 121 offices across the world.

Beyond expanding our service network, we are also working to maintain and improve the quality of our exclusive survey offices. We are constantly developing the expertise of our surveyors through extensive training courses held both in Japan and overseas.
We also continue our work to earn authorizations to carry out surveys on behalf of flag administrations around the world. Continuing from the authorization we received from the Norway and U.S. flag administrations in 2011, we were granted authorization from the flag administration of Madeira, Portugal in 2012. By the end of 2012, we had received permission to carry out surveys on behalf of 106 flag administrations around the world.

We have also expanded our range of seminars and educational activities in order to help our clients comply with the new MARPOL Annex VI amendments and the Maritime Labor Convention, both of which will come into force in 2013.

In April 2012, we established the EEDI (Energy Efficient Design Index) Division in order to comprehensively address new regulations for the reduction of greenhouse gases. For the Maritime Labor Convention, which will come into force in August 2013, we are training our surveyors to conduct surveys that address this new standard. In addition, we are striving to acquire authorization from each flag state to perform this type of survey certification.

Research and Development

In addition to our independent R&D activities, we have greatly expanded our Joint R&D for Industry program, which we began in 2009. In particular, we are focusing on the research and development of the rapidly growing off-shore and research and energy sectors, as well as the development of eco-ship design.

Since June 2012, ClassNK has been cooperating with IBM and IHIMU (now Japan Marine United) in conducting R&D for the architecture of a cloud-based “ship maintenance management system” for use by shipowners and ship management companies. It is our hope that we can reduce maintenance and management costs while ensuring vessel safety.

ClassNK will continue to provide technical and financial support for research that addresses the needs of those in the maritime industry, and in doing so, contribute to the success of the entire industry.

New Business Ventures

In addition to certification services for seafarer education and training facilities, which were introduced in 2011, in 2012 we began new services for wind turbine certification, as well as local content certification in Brazil.

In response to increasing environmental regulations, we began joint development of a new energy saving operation support system, “ClassNK-NAPA GREEN,” with the leading Finnish ship design software company NAPA in May 2012.

Toward Becoming the Chosen Class Society

Our Board of Directors and staff here at ClassNK never forget the fact that ship classification is a service that our clients are free to choose. We have gone back to the basics and reaffirmed our commitment to provide high-quality services with an uncompromising focus on the improvement of technical capabilities. It is our goal to be the classification society that our clients can trust and rely upon.

We look forward to enjoying your cooperation and support again in 2013.

Noboru Ueda
2012 at a Glance

Register Exceeds 200 Million Gross Tons

ClassNK became the first classification society in the world to exceed 200 million gross tons of vessels under class. ClassNK registered 692 newbuildings amounting to 20,328,329 gross tons in 2012, exceeding the previous record of newbuildings and gross tons registered in 2011. As of the end of December 2012, ClassNK has 8,202 vessels and 211,126,849 gross tons under class.

Breakdown of NK Fleet by Flag

<table>
<thead>
<tr>
<th>Flag</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panama</td>
<td>53%</td>
</tr>
<tr>
<td>Japan</td>
<td>8%</td>
</tr>
<tr>
<td>Singapore</td>
<td>7%</td>
</tr>
<tr>
<td>Liberia</td>
<td>4%</td>
</tr>
<tr>
<td>Others</td>
<td>14%</td>
</tr>
</tbody>
</table>

Breakdown of NK Fleet by Type

<table>
<thead>
<tr>
<th>Ship Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk Carrier</td>
<td>39%</td>
</tr>
<tr>
<td>Oil Tanker</td>
<td>10%</td>
</tr>
<tr>
<td>General Cargo</td>
<td>8%</td>
</tr>
<tr>
<td>Chemical Tanker</td>
<td>8%</td>
</tr>
<tr>
<td>Container Carrier</td>
<td>7%</td>
</tr>
<tr>
<td>Vehicle Carrier</td>
<td>4%</td>
</tr>
<tr>
<td>LPG Carrier</td>
<td>4%</td>
</tr>
<tr>
<td>Refrigerated Cargo</td>
<td>2%</td>
</tr>
<tr>
<td>LNG Carrier</td>
<td>1%</td>
</tr>
<tr>
<td>Others</td>
<td>17%</td>
</tr>
</tbody>
</table>

Total Tonnage of Ships under Class

200 million GT

First classification society in the world to exceed 200 million gross tons on register

ClassNK became the first classification society in the world to exceed 200 million gross tons on its register, with a total of 7,847 vessels and 200,804,781 gross tons under class by the end of May 2012.

Reaching more than 200 million gross tons on our register was one of the goals set out in ClassNK’s Medium-Term Business Plan “Global Approach 200” in June 2011. The objective was to reach 200 million gross tons by 2013, but was accomplished just halfway through 2012.

Total Number of Ships under Class

8,000 ships

ClassNK exceeds 8,000 vessels under class

By the end of August 2012, ClassNK surpassed 8,000 vessels on its register, with a total of 8,036 vessels and 206,927,557 gross tons under class.

The Society topped 6,000 vessels in 1989, and 7,000 vessels in 2008. Within four years ClassNK registered an increase of 1,000 vessels, breaking the 8,000 mark by the end of August 2012. This was mainly thanks to the number of newbuildings classed with NK and an increase in the number of existing vessels transferring from other classification societies to register with ClassNK.
ClassNK established three new exclusive survey offices in Doha (Qatar), Muscat (Oman), and Lianyungang (China), exceeding 100 locations overseas. ClassNK is committed to responding to market trends and the needs of our clients by constantly expanding our survey network and dispatching surveyors to provide the best possible service.

ClassNK participated in the following maritime exhibitions in 2012:

<table>
<thead>
<tr>
<th>Name</th>
<th>Venue</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping, Marine &amp; Port World Expo</td>
<td>Mumbai, India</td>
<td>2/8~2/11</td>
</tr>
<tr>
<td>VietShip</td>
<td>Hanoi, Viet Nam</td>
<td>2/28~3/1</td>
</tr>
<tr>
<td>China Maritime</td>
<td>Hong Kong</td>
<td>2/28~3/1</td>
</tr>
<tr>
<td>Asia-Pacific Maritime</td>
<td>Singapore</td>
<td>3/18~3/16</td>
</tr>
<tr>
<td>Sea Japan</td>
<td>Tokyo, Japan</td>
<td>4/18~4/20</td>
</tr>
<tr>
<td>Offshore Marine Asia</td>
<td>Singapore</td>
<td>4/25~4/27</td>
</tr>
<tr>
<td>Posidonia</td>
<td>Athens, Greece</td>
<td>6/4~6/8</td>
</tr>
<tr>
<td>Sri Lanka Ports Trade &amp; Logistics</td>
<td>Colombo, Sri Lanka</td>
<td>7/10~7/11</td>
</tr>
<tr>
<td>Navalhore</td>
<td>Rio de Janeiro, Brazil</td>
<td>8/1~8/5</td>
</tr>
<tr>
<td>SAMM Hamburg</td>
<td>Hamburg, Germany</td>
<td>9/4~9/17</td>
</tr>
<tr>
<td>INFA</td>
<td>London</td>
<td>9/12~9/13</td>
</tr>
<tr>
<td>Navegistic</td>
<td>Asuncion, Paraguay</td>
<td>9/26~9/28</td>
</tr>
<tr>
<td>Gastech</td>
<td>London</td>
<td>10/8~10/11</td>
</tr>
<tr>
<td>Shipset China</td>
<td>Dalian, China</td>
<td>10/23~10/26</td>
</tr>
<tr>
<td>Seatrade Middle East Maritime</td>
<td>Dubai, U.A.E.</td>
<td>11/27~11/29</td>
</tr>
<tr>
<td>Exponaval / Transport</td>
<td>Valparaiso, Chile</td>
<td>12/4~12/7</td>
</tr>
</tbody>
</table>

**Exclusive Survey Offices Overseas**

100 places

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**International Exhibitions**

17 places
ClassNK signed an agreement with government bodies of Lithuania, Portugal and Palau, granting the Society authorization to carry out Convention surveys and issue certificates as a Recognized Organization. The Society was also granted authorization from the United States Coast Guard (USCG) on December 2012 to carry out a full range of surveys, audits and issue certificates for the SOLAS and MARPOL among many other conventions on behalf of the United States flag administration. These are in addition to the authorizations for the Tonnage Convention and Load Line Convention granted in December 2011.

Board of Directors
Chairman and President N. Ueda (Reappointment)
Executive Vice President T. Matsui (Reappointment)
Executive Vice President S. Kakubari (Reappointment)
Executive Vice President K. Fujiwara (Reappointment)
Executive Vice President T. Yoneya (Reappointment)
Executive Vice President Y. Nakamura (Reappointment)
Managing Director T. Agata (New appointment)
Managing Director T. Kinoshita (New appointment)
Managing Director T. Matsui (New appointment)
Managing Director T. Watanabe (New appointment)

New authorizations earned from Lithuania, Portugal, Madeira and Palau flag states and expansion of authorizations from U.S.A. flag state (SOLAS and MARPOL)

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March 22

ClassNK organizational restructuring
1. Board of Directors
The following changes in the Board of Directors were approved at a board meeting held on 22 March 2012 after a meeting of the Board of Trustees:

2. Establishment of the EEDI Division
ClassNK established the EEDI Division on 1 April 2012.

Amendments to the MARPOL Convention on new regulations for reducing CO2 emissions in international shipping came into force on 1 January 2013, bringing in the Energy Efficiency Design Index (EEDI) for newbuilding and requiring existing vessels to have a Ship Energy Efficiency Management Plan (SEEMP).

Full-time technical staff have been dispatched to the EEDI Division to make preparations for the enactment of the new regulations as well as provide appraisals for such services as EEDI and SEEMP before the regulations come into force. On top of this, the Society also provides its “PrimeShip-GREEN/ EEOI” calculation analysis system and appraisals for EEOI.

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Joint development with NAPA on the operational efficiency support system “ClassNK-NAPA GREEN”

In May 2012, the Society announced that it had launched a joint research project with ship design and operation software system development company NAPA Ltd. Together with NAPA, ClassNK is developing a comprehensive operational efficiency support system for the effective implementation of the Ship Energy Efficiency Management Plan (SEEMP).

The system was also installed onboard newbuildings at Imabari Shipbuilding Co. Ltd., and Sanoyas Ltd in August 2012. Ship trials were carried out at the companies in both calm waters and actual seas to verify the effectiveness of the system’s energy-saving operational support efficiency, as well as gain information for total optimization through analysis of various information and feedback from the trials.

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ClassNK announced in December 2012 that it had granted the world’s first Statement of Compliance (SOC) to Jiangmen Zhongxin Shipbreaking & Steel Co. Ltd in regards to the Ship Recycling Convention (adopted at the Hong Kong International Convention for the improved safety of shipping and the environment).

Lloyd’s List Middle East Awards
The Society announced in October 2012 that it is developing the Ship Maintenance Management System to help reduce ship lifecycle costs as part of a joint research effort with IHI Marine United Ltd. (now Japan Marine United Inc.), Diesel United Ltd., and IBM Japan. The system will provide shipowners and ship management companies with a cloud service for the system from June 2013.

The ClassNK Rio de Janeiro Office (NK NIPPON KAIJI KYOKAI DO BRASIL LTDA.) earned authorization* from ANP as an accredited entity for certifying local content certification in December 2012.

ClassNK became the first classification society in the world to announce software to support “Harmonized CSR Rules for Bulk Carriers and Oil Tankers (First Draft Report),” announced by IACS on 1 July 2012. The software is based on knowledge gleaned from the society’s software developments up until now and the opinions of designers based on the operation of current CSR software, and is installed with the latest technical information. It is aimed at designers, and is a complete renovation of existing CSR software. This new Harmonized CSR software will shorten design lead time and help improve the design process.

ClassNK received the following awards at award ceremonies held in various places across the world by Lloyd’s List Ltd. and Seatrade Ltd.

- Lloyd’s List Global Awards: “Safety Award”
- Seatrade Asia Awards 2012: “The Classification Society Award” and “The Education and Training Award” (two awards)
- Lloyd’s List Middle East and Indian Subcontinent Awards 2012: “The Classification Society Award”
- Lloyd’s List Asia Awards 2012: “The Classification Society Award” and “The Training Award” (two awards)
ClassNK continues to expand its extensive worldwide survey network, with the number of exclusive survey offices overseas exceeding 100 locations on 1 October 2012. As of the end of December 2012, the Society operates 121 exclusive survey offices at the world’s major ports and maritime cities as well as five Plan Approval Centers located in the major shipbuilding regions of the world.
ClassNK opens offices in Doha, Qatar; Muscat, Oman; and Lianyungang, China (Doha and Muscat are under the jurisdiction of the Dubai Office, and Lianyungang is under the jurisdiction of the Qingdao Office).

ClassNK opens an office in Karachi, Pakistan (under the jurisdiction of the Kuwait Office).

Exclusive Survey Offices Newly Opened in 2012

October 1

November 15
ClassNK continues to expand its service network, with over 120 exclusive survey offices around the world and Plan Approval Centers in the major shipbuilding regions of the world. In 2012, the Society retained its global top share of the merchant fleet in terms of gross tonnage. By the end of 2012, the Society added 964 ships to its registry, totalling 25,746,815 gross tons, marking the highest figures in ClassNK history in both categories.

ClassNK in Action

Class Surveys
Over the course of the year, the Society carried out a total of 3,312 surveys in Japan. Of these, 412 were initial surveys, and 2,900 were class maintenance surveys. Surveys conducted overseas totaled 14,308, of which 280 were initial surveys, and 14,028 were class maintenance surveys.

Statutory Surveys
At present, a total of 106 government administrations around the world recognize and authorize ClassNK to act on their behalf to conduct surveys and issue certificates in accordance with international conventions and codes, as well as national requirements pertaining to ship safety and the prevention of marine pollution. In 2012, the Society carried out inspections and issued more than 44,000 statutory certificates based on these authorizations as follows:
- International Tonnage certificates: 930
- International Load certificates: 3,644
- SOLAS related certificates: 21,882
- MARPOL related certificates: 16,390
- Anti-fouling system certificates: 1,438

Approval of manufacturers and service suppliers
The Society provided a range of company approval related services including testing and measurement services related to class and equipment maintenance surveys as well as for maintaining the registration of approved firms during the year. Firms providing the following types of services were approved by the Society in 2012:
1. In-water survey of ships: 34
2. Thickness measurements on ships: 28
3. Radio inspection services: 24
4. Maintenance of fire fighting systems and equipment: 53
5. Maintenance of life saving equipment and appliances: 27
6. BLACH: 51
7. Voyage data recorders: 22
8. Hatch tightness testing: 2
As with previous years, the Society continues to work with the managers and owners of detained vessels to help improve ship conditions and increase safety awareness. To this end, the Society’s Survey Department published the Annual Report on Port State Control (August 2012), a compilation and analysis of PSC related statistics for the previous year, and distributed it to shipowners, ship managers, and other concerned parties. In addition, high-ranking members of the Society visited key maritime authorities around the world, including the Australian Maritime Safety Authority (AMSA), China MSA, Transport Canada, and the USCG during the course of the year. ClassNK also sent representatives to bilateral Korea-Japan meetings and China-Japan meetings, held in South Korea and Nagoya respectively, on inspection related matters and gave presentations on the Society’s efforts being taken to reduce the detention ratio of NK classed ships.
During 2012, ClassNK issued Statements of Compliance to 33 vessels under the Society's Condition Assessment Program (CAP). Statements of Compliance were also issued for the ballast water management plans of 667 ships. As of the end of 2011, the aggregate total number of Statements of Compliance issued by the Society stood at 291 for CAP and 5,746 for ballast water management plans. No one is immune to the risk of incidents at sea as the rate of ship casualties of recent years can testify. The Society's Emergency Technical Assistance Service (ETAS) team is on call 24/7 to support the owners and operators of ships registered for this service in ensuring the safety of their vessels and minimizing the environmental impact if disaster should strike. In 2012, this team was called into action for 6 incidents related to maritime casualties to provide technical support. In 2012, 80 more vessels registered for the Society’s ETAS service, giving a total of 1,096 in all.

TECHNICAL SERVICES

In 2012, ClassNK had another busy year conducting ISM Code and ISPS Code related audits as a Recognized Organization on behalf of various flag administrations. Over the course of the year, the Society registered 46 new companies in accordance with ISM requirements, bringing the total number of companies registered with the Society to 640. Safety Management Certificates (SMC’s) were issued to 887 ships in 2012, bringing the total number of vessels registered with the Society to 5,056. As of the end of 2012, NK conducts ISM authorizations on behalf of 73 Administrations. The Society also registered 853 ships to ISPS Code requirements during the year, bringing the total number of ships registered with the Society under the ISPS Code to 4,367. NK currently conducts ISPS authorizations on behalf of 58 Administrations.

1. Quality, Environmental Management, and Occupational Health & Safety Management Systems

ClassNK also conducts certification of quality management systems under the ISO 9001 standard, environmental management systems under the ISO 14001 standard, and occupational health and safety management systems under the OHSAS18001 standard. In 2012, a total of 23 organizations were newly registered under ISO 9001, bringing the total number registered with the Society to 398. The Society also registered 8 organizations to the ISO 14001 standard during the year, bringing the total number to 116. ClassNK registered 7 organizations to the OHSAS18001 standard under its new service started in 2010.

2. New Services

ClassNK has been providing the following services since 2011:
(1) Training Course Certification
(2) Voluntary Certification for Seafarer Recruitment and Recruiting Institutions
(3) Maritime Instructor Training
(4) GHG Emission Certification

3. PrimeManagement Seminar

ClassNK has been providing its integrated PrimeManagement System for management system certifications (ISO etc.), training course certification and certification for ISM Code among others since 2011. As part of our global strategy, PrimeManagement Seminars were held in 4 locations in Japan as well as 9 locations abroad.
**ClassNK in Action**

Drawing upon its extensive expertise in the survey of ships and audit of ship management systems, ClassNK set up the ClassNK Academy in 2009 to provide the necessary basic knowledge to those involved in the shipbuilding, maintenance, and transport industries. The courses listed below were held at locations throughout Japan including Tokyo, Kobe, Imabari, Yokohama, and Fukuoka, and were attended by over 1,500 participants. Some 2,000 participants also took part in seminars held in a total of 17 countries around the world; Singapore, Indonesia, Malaysia, the Philippines, India, Thai, Myanmar, China, Korea, Taiwan, USA, Mexico, Turkey, Greece, UAE, Saudi Arabia, Oman.

**Courses Related to Newbuildings**
- Classification Societies and Statutory Issues Course
- New Shipbuilding Course (Hull)
- New Shipbuilding Course (Machinery and Electrical Installations)
- Material and Welding Course

**Courses Related to Existing Ships**
- Damage and Maintenance Course (Hull)
- Damage and Maintenance Course (Machinery and Electrical Installations)
- Cargo Handling Appliance Course
- Safety Equipment Course
- Port State Control (PSC) Course

**Courses Related to Ship Management**
- Ship Management Course (Incident Investigation and Analysis, Risk Management and Internal Audits)

**EDUCATIONAL & TRAINING SERVICES**

ClassNK Academy

ClassNK Annual Report 2012 14
Training

ClassNK actively runs and participates in a number of different training activities both for internal staff development and in cooperation with outside organizations. These training programs cover everything from surveyor training to internships, lectures, and other cooperative training programs designed to meet the needs of government agencies and the maritime industry. Some of the more notable training programs ClassNK conducted in 2012 are briefly introduced below.

Surveyor Training

In order to provide an unparalleled quality of service to its clients, the Society is dedicated to maintaining and improving the quality of its surveyors. To this end, ClassNK conducted a range of surveyor training programs for 73 surveyors (including new graduates) around the world during the year. In addition to the training provided by the Society’s Head Office, 75 surveyors also underwent additional survey training at one of the Society’s local offices either in Japan or overseas, as well as on marine engines, conducted at the Yanmar Co. Ltd’s Amagasaki Factory T.T. School.

Marine Management Systems Auditor Training

ClassNK conducted Maritime Security Auditor training for 22 surveyors at the Society’s Training Center in Japan as well as for 26 surveyors at its Shanghai, Singapore and London Offices.

Maritime Labor Inspector Training

ClassNK conducted Maritime Labor Inspector training for 33 surveyors at its Training Center in Japan as well as for 40 surveyors at the Society’s Shanghai, Singapore, Dubai, London, New York, and Panama Offices.

Internships

In response to requests from numerous universities across Japan, ClassNK took offered 15 internships to students in Japanese universities. A total of 8 internships were also offered at the Manila, Jakarta, and Surabaya Offices for students overseas.

Lectures at the Eastern Japan Training Center for Shipbuilding Skills

At the request of the Eastern Japan Training Center for Shipbuilding Skills, the Society presented lectures on the quality of defective welding to technical staff members new to the field of shipbuilding.

Lectures at the Innoshima Technical Center

At the request of the Innoshima Technical Center, the Society presented lectures on “Case Studies of Ship Damage and Lessons Learned” to staff members at the Center.

Lectures for the Japanese Ministry of Land, Infrastructure, Transport and Tourism

In 2012 ClassNK conducted a variety of lectures at the request of the Japanese Ministry of Land, Infrastructure, Transport and Tourism (MLIT). These included lectures on “ClassNK ISM Audits” at its ISM Code Seminar, and “Principles of Ship Security Risk Assessments at Classification Societies” at its ISPS Code Seminar.

Cooperation with the International Mariners Management Association of Japan and the All Japan Seamen’s Union

Following a request from the International Mariners Management Association of Japan and the All Japan Seamen’s Union, ClassNK provided lectures on ship classification societies, maritime conventions, classification surveys, and convention surveys for related organizations at a training course held by Japan Marine Science Inc. for junior technical superintendents.

Cooperation with JICA

Following a request from Japan International Cooperation Agency (JICA), the Society also presented lectures on the SOLAS and MARPOL conventions as well as on newbuilding surveys at the “Group Training Course in International Maritime Conventions and Ship Safety Inspection” held by the Ship Research Centre of Japan for maritime officials from various countries overseas.
ClassNK Technical Seminars Held in Japan

Providing clients with the latest and most up to date technical information is one of the most important tasks undertaken by the Society. To this end, each year ClassNK conducts a number of technical seminars on a wide variety of timely topics. In 2012, ClassNK Technical Seminars were held twice in five locations across Japan; Tokyo, Kobe, Imabari, Onomichi, and Fukuoka. The Spring Technical Seminars comprises mainly of the results of research, and the Autumn Seminar with the explanation of new rules and amendments to existing rules, with both giving an outline of the new trends in international conventions. The seminars drew a total of 1,513 attendees from across the entire spectrum of the maritime industry, including shipowners, shipyard staff, and manufacturers, among others.

ClassNK Spring Technical Seminar
- NK’s efforts in R&D
- Effects of hydroelastic response (whipping, springing) on hull architecture
- NK’s efforts towards the safe carriage of nickel ore (Second Report)
- Latest trends in international conventions and statutory requirements, etc.
- Next generation sailing vessels (Wind Challenger plans)
- NK’s efforts towards the practical implementation of Gas-fuelled Vessels

ClassNK Autumn Technical Seminar
- Explanation of amendments to the Rules, etc. enacted since December 2011
  - Explanation of Rules related to machinery and electrical systems
  - Explanation of Rules related to equipment and materials
  - Explanation of Rules related to hull structures
  - Latest activities of IACS Hull/Machinery/Survey/Statutory Panel
- Latest trends in international conventions and statutory requirements, etc.
- Technical topics
  - NK activities regarding the coming into force of the MARPOL Convention on GHG Emissions
  - Explanation of pertinent EEDI and SEEMP regulations, and introduction of related services
  - NK activities regarding the development of Harmonized CSR software
  - Newest trends in the development of Harmonized CSR software, and introduction to related software
Research and Development Related to Ship Classification

Based on the 2012 Research and Development Plan, ClassNK carried out R&D into problems facing classification societies with the aim of creating guidelines and expanding its technical services. The following are the main details and results of the research carried out in 2012.

Amendments to the Guidelines for Container Carrier Hull Girder Torsional Strength Assessment

Container ships in general utilize a large storage opening, making an evaluation of strength against longitudinal bending as well as distortion due to oblique waves an important matter. In 2003, the Society created “Guidelines for Container Carrier Hull Girder Torsional Strength Assessment,” which provides evaluation methods to test torsional hull strength, but centered only on ultra-large container ships with a general semi-aft arrangement (engine rooms and deck houses are located semi-aft).

On the other hand, the diversification of structural arrangement due to the further enlargement of container ships has seen the emergence of mid-ship location (engine room and deck house located amidships) and two-islander location (machinery room located semi-aft; living quarters located amidships) structural arrangements. The guidelines were amended to support these new structural arrangements, with investigative research focusing on methods of synthesizing torsional strength on hull girders. Amendments were made to the Guidelines for Container Carrier Hull Girder Torsional Strength Assessment based on the results of the research.
Impact investigation into hull reinforcement against hydroelasticity

Research into establishing logical evaluation methods for determining the effects on hull reinforcements against whipping and springing forms of hydroelasticity has been ongoing since 2011.

Methods for evaluating fatigue strength taking into account the probability rate of whipping was developed based on the analysis of the ultra-large container ship measurement results. The results were presented at Hydroelasticity2012 in Tokyo in September 2012.

Research and development into prevention of brittle fractures in ultra-large container ships

A series of brittle crack tests were carried out on middle- and large-sized vessels from 2011 onwards with the aim of expanding on the arrest design guide published in 2009. FEM analysis was also carried out into related kinetic crack transmission along with various other numerical analyses.

From these results, the research has proved that the shape of the welding joints has an effect on stopping cracks, and the necessary arrest ability (Kca values, brittle crack transmission arrest toughness values) in order to stop brittle cracks has an effect on plate thickness. These results were presented at various international forums. There are currently plans to amend the brittle crack arrest guide designs.
Joint Research to meet the demands of the industry

In response to the needs of the industry, ClassNK created a joint research scheme to contribute both technically and financially to numerous joint research projects with various external institutions. By the end of 2012, a total of 79 projects were completed, and 106 are ongoing. The following is an introduction of some of the 48 joint research projects which were carried out in 2012.

Research on usable 3D laser scanner model for vessels

The Society has confirmed the practical use of 3D laser scanners in several maritime related circumstances at the last fiscal year’s “3D CAD Laser Scanner Practical Application Research Seminar.” Based on the results, the shipyards, transport companies and classification societies of Japan were the first in the global maritime industry to start research on a business model for the 3D laser scanner.

The results of this research proved that a competitive business model could be constructed for the use of 3D reverse engineering techniques using a high precision movement 3D laser scanner in various maritime related operations. However, there are tools which are indispensable for it to be used swiftly in these operations, and research on the development of such elements as specialized software is ongoing.

Research developments on onboard noise predictions (Phase 1)

Deliberations are currently underway on the enforcement and strengthening of MLC2006 and IMO rule A.468(XII) regarding onboard noise predictions. In order to solve noise level problems in living quarters that are problematic based on these rules, research was carried out to establish the method of prediction, fill the requirements of the convention, as well as contribute to ship construction to improve the environment of the living quarters for the crew.

The results of this research (phase 1) led to the creation of noise prediction program specifications and established a standardized method of measurement for noise through the air and noise reverberated through solids.

Phase 2 builds on these results with R&D being carried out to develop software for the sound prediction program as well as verify the program through measurements on actual ships.
R&D on application of Ballast Water Management System on operating vessels

Currently about 70,000 vessels will come under the coverage of the IMO Ballast Water Management System Convention adopted in 2004. After the Convention enters into force, these ships will need to have BWMS installed onboard and be approved by classification societies in the next few years. In order to carry out the construction work and the approval of the systems appropriately in as quick a time as possible, engineering verification on preliminary blueprints, as well as certification encompassing construction, the verification of installed equipment, and other matters are essential. Based on these conditions, research based on samples of certifications carried out on actual ships and investigations into plans were carried out with the aim of tackling the problem of speedily executing both the installation of the BWMS as well as the associated certifications to provide a smooth installation of BWMS, which is expected to rise in the future.

As up until that point there were few working models of BWMS on large operating vessels, the research saw a vessel fitted with the system, which enabled us to gain the knowledge for the prior procurement of machinery and conducting of ship inspections, as well as shorten the time required for both preparatory work planning and installation.

After the installation of the Ballast Water Management System, a number of biological treatment tests were carried out in different locations and during different seasons, and the system was confirmed to be well in line with regulation D-2 of the Ballast Water Management Convention (levels of biological materials in ballast water discharge). The tests also provided much other valuable data.

Research was carried out using IBM Japan's data analysis techniques and data analysis tools (ANACONDA) on information gathered from a vessel's engine components, with the aim of determining whether data analyses and failure prognoses of facility diagnostic systems could be put to further practical use.

The results of the research confirmed that data analyses and failure prognoses of facility diagnostic systems could be used effectively, and it was shown that they may provide a more accurate detection of anomalies than current methods, which entail measurements by specialists.

Following these results, joint research into the development of high added value vessel monitoring systems is being carried out to improve the analyses of onboard machinery sensor data. The research aims to help to implement preventative maintenance for the early detection of anomalies in machinery installed onboard vessels.

Joint Research Partners (no particular order):
- Kawasaki Kisen Kaisha Ltd., IHI Marine United Ltd. (now Japan Marine United Inc.), JFE Engineering Corporation, S.E.A. Systems, ClassNK
- IHI Marine United Ltd. (now Japan Marine United Inc.), IBM Japan, ClassNK
Development of Data Linkage System between 3D-CAD and PrimeShip-HULL

**Introduction**

ClassNK has developed and released advanced calculation software compatible with IACS Common Structural Rules and Steel Ship Regulations Part C. This software is known as "PrimeShip-HULL (Rules)" (hereinafter referred to as PS-HULL).

When carrying out calculations for prescriptive rules using PS-HULL, designers need to input all particular data in order to calculate the requirements for structural members in the software. However, much of the data needed overlaps with data already created within the ship performance capability calculation software and CAD software, ordinarily used in the shipyard for the hull’s basic and structural design. Accordingly, this data linkage achievement is a task to be tackled for designers.

In order to achieve this, construction of an automated system to some extent is necessary, requiring the development of a new system which makes it possible to transfer data simply. Based on the above understanding, the Research and Development project began development with 14 shipyards in Japan, which are the main users of PS-HULL, and three systems development companies.
In ship design in recent years, the use of 3D-CAD software, which was mainly used for product design, is now being expanded in the early design stages. With 3D-CAD, unlike conventional 2D drawings, one is able to grasp product structure intuitively. 3D-CAD models created in the early design stages make it possible to perform various functions, such as estimates for hull weight and steel materials, block division examination, and practical usage of data for FEM models. The range of functions that can be utilized is expanding every year. We believe that the practical use of 3D-CAD software in the early design stages will further expand in the future, and we are developing a data linkage system between 3D-CAD software and PS-HULL as a major part.

However, there are several kinds of 3D-CAD software on the market, and currently each shipyard is introducing several products. Since each piece of 3D-CAD software has a different data structure, in order to perform data transfers with each type, it is necessary to develop an interface program which can transfer data from each type of 3D-CAD software into the data format for PS-HULL.

On the other hand, as it is very difficult to develop an interface program corresponding to every piece of 3D-CAD software, we consider the development of a linkage system independent of the data structure of 3D-CAD software a more realistic approach.
In view of the aforementioned situation, in order to enable data linkage between software for 3D-CAD ship performance capability calculations and PS-HULL, we are developing a common structure in the form of an XML format including this extensive information and an interface program centered around it.

A correlation diagram of the data linkage with each type of software centered around XML files is shown below.

**PrimeShip-CAD XML Schema Group**

- **XML for Ship3D**
  This is a data structure file in XML format developed in order to realize data linkage between each type of 3D-CAD software and PS-HULL. As it possesses versatility, it enables data linkage between various types of systems. It is being published widely so that it may be utilized by 3D-CAD vendors.

- **XML for Performance**
  This is a data structure file in XML format developed in order to realize data linkage between each type of ship performance calculation software and PS-HULL. As with XML for Ship3D, this is available to the public.
Outline of Research and Development

■ Interface for CSR (Rules)
This is a type of interface software that imports XML files created with 3D-CAD software and ship performance capability calculation software and exports data files for PS-HULL.

■ Interface for 3D-CAD
  ● Interface for NUPAS (3D)
This is a type of interface software that creates XML files from NUPAS-CADMATIC data.
  ● Interface for AVEVA (3D)
This is a type of interface software that creates XML files from AVEVA Marine 12.0 / VANTAGE Marine 11.6 / Tribon M3 data.

Achievement and ripple effect obtained by data linkage
We believe that the achievement of a data linkage system centered around XML files contributes not only to a reduction in time-consuming design tasks and the optimization of ship design, but also to the following ripple effects.

■ Releasing a data structure with a common format encourages 3D-CAD vendors to develop interface software for their CAD systems, and shipyards which use the 3D-CAD software are able to enjoy the benefit from this.

■ Furthermore, this common format has the potential to become the format used for the development of unified 3D models and viewers, something which is attracting attention as a future research task to create further efficiency in the shipbuilding industry.

The development of a data linkage system as mentioned above will also apply to the new software under development, which features compatibility with harmonized CSR. As a classification society, NK will continue to engage in technical development, seeking to offer support to ship designers.
As one of its many important international activities, ClassNK contributes to the International Maritime Organization (IMO) on a wide range of technical issues. In 2012, the Society attended the IMO meetings listed to the left as part of the Japanese Government delegation or as a representative of the International Association of Classification Societies. In addition, the Society continues to dispatch a member of its staff to the IMO secretariat on a full-time basis.

Information regarding decisions on amendments at the Maritime Safety Committee (MSC) and the Marine Environment Protection Committee (MEPC) was sent to various associated groups via mail service, and was also uploaded on the IMO International Convention Calendar on the IMO homepage.
After being appointed Chair Society of IACS from July 2010 until July 2011, ClassNK continued to serve the IACS as Vice-Chair Society from July 2011 until June 2012, where it contributed to debates and activities by reflecting the opinions of the industry.

ClassNK was head of the Survey Panel, one of four panels of the IASC which also includes the Hull, Machinery, and Convention Panels, and also head of the IMO Goal Based Standards (GBS) Specialist Group. Panels are responsible for resolving technical problems and amendments to various rules, and each panel has various project teams.

ClassNK also contributed to the advancement of Harmonized CSR (Common Structural Rules) and reflected the opinions of the industry through an IACS Council controlled consultative group as well as the Hull panel and 10 project teams under its control.

In 2012, ClassNK participated in the IACS meetings listed to the right.

Participation in the International Association of Classification Societies (IASC)

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<tr>
<th>Meeting Type</th>
<th>Frequency</th>
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<td>Council Meeting</td>
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<td>General Policy Group Meeting</td>
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<tr>
<td>Quality Committee Meeting</td>
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<td>Chairman’s Office Meeting</td>
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<td>Consultative Group Meeting (CSR, Quality Policy (2 Groups))</td>
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<td>Specialist Group Meeting (GBS, EU, ILO etc. (8 Groups))</td>
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<td>Technical Panel (Hull, Machinery, Survey, Convention)</td>
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<td>Project Team Meeting (10 Teams)</td>
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</tr>
<tr>
<td>IACS/Industry Joint Working Group Meetings (EEDI, Harmonized CSR (2 Groups))</td>
<td>8 times</td>
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</table>
The Association of Asian Classification Societies (ACS), began holding regular informal meetings from 1993. During a special meeting held in February 2012, members unanimously agreed to adopt a charter based on drafts compiled by the Society, and officially established the association. As well as taking an active part in the planning of the Executive Committee and the Technical Management activities, ClassNK also headed the GBS and Ship Recycling work groups.

The Society also contributed to the first ACS independent Technical Seminar (August), served on the Safe Navigation & Environment Committee for the Asian Shipowners’ Forum (ASF/SNEC), and worked as ACS Coordinator. ClassNK also represented the association at the Asian Shipbuilding Experts’ Forum (ASEF) held in November, and worked at strengthening links with other groups in the Asian Region.

In 2012, ClassNK participated in the meetings listed to the left.

As part of its goal of improving customer service and better meeting the needs of the global maritime industry, ClassNK holds many overseas committee meetings around the world. These meetings are an important venue for the two-way exchange of information and advice between the Society and key industry and regional stakeholders in local regions around the world.

Each committee is comprised of distinguished members of the maritime community in each respective country. A full list of the ClassNK Committee meetings held during 2012 is shown in the following table.

<table>
<thead>
<tr>
<th>Name of Committee Meeting</th>
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<td>18th Indian Committee</td>
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International Activities

Book donation to International Maritime College Oman (IMCO)

To help support the education of future marine engineers and naval architects, ClassNK donated a library of technical reference books to universities in both Indonesia and Oman in 2012. The Society is committed to helping support the education of students for the future of the maritime industry, and is planning to make further contributions through similar activities.

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<tr>
<th>Name of Committee</th>
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Book Donations to Maritime Universities around the World

To help support the education of future marine engineers and naval architects, ClassNK donated a library of technical reference books to universities in both Indonesia and Oman in 2012. The Society is committed to helping support the education of students for the future of the maritime industry, and is planning to make further contributions through similar activities.
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**Abbreviations:**
- ★—Authority has been delegated subject to some conditions.
- ★—Authority has been delegated.
## Organization
### Class NK in Committee

#### ADVISORY COUNCIL

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<tr>
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<td>Wang Yongliang</td>
<td>Vice President</td>
<td>Shanghai Waigaoqiao Shipbuilding Co., Ltd.</td>
</tr>
<tr>
<td>Tian Zhong Shan</td>
<td>General Manager</td>
<td>Sinotrans Shipping Limited</td>
</tr>
</tbody>
</table>

#### CHINA COMMITTEE

<table>
<thead>
<tr>
<th>Chairman</th>
<th>President</th>
<th>China Ship Design &amp; Research Center Co., Ltd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zhao Zhanjun</td>
<td>Chief Engineer</td>
<td>COSCO Shipyard Group Co., Ltd.</td>
</tr>
<tr>
<td>Zhan Shuming</td>
<td>Chief Engineer</td>
<td>Bohai Shipbuilding Heavy Industry Co., Ltd.</td>
</tr>
<tr>
<td>Li Guang Min</td>
<td>Vice President</td>
<td>China Business Marine Co., Ltd. (SINOMARINE)</td>
</tr>
<tr>
<td>Feng Guo Ying</td>
<td>Vice General Manager</td>
<td>China Ocean Shipping (Group) Company</td>
</tr>
<tr>
<td>Chen Zhengjie</td>
<td>Director</td>
<td>China Ocean Shipping (Group) Company</td>
</tr>
<tr>
<td>Zhang Lelong</td>
<td>Safety &amp; Technology Superintendent Div Manager</td>
<td></td>
</tr>
<tr>
<td>Chen Jian</td>
<td>Deputy Managing Director</td>
<td>China Shipping Development Co., Ltd. Tanker Company</td>
</tr>
<tr>
<td>Chen Yan</td>
<td>General Manager</td>
<td>China Shipping International Trading Co., Ltd.</td>
</tr>
<tr>
<td>Wang Guorong</td>
<td>Managing Director</td>
<td>COSCO Bulk Carrier Co., Ltd.</td>
</tr>
<tr>
<td></td>
<td>Senior Chief Engineer</td>
<td></td>
</tr>
</tbody>
</table>
Cai Deqing
General Manager
Safety & Technology Management Division
COSCO Container Lines Co., Ltd.

Hong Ying
General Manager
Ship Management Dept.
COSCO Shipping Co., Ltd.

Gao Cheng Gang
General Manager
Dalian Master Well Ship Management Co., Ltd
Zhao Jin Wen
General Manager
Dalian Ocean Shipping Company

Yang Wei Zan
Deputy Technical Director
Senior Engineer
Dalian Shipbuilding Industry Co., Ltd.

Chen Yu
Managing Director
Dalian Tiger Shipping Ltd.

Zhang Minghua
Vice President, Senior Engineer
Evergreen Industries Holding Group

Zhou Zhi Hao
Senior Engineer
Guangzhou Shipyard International Co., Ltd.

Lou Dan Ping
Deputy Chief Technical Officer
Hudong-Zhonghua Shipbuilding (Group) Co., Ltd.

Hu Keyi
Technical Director
Jiangnan Shipyard (Group) Co., Ltd.

Chen Xing
Vice General Manager
JDingwu Hongtong Ship Heavy Industry Co., Ltd.

Peter Chen
Deputy General Manager
Jiangsu Ocean Shipping Co., Ltd.

Jin Qiang
Deputy Director
Marine Design & Research Institute of China

Goro Nishiyama
Vice President
Nantong COSCO KHI Ship Engineering Co., Ltd.

Qian Huqing
Deputy general manager
Senior Engineer
New Century Shipbuilding Co., Ltd.

Li Yanjie
General Engineer
Qingdao Beihai Shipbuilding Heavy Industry Co., Ltd

Wang Rongliang
General Manager
Qingdao Fushun Ship Management Co., Ltd.

Guan Qinghui
Deputy Managing Director
Qingdao Ocean Shipping Co., Ltd.

Ren Jian
Technology Director
Qingshan Shipyard of SINDOTRANS & CSC SBICO

Mu Shi Jia
V. G. Manager
Sea Carrier Shipping Co., Ltd

Wang Lin
Vice President
Shanghai Merchant Ship Design & Research Institute

Qiu Xin Yao
General Manager
Shanghai Ocean Shipping Company LTD

Jin Yun Long
Technical Chief
Shanghai Ship & Shipping Research Institute,
Ministry of Communications

Ye Jinwen
Technical Director
Shanghai Shipyard Co., Ltd.

Tao Ying
Chief Engineer
Shanghai Waigaoqiao Shipbuilding Co., Ltd.

Gao Fu Quan
Managing Director
Senior Engineer
Shanghai Ocean Shipping Company LTD.

Yang Shiming
Technical Director
Sinopacific Shipbuilding Group Co., Ltd

Xiao Sen Yuan
President
SITC Ship Management Co., Ltd.

Yan Jun
Vice Chief Engineer
Wuchang Shipbuilding Industry Co., Ltd.

Cao Zhi Teng
General Manager
General Manager of Offshore

Sun Zhenglin
General Manager
Zhongchang Marine Company Ltd.

Goro Nishiyama
Senior General Manager of Central Technical Div.

Jørgen Juncher Jensen
Professor, Head of Section
Coastal, Maritime and Structural Engineering

Chairman
Jørgen Juncher Jensen
Member
Niels Bjørn L. Mortensen
Claus Usen Jensen
Lars Robert Pedersen
Per Sønderstrup
Per Winther Christensen
Lars Christiansen
Peter Justesen
Erik Møller
Thomas S. Knudsen

DANISH TECHNICAL COMMITTEE

Chairman
Jørgen Juncher Jensen
Member
Niels Bjørn L. Mortensen
Claus Usen Jensen
Lars Robert Pedersen
Per Sønderstrup
Per Winther Christensen
Lars Christiansen
Peter Justesen
Erik Møller
Thomas S. Knudsen

Professor, Head of Section
Coastal, Maritime and Structural Engineering

DTU Mechanical Engineering
Department of Mechanical Engineering
Technical University of Denmark

Director
Regulatory Affairs
A/S Dampskibsselskabet TORM

Executive Vice President
Technical Division

Deputy Secretary General
Head of Division

Director
Technical Director

Vice President
Head of Fleet Management

Technical Director, Projects
Senior Vice President

Head of Marine Low Speed

A.P. Moller-Maersk A/S

A/S Dampskibsselskabet TORM

BIMCO

Danish Maritime Authority

Danish Shipowners’ Association

ID Shipping A/S

Lauritzen Kosan A/S

Lauritzen Offshore Services A/S

MAN Diesel & Turbo
Pavlos G. Perakis
Technical Manager
Technical Department
Fairsky Shipping and Trading S.A.

Dimitrios Theodoropoulos
Chief Operating Officer
Golden Union Shipping Co. S.A.

Christoforos E. Andreassis
Technical Manager
Iolcos Hellenic Maritime Enterprises Co. Ltd.

Anastasios Kalogiannis
Technical Manager
Konkar Shipping Agencies S.A.

Dion Theodorou
Managing Director
Kristen Marine S.A.

Takis Koutris
Technical Department
Kittas Shipping S.A.

John A. Yiannakenas
Technical Director
Laskaris Shipping Co. Ltd.

Nick Argyros
Technical Manager
Load Line Marine S.A.

Ioannis Voulgaris
Mech. Eng. NTUA
Lydia Mar Shipping Co. S.A.

Kostas Symeonidis
Technical Manager

John N. Ioannidis
Technical Director

Stavros Daniolos
Technical Director

Nikolaos Balalis
Technical Director

Costas Mitropoulos
Manager

Amir Geva
Technical Department Manager

Paraskevas Koutsoukos
Managing Director & Technical Manager

Elias A. Galanopoulos
Managing Director

Michael Anagnostou
Managing Director and Technical Manager

Achilleas Avlonitis
Technical Manager

George Hatzivassiliou
Technical Manager

Dimitris C. Makris
Technical Manager

Apostolos P. Gavalas
Technical Manager

Diamantis Andriotis
Technical Manager

Frantzeskcs D. Kontos
Technical Director

Dimitrios A. Heliotis
Technical Director

Vasilieos Lampropoulos
Technical Director

Dimitris Andreadakis
Technical Manager

Manolis G. Koutlakis
Technical Manager

C. Dean Tseretopoulos
Technical Manager

Savvas D. Papadatos
Technical Manager

Constantinos M. Metaxas
Technical Manager

Takis Koutouras
Technical Manager

Sabrina S. M. Chao
Chairman

M. H. Liang
Honorary Chairman

Chen Xin Chuan
Member

Robert Alexander Ho

Andrew Y. Chen

Y. Q. Huang

Arthur Bowring

Frank W. K. Tsao

Jack Hsu

Lothair M. F. Lam

Kwai See Hoi

Jan Rindbo

Teh-Hu Cargocean Management Co., Ltd.

Li Hua

Peter Cheng

Wah Kwong Maritime Transport Holdings Limited

Raymond Pao

Island Navigation Corporation International Ltd.

Peter Cheng Naval Architect & Marine Consultant Ltd.

Li Hua

COSCO (H.K.) SHIPPING CO., LTD

Regent Shipping Ltd.

Raymond Pao

Fairmont Shipping (HK) Ltd. & Affiliates

Sinotrans Shipping Limited

Kenneth K.W. Lo

Grand Seatrade Shipping Company Ltd.

Peter Cheng Naval Architect & Marine Consultant Ltd.

Edward S. C. Cheng

Hong Kong Ming Wah Shipping Co., Ltd.

Regent Shipping Ltd.

Richard Hext

Hong Kong Shipowners Association

Univan Ship Management Limited

David C. C. Koo

IMC Group of Companies

Univan Ship Management Limited

Jim Nelson

Oak Maritime (H.K.) Inc., Ltd.

Wallem Shipmanagement Ltd.

HONG KONG COMMITTEE

Vice Chairman

Chairman

Deputy Managing Director

President

Chairman & Managing Director

Vice-President

Managing Director

Group Chairman

Managing Director

Chairman & President

Chief Operating Officer

Vice President

Director

General Manager

ShIPPING DIVISION

Managing Director

President

Executive Director

Deputy General Manager

Chairman & Managing Director

Chairman

Deputy Chairman & CEO

Managing Director

Managing Director
## HONG KONG TECHNICAL COMMITTEE

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
<th>Company/Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chairman</td>
<td>Peter Cheng</td>
<td>Managing Director, Peter Cheng Naval Architect &amp; Marine Consultant Ltd.</td>
</tr>
<tr>
<td>Member</td>
<td>Marcel Liedts</td>
<td>Managing Director, Anglo-Eastern Group</td>
</tr>
<tr>
<td>Member</td>
<td>Y. Q. Huang</td>
<td>Managing Director, Associated Maritime Company (Hong Kong) Limited Partnership</td>
</tr>
<tr>
<td>Member</td>
<td>Alok Roy</td>
<td>Managing Director, Bernhard Schulte Shipmanagement (Hong Kong) Limited</td>
</tr>
<tr>
<td>Member</td>
<td>Vishal Khurana</td>
<td>Director &amp; Chief Executive, Chellaram Shipping (Hong Kong) Ltd.</td>
</tr>
<tr>
<td>Member</td>
<td>Liu Yi Fan</td>
<td>Deputy General Manager, China Shipping (H.K.) Marine Co., Ltd.</td>
</tr>
<tr>
<td>Member</td>
<td>Chen Xin Chuan</td>
<td>Managing Director, COSCO (H.K.) Shipping Co., LTD</td>
</tr>
<tr>
<td>Member</td>
<td>Kishore S. Rajanshy</td>
<td>Senior Engineer, Fleet Management Limited</td>
</tr>
<tr>
<td>Member</td>
<td>Lau Pong Sze</td>
<td>Managing Director, Gold Bridge Shipping Ltd.</td>
</tr>
<tr>
<td>Member</td>
<td>Y. H. Shum</td>
<td>Director, Goldbeam International Limited</td>
</tr>
<tr>
<td>Member</td>
<td>Li Kwok Hung</td>
<td>Managing Director, IMC Shipping Services Co. Pte. Ltd.</td>
</tr>
<tr>
<td>Member</td>
<td>Vipin Sachdeva</td>
<td>Vice President, KC Maritime Ltd.</td>
</tr>
<tr>
<td>Member</td>
<td>Pan Zhong Shan</td>
<td>Director &amp; General Manager, Lihai International Shipping Limited</td>
</tr>
<tr>
<td>Member</td>
<td>Bibhash Chaudhuri</td>
<td>General Manager, New Asian Shipping Company, Limited</td>
</tr>
<tr>
<td>Member</td>
<td>Haruki Aono</td>
<td>Executive Director, Northstar Ship Management Ltd.</td>
</tr>
<tr>
<td>Member</td>
<td>James S. C. Tai</td>
<td>General Manager -cum- Technical Director, Orient Overseas Container Line Ltd.</td>
</tr>
<tr>
<td>Member</td>
<td>Vijayesh Dutta</td>
<td>Fleet Manager, Pacific Basin Shipping (HK) Limited</td>
</tr>
<tr>
<td>Member</td>
<td>Kenneth Koo</td>
<td>Group Chairman &amp; Chief Executive Officer, Tai Chong Cheang Steamship Co. (H.K.) Ltd.</td>
</tr>
<tr>
<td>Member</td>
<td>Anil Arora</td>
<td>Head of Ship Management &amp; Projects, Unique Shipping (H.K.) Limited</td>
</tr>
<tr>
<td>Member</td>
<td>W. L. Hung</td>
<td>General Manager, Wah Kwong Ship Management (Hong Kong) Limited</td>
</tr>
</tbody>
</table>

## INDIAN COMMITTEE

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
<th>Company/Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chairman</td>
<td>K. M. Sheth</td>
<td>Executive Chairman, The Great Eastern Shipping Co., Ltd.</td>
</tr>
<tr>
<td>Vice Chairman</td>
<td>R. L. Pai</td>
<td>Advisor, Reliance Industries Limited</td>
</tr>
<tr>
<td>Member</td>
<td>H. Ansari</td>
<td>Visiting Professor (Insurance), ARB Shipyard Ltd.</td>
</tr>
<tr>
<td>Member</td>
<td>V. K. Sood</td>
<td>Advisor (Shipping), Arcadia Shipping Limited</td>
</tr>
<tr>
<td>Member</td>
<td>R. S. Narla</td>
<td>Managing Director, British Marine Plc</td>
</tr>
<tr>
<td>Member</td>
<td>A. K. Bahl</td>
<td>Vice President (Shipping), Chowgule and Company Private Limited</td>
</tr>
<tr>
<td>Member</td>
<td>Ashok V. Chowgule</td>
<td>Executive Director, Directorate General of Shipping</td>
</tr>
<tr>
<td>Member</td>
<td>Shri D. Mehrotra</td>
<td>Deputy Chief Surveyor with the Government of India-cum Sr. DDG (Tech)</td>
</tr>
<tr>
<td>Member</td>
<td>A. R. Ramakrishnan</td>
<td>Wholetime Director, Essar Shipping Limited</td>
</tr>
<tr>
<td>Member</td>
<td>M. P. Dhanuka</td>
<td>Executive Director, GEE Limited</td>
</tr>
<tr>
<td>Member</td>
<td>Anil Devi</td>
<td>Chief Executive Officer, Indian National Shipowners’ Association</td>
</tr>
<tr>
<td>Member</td>
<td>Atul J. Agarwal</td>
<td>Managing Director, Mercator Limited</td>
</tr>
<tr>
<td>Member</td>
<td>Commodore M. Jitendran</td>
<td>Chief Executive Officer, Pipavav Shipyard Limited</td>
</tr>
<tr>
<td>Member</td>
<td>S. Govindrajan</td>
<td>Managing Director, Progressive Shipping Consultancy Services (PVT) Ltd.</td>
</tr>
<tr>
<td>Member</td>
<td>J. V. S. Rao</td>
<td>Executive Director, The Shipping Corporation of India Ltd.</td>
</tr>
<tr>
<td>Member</td>
<td>Sujata Naik Tolani</td>
<td>Chairperson, Tolani Shipping Company Limited</td>
</tr>
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## INDONESIA COMMITTEE

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
<th>Company/Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chairman</td>
<td>Widiardja Tanudjaja</td>
<td>President Director, PT. Berlian Laju Tanker Tbk</td>
</tr>
<tr>
<td>Honorary Member</td>
<td>Oenotoro Surya</td>
<td>Commissioner, PT. ARPENI PRATAMA OCEAN LINE Tbk.</td>
</tr>
<tr>
<td>Member</td>
<td>Antonius W. Sumarlin</td>
<td>Ex-President Director of PT Humppus Intermoda Transportasi Tbk</td>
</tr>
<tr>
<td>Member</td>
<td>Chan kok Leong</td>
<td>Director, GBLT Shipmanagement Pte. Ltd.</td>
</tr>
<tr>
<td>Member</td>
<td>Ir. Tjahjono Roedianto</td>
<td>Chairman, Indonesia Shipbuilding and Offshore Industry Association</td>
</tr>
<tr>
<td>Member</td>
<td>Carmelita Hartoto</td>
<td>Chairman, Indonesian National Shipowners’ Association</td>
</tr>
<tr>
<td>Member</td>
<td>Arifin Soenardjo, MH</td>
<td>Director of Marine Safety, Ministry of Transportation Republic of Indonesia</td>
</tr>
<tr>
<td>Member</td>
<td>Theo Lekatomopessy</td>
<td>Director, PT Humppus Intermoda Transportasi Tbk</td>
</tr>
<tr>
<td>Member</td>
<td>Asmarierry</td>
<td>President Director, PT Samudera Indonesia, Tbk.</td>
</tr>
<tr>
<td>Member</td>
<td>Praditya Nirtara</td>
<td>Director, PT. Adnyana</td>
</tr>
<tr>
<td>Member</td>
<td>Stephen Layarda</td>
<td>President Director, PT. Alpha Pacific Lines</td>
</tr>
<tr>
<td>Member</td>
<td>Irwanan Alex Ibarat</td>
<td>Managing Director, PT. Arpeni Pratama Ocean Line Tbk.</td>
</tr>
</tbody>
</table>
Kasim Arifin  President Director  PT. Bumi Perkasa Bahtera
Amir Gunawan  President Director  PT. Daya Radar Utama
Riry Syeried Jette  President Director  PT. Dok & Perkapalan Kodja Bahari (PERSERO)
Yance Gunawan  President Director  PT. Dumas Tanjung Perak Shipyard
Hendra  General Manager, Liner Division  PT. Gesuri Lloyd
H. Soemarto  President Director  PT. Gurita Lintas Samudera
Joewanto Karjodimedjo  President Director  PT. Janata Marina Indah
Henry Djuhari  President Director  PT. Meranti Maritime
Frank Menaro  Fleet Director  PT. Meratus Line
M. Firmansyah Arifin  President Director  PT. PAL Indonesia
Benny Winarto  President Director & CEO  PT. Pelayaran Caraka Tirta Perkasa
Rachmat Koentjoro  Managing Director  PT. Tanto Intim Line
Johnson W. Sutjipto  President Director  PT. Wintermar Offshore Marine Tbk

INDIAN TECHNICAL COMMITTEE

Chairman  R. L. Pai  Reliance Group - Advisor  ABG Shipyard Ltd.
Member  K. Mantry  Associate Vice President - Projects  Naval Architect
Ashok Kumar Sharma  Superintendent - Training  Anglo-Eastern Maritime Training Centre
B. N. Prasad  Managing Director  Bernhard Schulte Shipmanagement (India) Private Limited
P. Vrnayakumar  Director (Technical)  Cochin Shipyard Limited
Dileep Krishnan  Associate Professor & Consultant  Cochin University of Science and Technology (CUSAT)
D. V. Abeyesinghe  General Manager (Projects & Engineering)  Colombo Dockyard PLC
Rajeev Nayer  Head S & P New Building  Essar Shipping Limited
S. C. Misra  Director  Indian Maritime University (IMU)
R. B. Utkiokuth  General Manager (Ship Building)  Larsen & Toubro Limited
S. M. Rai  Vice President (Technical)  Mercator Limited
Maneesh Jha  Chief Engineer, F. I. Mar. E.  Samundra Institute of Maritime Studies
Hariraj P.  Manager-Hull Structure Design  Smart Engineering and Design Solutions Ltd.
Ajay Chatterjee  Principal & Head  The Great Eastern Institute of Maritime Studies
David Birvadkar  Vice President - Fleet Management  Tolani Shipping Company Limited
Indra Nath Bose  General Manager – Quality, Safety & Training  The Great Eastern Shipping Co., Ltd. (GESCO)
Virendra Garhat  Director (Technical)  Tolani Shipping Company Limited

KOREA COMMITTEE

Chairman  S. R. Pae  President & CEO  STX Pan Ocean Co., Ltd.
Member  Bang Eon Jeong  Senior Executive Vice President/CTO  Daewoo Shipbuilding & Marine Engineering Co., Ltd.
Hyon-Soo Bong  Senior Executive Vice President/CTO  Hanjin Heavy Industries & Construction Co., Ltd.
Oi-Hyun Kim  President & CEO  Hyundai Heavy Industries Co., Ltd.
Shipbuilding & Offshore Division
Weon-Gil Choe  President & CEO  Hyundai Mipo Dockyard Co., Ltd.
Byung-Wook Oh  President & C.E.O.  Hyundai Samho Heavy Industries Co., Ltd.
Jin Bang Lee  Chairman  Korea Line Corporation
Doo-Chan Chang  President  Korea Maritime Foundation
Suh, Myung-Chun  President & CEO  Namsung Shipping Co., Ltd.
Sangbok Lee  Representative director  Pan Continental Shipping Co., Ltd.
Insik Roh  President & CEO  Samsung Heavy Industries Co., Ltd.
Kyuhwo Whang  President & CEO  SK Shipping Co., Ltd.

KOREA TECHNICAL COMMITTEE

Chairman  Jeom Kee Paik  Professor  Pusan National University
Member  Jang Min-Seok  Director  Dae Sun Shipbuilding & Engineering Co., Ltd.
ManSoo Kim  Vice President  Daewoo Shipbuilding & Marine Engineering Co., Ltd.
Head Of Hull Design 
W. G. Sagong  
Vice President  
Daewoo Shipbuilding & Marine Engineering Co., Ltd.

Sung-Ryool Kim  
Managing Director  
Hanjin Heavy Industries & Construction Co., Ltd.

In Soon Kim  
Vice President  
Hanjin Ship Management Co., Ltd.

Lee Jong-seung  
Senior Vice President  
Hyundai Heavy Industries Co., Ltd.

Tae-Gyu Lee  
President  
Hyundai Ocean Service Co., Ltd.

Hyun-Sang Shim  
Executive Vice President  
Hyundai Samho Heavy Industries Co., Ltd.

Yeong-Se, Jeong  
Managing Director  
KLC SM Co., Ltd.

Jae-Sung Choi  
Professor  
Korea Maritime University

Moon-Ho Park  
Managing Director  
KSS Line Ltd.

Munkeun Ha  
Executive Vice President  
Samsung Heavy Industries Co., Ltd.

Hohyun Jeong  
Vice President  
Samsung Heavy Industries Co., Ltd.

Seog Hwan Kang  
Vice President  
SK ship management Co., Ltd.

Chul-Ho, Song  
Technical Managing Director  
SPP Shipbuilding Co., Ltd.

Nam-Young Kim  
Chief of Engineering Division  
STX Marine Service Co., Ltd

S. W. Jo  
Senior Vice President  
STX Offshore & Shipbuilding Co., Ltd.

Sang-Heon OH  
Director  
STX Offshore & Shipbuilding Co., Ltd.

Jae-Woo Son  
Vice President  
Sungdong Shipbuilding & Marine Engineering Co., Ltd.

Nojoon Park  
CEO  
TMS Co., Ltd

LATIN AMERICAN COMMITTEE

Chairman  
Ricardo dos Santos

Member  
Javier Reyes Conde

Angel Canessa T.

Alberto Velázquez

Marcelo de Mendonça Abreu

Wanderley Marques

Patricio Mondaca

Hiroshi Nishiyama

Ricardo Vahia Alves de Souza

José Luiz Nunes Ruiz

Ricardo Menezes

Vladimir Contreras

Roberto Hetz Vorpahl

Eduardo Balzaretti

Paul Casanova Claro

Agenor Cesar Junqueira Leite

Ruben Galindo Villanueva

Victor Montes

Nelson Luiz Coelho Alves

Director  
P&O Maritime Services Paraguay S.A.

FSV’s Operations Manager / FSV’s Contracts Manager  
Blue Marine Technology Group

Vice President Planning and Operations Shipmanagement  
Compañía SudAmericana de Vapores S.A.

Fleet Director  
Elicano, S.A.

Engineering Manager - DRU Project President  
EP FLOPEC

Senior Vice President  
Estaleiro Atlântico Sul S/A

General Manager  
Estaleiro Mauá

Director  
Humboldt Shipmanagement

Principal Engineer  
Kawasaki del Peru S.A.

Operation and New Building Director Naval Architect / Project Engineer President  
KROMAV Engenharia Ltda.

Chief Executive Officer  
London Offshore Consultants Brasil Ltda.

Commercial Manager General Manager  
Ocean Pact

Shipping Director  
Petróleos de Venezuela S.A.

Technical and Fleet Managing Director  
Proyemar

Manager & Marine Engineer  
TANDANOR S.A.C.I. y N.

Shipping Engineering General Manager  
Transgas Empresa Naviera

TMM Group

Vale S.A.
MALAYSIAN COMMITTEE

Chairman
Datuk Nasarudin bin Md Idris

Vice Chairman
Ir. Nordin Mat Yusoff

Member
Azmi Bin Ahmad

Datuk Ng Chin Keuan

Dato’ Ir. Abdul Hak B. Md. Amin

Tan Sri Dato’ Seri Halim Bin Mohammod

Dennis Liong

Elas Kadir

Azaharuddin Osman

Lawrence Wong

Lim Paik Wah

Vincent Ling Lu Yew

Datuk Lau Nai Hoh

Torbjørn J. Aaker

President/Chief Executive Officer
Group Managing Director/CEO
Executive Director
Managing Director
Executive Chairman and Managing Director
General Manager
President
Chief Executive Officer
Executive Director
Director
Group C.E.O. / Group M.D.

MISC BERHAD
Alam Maritim Resources Berhad
E.A. Technique(M) Sdn. Bhd.
Gagasan Carriers Sdn Bhd
Hub Shipping Sdn. Bhd.
Keretapi Tanah Melayu Berhad
Petronas Maritime Services Sdn. Bhd.
Serudong Shipping Sdn. Bhd.
Shin Yang Shipyard Sdn Bhd.
Tuong Aik Shipyard Sdn. Bhd.

MIDDLE EAST TECHNICAL COMMITTEE

Chairman
Jitendra Misra

Member
Haakon Johnson

Benny K. Alex

Abdul Hayee

Anil Carappa

Jamil Al-Ali

Masanori Hayashi

Zaheer Babar Qureshi

A. Ramamurty

A. Mansourzadeh

Mohammed El-Sayed Ahmed

Abdulaziz A. Sabri

N. V. K. Nambar

Managing Director
Senior Vice President (Operations)
General Manager
Fleet Manager
Technical Director
Manager
General Manager(LNG)
Executive Director
Sr. General Manager
Technical Director
Vice President - Fleet(acting)
Fleet Operations Manager
Technical Manager

Emarat Maritime
ADNATCO-NGSCO
Emarat Maritime
Gulf Stolt Ship Management
International Tanker Management Limited
Kuwait Oil Tanker Co. S.A.K.
Oman Ship Management Company
Pakistan National Shipping Corporation
Pioneer Ship Management Services LLC
Simatech Shipping L. L. C.
United Arab Shipping Company (S. A. G.)
Vela International Marine Limited
Warm Seas

NORTH AMERICAN COMMITTEE

Chairman
Alexis P. Zoulas

Member
John Calicchio

Royce C. Wilken

John D. Noonan

Hiromi Akasaka

Ramesh Bhat

Calvin W. S. Cheng

Byron M. Sugahara

Charles Leung

Thomas H. Paterson

Michael M. Lee

Shunji Sasada

Ronald W. Tursi

President
Chairman
President
President / C.O.O.
Technical Director
Chairman
President
Senior Vice President
Vice President
President
Chief Operating Officer
President

Eagle Shipping International (USA) LLC
Apex Bulk Carriers LLC
ARTCO
Chembulk Tankers
Dowa Line America Co., Ltd.
Eagle Shipping International (USA) LLC
Eastmark Associates, Inc.
Fairfield-Maxwell Services, Ltd.
Fairmont Shipping (Canada) Limited
Fednav Limited
Foremost Maritime Company LLC
Navios Corporation
Roymar Ship Management Inc.

PHILIPPINE COMMITTEE

Chairman
Arben E. Santos

Member
Doris Magaysay Ho

Roy R. Alampay

Emerson M. Lorenzo

President & CEO
President & Chief Executive Officer
President & Chief Executive Officer
President

Southwest Maritime Group of Companies
A. Magaysay Inc.
Baliswag Navigation, Inc.
Department of Transportation & Communications

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Rogelio A. Torres  
Ahn, Jin Kyu  
Mok Kim Whang  
Teodoro G. Bernardino  
Edgardo G. Lacson  
Eduardo U. Manese  
Thomas A. Tan  
Fausto C. Tiu  
Hitoshi Kono  

Eastern Shipping Lines, Inc.  
HHIC-Phil  
Keppel Philippines Marine, Inc.  
Loadstar International Shipping, Inc.  
MIS Maritime Corporation  
Philippine-Japan Manning Consultative Council of the Philippines  
SMC Shipping and Lighterage Corporation  
Tsuneshi Heavy Industries (Cebu), Inc.

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**SINGAPORE COMMITTEE**

**Chairman**

Aloysius Seow  
Kenneth A Glenn  
Tong Chong Heong  
Lam Yi Young  
Kuok Khoon Kuan  
Teo Cho Keng  
Wong Weng Sun

Ocean Tankers (Pte) Ltd.  
APL Co. Pte Ltd  
Keppel Offshore & Marine Ltd  
Maritime and Port Authority of Singapore  
Pacific Carriers Limited  
Pacific International Lines (Pte) Ltd.  
Sembcorp Marine Ltd

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**SINGAPORE TECHNICAL COMMITTEE**

**Chairman**

Tey Yoh Huat  
Iwane Ogawara  
Robert Sumantri  
Shaq U. Thayil  
Soumendu Das Roy  
Cheam Yeow Cheng  
Kapil Berry  
Liu De Tian  
Chandrasekharan  
B. S. Teeka  
Ajay K. Chaudhry  
Lim Teck Cheng  
Ir Wong Sin Futt

Altus Shipping Pte. Ltd.  
"K" Line Ship Management (Singapore) Pte Ltd  
Altus Shipping and Logistics Pte. Ltd.  
APL  
Berge Bulk (Singapore) Pte. Ltd.  
COSCO (SINGAPORE) PTE LTD  
Drydocks World-Singapore Pte. Ltd.

---

**Members**

Seow Tan Hong  
Chor How Jat  
Avinash Kadam  
Mark Lim Yew Guan  
Toshihiko Ota  
Arun K. Ahiuwalia  
Mok Kim Teng  
Hemant Pathania  
Teh Eng Hua  
Lim Tau Kok  
Panneer Selvam  
Toh Ho Tay  
Governor Singh Chopra  
Francis Chin  
Rajdeep Singh

Jurong Shipyard Pte Ltd  
Keppel Shipyard Limited  
Maersk Tankers  
Maritime and Port Authority of Singapore  
MOL Tankship Management (Asia) Pte Ltd  
MSI Ship Management Pte Ltd  
NAM CHEONG LIMITED  
NYK SHIPMANAGEMENT PTE LTD  
Ocean Tankers (Pte) Ltd  
PACC SHIP MANAGERS PTE LTD  
PACC SHIP MANAGERS PTE LTD  
Pacific International Lines (Pte) Ltd.
Naresh Chand  
Calum S Hume  

Executive Vice President  
Managing Director  
Operation Director  
President  
Deputy Director General  
Director  
Director - Shipping  
Chief Production Manager  

Regional Container Lines Public Co., Ltd.  
Asian Marine Services Public Co., Ltd.  
Bhureemas Navee Co., Ltd.  
ES Offshore and Marine Engineering (Thailand) Co., Ltd.  
Italthai Marine Ltd.  
Jutha Maritime Public Co., Ltd.  
Marine Department  
Nathalin Group  
Precious Shipping Public Co., Ltd.  
PTT Public Company Limited  

Yalcin Sabanci  
Necdet Aksoy  
Ali Umur  
Kenan S. Sumra  
Erhan Bayraktar  
Derya Sabaz  
Engin Özcelik  
İdil Baran  
Esref Cerrahoglu  
Serra Cerrahoglu  
H. Bülent Sener  
Serdar Akcali  
O. Faruk Miras  
Bilge Bayburtluğlu  
Cihan Ergenc  
Orhan Karademir  
Sadık Kaptanoglu  
Bedri Ince  
Murat Edip Karahan  
Tamer Kiran  
Bayram Yusuf Aslan  
Mecit Çetinkaya  
Huseyin Yardımcı  
Serif Özdağlar  
Hüseyin ŞENER  
G. Osman Kuçukkaya  
Emir Sohtorik  
Suhan İzmirlioğlu  
Orkun Kalkavan  
Hasan PEHLİVAN  
Yasin ÇİL  
Ilhan Sabancı  
Emirhan Sabancı  

Chairman  
Member  
Chairman  
Chairman  
President  
Company Manager  
Board Member/CEO  
Board Member  
General Manager  
Director  
Chairman  
Chairman  
Chairman  
Chairman  
President  
Member of Board  
Deputy General Manager  
Fleet Manager  
General Manager  
Chairman  
President  
Executive Board Member  
Operational Director / CSO  
General Manager  
Member of the Board  
Board Member  

YA-SA Holding S.A.  
Akmar Shipping & Trading S.A.  
Aktif Shipping  
Anadoluhisari Tankercilik A.S.  
Bayraktar Shipping Group  
BEŞİKTAŞ GROUP  
CEBI Maritime & Trading SA  
Cerrah Group of Companies  
Cerrahgil A. S.  
CERRAHGİL GROUP OF COMPANIES  
Delta Marine Engineering and Computer Trading Co.  
Denak Ship Management & Agency  
Diler Shipping and Trading Inc.  
DITAS Tanker and Marine Operations Corp.  
ER Denizcilik Sanayi Ve Tic. A. S.  
Genel Denizcilik Nakliyatı A.S.  
H.I. Kaptanoglu Shipping Group  
Ince Shipping and Trading Co. Inc.  
Karahanas Group of Shipping Companies  
KIRAN Group of Shipping Companies  
Mardeniz & Kardeniz & Mardas Group of Companies  
MECİT ÇETİNKAYA Shipping, Transport, Marketing Ind. & Trade Co. Ltd.  
MOLİVA SHIPPING INC.  
NEMTAS NEMRUT LIMAN İŞLETMELERİ A.Ş.  
Odın Ship Management  
OMSAN DENİZCİLİK A.Ş.  
SEMIH SOHTORİK MANAGEMENT & AGENCY INC.  
SİNOMAR S. A.  
Turkon Holding  
U.N RO-RO İŞLETMELERİ A.Ş.  
VERA SHIPPING  
YA-SA Shipmanagement and Trading S.A.  
YA-SA Tanker and Transportation S.A.
Yusuf Angin  
Selçuk Karakimseli  
Kenan S. Sumra  
Metin Solak  
Mustafa Bahar  
S. Dirim Şener  
Şemsettin Ozyapar  
Baha Erbil  
Taşkin Çilli  
Coşkun Ağca  
Yavuz Büyüküksel  
Mehmet Cebeci  
Ergun Koker  
Ahmet Taynez  
Bülent Subaşi  
A. Yaşar Canca  
Raif Söylерkaya  
Cengiz Eren  
Mehmet G ülakdeniz  
Melek Yavan  
Galip Kendigelen  
Gökşenin Eroğul  
Hüseyin Şener  
Kemal Ayt en  
M. Murat Düşerme ciler  
Hak tan Demirboğa  
M. Çumhur Kuter  
Mehmet Başpölü  
Müjdat Ulu đağ  
Hayati Cingöz  
Ali H. Doğanlı  
Mehmet Kayhan  
Hakan Gürel  
Manager  
Board of Member  
Marine Department Manager  
Technical Manager  
Technical Manager  
Department Manager  
Planning Manager  
Technical Manager  
General Manager  
CEO, Member of Board  
Fleet Manager  
Fleet Manager  
Bulk Fleet Manager  
Manager  
Operation Manager  
Technical Manager  
Ocean Going Master  
Head of Technical Department  
Safety Coordinator / DPA  
Master Mariner  
Member of Board  
General Manager  
Deputy General Manager  
(Technical & Logistics)  
Fleet Manager  
Technical Manager  
Operation Manager  
Uzak Yol Kaptanı  
Gemi Sürvey Kurulu Başkan  
Republic of Turkey  
General Manager  
General Manager  
Purchasing & Logistics Director  
BSC Engineer & Technical Manager  
Technical Manager  
General Manager  
Bulk Carriers  
General Manager  
Assistant to Group Chairman  
Chief Executive Director  
Chairman  
Executive Manager  
Chairman  
President  
President  
Director & President  
Chairman  
C. E. O.  
Chairman  
Chairman  
President  
President  
Chairman  
C.E.O.  
President  
Chairman  
Chairman  
Aruna Shipping Ltd., Corp.  
Atlas Ship Management Ltd.  
Aygaz A.Ş.  
Besiktas Group  
Cebi Denizcililik AS  
Delta Marine Engineering and Computer Trading Co.  
Denak Ship Management & Agency  
Densan Deniz Nakliyat ve Sanayi A.Ş.  
Desan Deniz İnşaat San. A.Ş.  
Ditaş Deniz İletişim ve Tankerciliği A.Ş.  
GAS MASTER Deniz İletişimleri ve Acentelileri Ltd. Şti.  
Genel Denizcililik Nakliyat A.Ş.  
GUNGEN Denizcililik  
Horizon Gemi İletişimleri San ve Tic A.Ş.  
IDC Denizcilik San. Tic. A.Ş.  
Ince Shipping Group  
Kaptanoglu Holding  
Karahasan Group of Shipping Companies  
Kiran Group of Shipping Companies  
Körfez Shipping and Trading Inc.  
Mardax & Mardeniz & Kardeniz Group of Companies  
Nemtaş Shipping  
Odin Ship Management  
Pina Shipping & Transportation Inc.  
POLARNET İletişim ve Gemi İletişimleri San. Tic. A.Ş.  
Ministry of Transport Maritime Affairs and Communications  
Sedef Shipbuilding Inc.  
Semit Sohtorik Management & Agency Inc.  
Turkish Airlines Technic Inc.  
Ulusoy Sea Lines Management S.A.  
VERA SHIPPING  
YA-SA Shipmanagement and Trading S.A.  
YA-SA TANKERCILIK VE TASIMCILIK A.S.  
Chairman  
Member  
Loh Yao-fon  
Huang Chin-san  
Donald K. L. Chao  
Jei-Yuan Chen  
Robert Lai  
Der Hsiung Chen  
Shang-Wen Liao  
David Hsu  
B. C. Tsai  
Bill M. H. Huang  
Harvey Chiu  
R. Y. Guer  
Jimmy C. Hsia o  
J. D. Lan  
Mathias K. Y. Chen  
Fred C. P. Tsai  
Hrong-Nain Lin  
Janus Kao  
I. Y. Chang  
Nobu Su  
C. K. Ong  
Lin Ching Chih  
Glenn K. L. Chan  
Chen, Po Ting

TAIWAN COMMITTEE

Chairman  
Member  
Loh Yao-fon  
Huang Chin-san  
Donald K. L. Chao  
Jei-Yuan Chen  
Robert Lai  
Der Hsiung Chen  
Shang-Wen Liao  
David Hsu  
B. C. Tsai  
Bill M. H. Huang  
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Janus Kao  
I. Y. Chang  
Nobu Su  
C. K. Ong  
Lin Ching Chih  
Glenn K. L. Chan  
Chen, Po Ting  
Assistant to Group Chairman  
Chief Executive Director  
Chairman  
Executive Manager  
Chairman  
President  
President  
Director & President  
Chairman  
C. E. O.  
Chairman  
Chairman  
President  
President  
Chairman  
C.E.O.  
President  
Chairman  
Chairman  
Evergreen Group  
Chang Yung-Fa Foundation  
China Steel Express Corporation  
CPC Corporation, Taiwan  
CSBC Corporation, Taiwan  
Deryoung Maritime Co., S.A.  
Eastern Media International Corporation  
First Steamship Co., Ltd.  
Franbo Lines Corp.  
Glory Navigation Co., Ltd.  
Hsin Chien Marine Co., Ltd.  
Kuang Ming Shipping Corp.  
Mingtai Navigation Co., Ltd  
Shih Wei Navigation Co., Ltd.  
Sincere Industrial Corporation  
Sincere Navigation Corporation  
Ta Tong Marine Co., Ltd.  
Ta-Ho Maritime Corporation  
Taiwan Navigation Co., Ltd.  
TMT Co., Ltd.  
U-Ming Marine Transport Corp.  
Unison Marine Corporation  
United Ocean Shipping S. A.  
Wan Hai Lines Ltd.
<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>James Lan</td>
<td>Chairman</td>
<td>Wisdom Marine Lines S.A.</td>
</tr>
<tr>
<td>Robert Ho</td>
<td>President</td>
<td>Yang Ming Marine Transport Corp.</td>
</tr>
<tr>
<td>Chiang Shou-hsing</td>
<td>Chairman</td>
<td>Evergreen Marine Corp. (Taiwan) Ltd.</td>
</tr>
<tr>
<td>Guo I-Lung</td>
<td>Member</td>
<td>Biggin Shipping Corporation</td>
</tr>
<tr>
<td>K. C. Lin</td>
<td>Member</td>
<td>Cheng Lie Navigation Co., Ltd.</td>
</tr>
<tr>
<td>P. J. Ching</td>
<td>Member</td>
<td>China Steel Express Corporation</td>
</tr>
<tr>
<td>J. Z. Fang</td>
<td>Member</td>
<td>CPC Corporation, Taiwan</td>
</tr>
<tr>
<td>Chih-Peng Tsai</td>
<td>Member</td>
<td>Deryoung Maritime Co., S.A.</td>
</tr>
<tr>
<td>Michael L. Y. Pan</td>
<td>Member</td>
<td>Eastern Media International Corporation</td>
</tr>
<tr>
<td>Luo Chin-ek</td>
<td>Member</td>
<td>Evergreen Marine Corp. (Taiwan) Ltd.</td>
</tr>
<tr>
<td>S. H. Wang</td>
<td>Member</td>
<td>First Steamship Co., Ltd.</td>
</tr>
<tr>
<td>Anthony Lin</td>
<td>Adviser</td>
<td>Formosa Plastics Marine Corporation</td>
</tr>
<tr>
<td>Tony C. T. Hsieh</td>
<td>Manager of Marine Department</td>
<td>Glory Navigation Co., Ltd.</td>
</tr>
<tr>
<td>Thomas S. H. Yeh</td>
<td>Manager</td>
<td>Harmony Transportation Co., Ltd.</td>
</tr>
<tr>
<td>W. K. Wu</td>
<td>Manager</td>
<td>Hsin Chien Marine Co., Ltd.</td>
</tr>
<tr>
<td>C. K. Lin</td>
<td>Vice President</td>
<td>Mingtai Navigation Co., Ltd.</td>
</tr>
<tr>
<td>You-Yen Ho</td>
<td>Vice President</td>
<td>Shih Wei Navigation Co., Ltd.</td>
</tr>
<tr>
<td>Kenny J. H. Yang</td>
<td>General Manager</td>
<td>Sincere Industrial Corporation</td>
</tr>
<tr>
<td>Young Perng-Terng</td>
<td>Vice President</td>
<td>Ta-Tong Marine Co., Ltd.</td>
</tr>
<tr>
<td>Yu Ko Yuan</td>
<td>Associate Manager</td>
<td>Ta-Ho Maritime Corporation</td>
</tr>
<tr>
<td>Chen Teng</td>
<td>Senior Vice President</td>
<td>Taiwan Navigation Co., Ltd.</td>
</tr>
<tr>
<td>Robert Y. P. Kao</td>
<td>Assistant Vice President</td>
<td>U-Ming Marine Transport Corporation</td>
</tr>
<tr>
<td>Peter W. D. Ho</td>
<td>Vice President</td>
<td>Unison Marine Corp.</td>
</tr>
<tr>
<td>Sanders Jong</td>
<td>Technical Department</td>
<td>Wan Hai Lines Ltd.</td>
</tr>
<tr>
<td>Charles Chu</td>
<td>Vice President</td>
<td>Wisdom Marine Lines S.A.</td>
</tr>
</tbody>
</table>
Class NK in Control

Officers

Councillors

Z. Akasaka  President  Akasaka Diesels Limited
A. Ashida  Chairman  Mitsui O.S.K. Lines, Ltd.
S. Hayama  Professor Emeritus  The University of Tokyo
Y. Katoh  President  Mitsui Engineering & Shipbuilding Co., Ltd.
S. Minami  Company CEO  Oshima Shipbuilding Co., Ltd.
K. Miyahara  Chairman  Nippon Yusen Kabushiki Kaisha
M. Nakanishi  Former Executive Director  Tokio Marine & Nichido Fire Insurance Co., Ltd.
M. Satani  Former Executive Consultant  JX Nippon Oil & Energy Corporation
H. Shima  Representative Director and President  Taihei Kogyo Co., Ltd.
K. Sugimoto  Counselor  Iino Kainu Kaisha, Ltd.
H. Tanikawa  Professor Emeritus  Seikei University
K. Tsukuda  Chairman  Mitsubishi Heavy Industries, Ltd.
T. Uyeno  Chairman & President  Uyeno Transtech Ltd.
M. Yasutomi  Vice President  Tokyo Metro Co., Ltd.
K. Yoshida  Professor Emeritus  The University of Tokyo

Directors

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T. Matsu  Executive Vice President  Nippon Kaiji Kyokai
S. Kakubari  Executive Vice President  Nippon Kaiji Kyokai
K. Fujiiwara  Executive Vice President  Nippon Kaiji Kyokai
T. Yoneya  Executive Vice President  Nippon Kaiji Kyokai
Y. Nakamura  Managing Director  Nippon Kaiji Kyokai
T. Agata  Managing Director  Nippon Kaiji Kyokai
T. Kinoshita  Managing Director  Nippon Kaiji Kyokai
S. Arisaka  Executive Officer  Kawasaki Kisen Kaisha, Ltd.
K. Ishikawa  Director and Senior Managing Officer, Ship and Offshore Structure Division  Universal Shipbuilding Corporation
Y. Otagaki  Executive Vice President  IHI Marine United Inc.
H. Otsubo  Professor Emeritus  The University of Tokyo
K. Yoshida  Managing Executive Officer  Mitsui O.S.K. Lines, Ltd.

Auditors

T. Aihara  Former Commandant  Japan Coast Guard
Y. Fujita  Professor Emeritus  The University of Tokyo
Y. Sakinaga  Board Counsellor  Kawasaki Kisen Kaisha, Ltd.
Y. Tanaka  Managing Corporate Officer  Nippon Yusen Kabushiki Kaisha

Classification Committee

Chairman

N. Ueda  Chairman and President  Nippon Kaiji Kyokai
T. Matsu  Executive Vice President  Nippon Kaiji Kyokai
T. Agata  Managing Director  Nippon Kaiji Kyokai
T. Araki  Director  Iino Marine Service Co., Ltd.
S. Arisaka  Executive Officer  Kawasaki Kisen Kaisha, Ltd.
K. Fujiiwara  Executive Vice President  Nippon Kaiji Kyokai
S. Hayama  Professor Emeritus  The University of Tokyo
H. Hosaka  General Manager, Marine Division  The Japanese Shipowners’ Association
H. Itagaki  Professor Emeritus  Yokohama National University
S. Kakubari  Executive Vice President  Nippon Kaiji Kyokai
T. Kinoshita  Managing Director  Nippon Kaiji Kyokai
K. Kiriake  Managing Director  The Shipbuilders’ Association of Japan
K. Kohayashi  Associate Officer, General Manager, Engineering Division, Ship & Offshore Structure Company  Kawasaki Heavy Industries, Ltd.

Vice Chairman

Y. Nakajima  General Manager of Basic Design Department  IHI Marine United Inc.
Y. Nakamura  Executive Vice President  Nippon Kaiji Kyokai
T. Nomoto  Professor Emeritus  The University of Tokyo
H. Otsubo  Professor Emeritus  The University of Tokyo
M. Sunouchi  General Manager of Basic Design, Department, Ship & Ocean Headquarters  Nippon Yusen Kabushiki Kaisha
T. Tsukakawa  General Manager of Basic Design, Department, Ship & Ocean Headquarters  Mitsu Engineering & Shipbuilding Co., Ltd.

Members

N. Tsukamoto  Senior General Manager, Commercial Lines Claims Department  Tokio Marine & Nichido Fire Insurance Co., Ltd.
N. Ueda  Deputy General Manager, Ship & Ocean Engineering Division, Shipbuilding & Ocean Development  Mitsubishi Heavy Industries, Ltd.
<table>
<thead>
<tr>
<th>Name</th>
<th>Position and Title</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>H. Yamada</td>
<td>General Manager, Naval Architect Strategy</td>
<td>Universal Shipbuilding Corporation</td>
</tr>
<tr>
<td>T. Yoneya</td>
<td>Executive Vice President</td>
<td>Nippon Kaiji Kyokai</td>
</tr>
<tr>
<td>K. Yoshida</td>
<td>Managing Executive Officer</td>
<td>Mitsui O.S.K. Lines, Ltd.</td>
</tr>
<tr>
<td>K. Yoshida</td>
<td>Professor Emeritus</td>
<td>The University of Tokyo</td>
</tr>
<tr>
<td>K. Yoshida</td>
<td>Professor Emeritus</td>
<td>Nippon Kaiji Kyokai</td>
</tr>
<tr>
<td>H. Otsubo</td>
<td>Professor Emeritus</td>
<td>The University of Tokyo</td>
</tr>
<tr>
<td>S. Arisaka</td>
<td>Executive Officer</td>
<td>Kawasaki Kisen Kaisha, Ltd.</td>
</tr>
<tr>
<td>H. Hara</td>
<td>Executive Vice President &amp; General Manager, Shipbuilding &amp; Ocean Development</td>
<td>Mitsubishi Heavy Industries, Ltd.</td>
</tr>
<tr>
<td>S. Hayama</td>
<td>Professor Emeritus</td>
<td>The University of Tokyo</td>
</tr>
<tr>
<td>K. Ishikawa</td>
<td>Director and Senior Managing Officer, Ship and Offshore Structure Division</td>
<td>Universal Shipbuilding Corporation</td>
</tr>
<tr>
<td>H. Itagaki</td>
<td>Professor Emeritus</td>
<td>Yokohama National University</td>
</tr>
<tr>
<td>T. Iwamoto</td>
<td>General Manager, Casting and Forged Products Dept.</td>
<td>The Japan Steel Works, Ltd.</td>
</tr>
<tr>
<td>H. Kawasaki</td>
<td>Councilor</td>
<td>Nippon Steel &amp; Sumitomo Metal Corporation</td>
</tr>
<tr>
<td>T. Kimura</td>
<td>Managing Director</td>
<td>Nippon Kaiji Kyokai</td>
</tr>
<tr>
<td>M. Kishimoto</td>
<td>Director, Chief General Manager, Business &amp; Technical Development Division</td>
<td>Sumitomo Heavy Industries Marine &amp; Engineering Co., Ltd.</td>
</tr>
<tr>
<td>K. Kobayashi</td>
<td>Associate Officer, General Manager, Engineering Division, Ship &amp; Offshore Structure Company</td>
<td>Kawasaki Heavy Industries, Ltd.</td>
</tr>
<tr>
<td>H. Matsuoka</td>
<td>General Manager of the Steel Casting &amp; Forging Division in the Iron &amp; Steel Business</td>
<td>Kobe Steel, Ltd.</td>
</tr>
<tr>
<td>T. Matsui</td>
<td>Executive Vice President</td>
<td>Nippon Kaiji Kyokai</td>
</tr>
<tr>
<td>Y. Nakajima</td>
<td>General Manager of Basic Design Department</td>
<td>IHI Marine United Inc.</td>
</tr>
<tr>
<td>Y. Nakamura</td>
<td>Executive Vice President</td>
<td>Nippon Kaiji Kyokai</td>
</tr>
<tr>
<td>H. Nishizaki</td>
<td>Senior Vice President</td>
<td>JFE Steel Corporation</td>
</tr>
<tr>
<td>T. Nomoto</td>
<td>Professor Emeritus</td>
<td>The University of Tokyo</td>
</tr>
<tr>
<td>M. Okada</td>
<td>Managing Director</td>
<td>Mitsui Engineering &amp; Shipbuilding Co., Ltd.</td>
</tr>
<tr>
<td>Y. Onuki</td>
<td>Director &amp; Managing Executive Officer</td>
<td>Daichi Chuo Kisen Kaisha</td>
</tr>
<tr>
<td>H. Takahashi</td>
<td>Managing Director</td>
<td>JX Tanker Company Limited</td>
</tr>
<tr>
<td>Y. Tanaka</td>
<td>Managing Corporate Officer</td>
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<tr>
<td>N. Ueda</td>
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<tr>
<td>T. Yoneya</td>
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<td>K. Yoshida</td>
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<tr>
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<tr>
<td>Vice Chairman</td>
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<tr>
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<td>S. Arisaka</td>
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<tr>
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<td>T. Kuboki</td>
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<td>The Japanese Society for Non-Destructive Inspection</td>
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<td>T. Yagi</td>
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<td>Y. Yamaguchi</td>
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