The ClassNK Mission

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

- Deliver the highest quality classification services, by the highest quality personnel, while maintaining our totally independent third party, non-profit status.
- Develop relevant rules, guidelines, and procedures, and conduct technical research and development to positively contribute to the maritime industry.
- Maintain and develop our global operations in line with the needs of our clients.

Profile

Founded on 15 November 1899, Nippon Kaisi Kyokai, better known as ClassNK or simply NK, is a ship classification society dedicated to safeguarding life and property at sea and to protecting the marine environment. ClassNK provides broad spectrum of services as an independent third party, non-profit organization, including survey & certification services, technical consulting services, and research & development activities. The principal work of the Society’s expert technical staff is to conduct surveys of new and existing ships and other floating structures, including hull structures, propulsion systems, electrical and electronic systems, safety equipment, and cargo handling gears, among numerous other areas, to ensure their full compliance with classification rules developed by the Society. ClassNK also conducts a wide range of statutory surveys on behalf of more than 100 flag States around the world, as well as audits and registers ship safety & security management systems, quality, environmental and occupational health management systems, and seafarer training institutions.

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Welcome to the ClassNK 2013 Annual Report. I would like to take this opportunity to express my warm gratitude to everyone for their continued support of our activities here at ClassNK.

While 2013 was a year full of important news, without a doubt the most significant event of the year for ClassNK was the casualty of a ClassNK-registered container ship during a voyage across the Indian Ocean in June. In response to this tragic event, we immediately established a special Casualty Investigation Team in order to determine the cause of the casualty and prevent the occurrence of similar casualties in the future. We will continue to work to ensure the safe operation of the world’s merchant fleet and use the results of this investigation to secure an even greater level of safety for the entire maritime industry.

In the classification industry, another major event was the formation of DNV-GL through the merger of Det Norske Veritas (DNV) and Germanischer Lloyd (GL). As the competition between class societies grows, we expect our operating environment to become even more challenging.

In 2013, we obtained new authorizations from the governments of Germany, Serbia, Romania, and Finland, bringing the number of flag states which have authorized ClassNK to perform surveys and issue certificates on their behalf to 110 by the end of December 2013. 2013 also saw several new international conventions come into effect, including new amendments to reduce greenhouse gas (GHG) emissions, and the International Labour Organization’s Maritime Labour Convention, 2006 (MLC, 2006). Having established our Energy Efficiency Design Index (EEDI) Division in 2012, ClassNK comprehensive support for GHG emission reduction. As for the MLC, 2006, in addition to the systematic training of Maritime Labour Inspectors, we have also held seminars around the world to help our clients achieve compliance with the new regulations.

At ClassNK, R&D to ensure the future development of the maritime industry is also one of our highest priorities. In addition to conducting our own independent research and development activities, through our Joint R&D for Industry program we are also contributing to collaborative research to meet the changing needs of the maritime industry. As of the end of 2013, more than 140 projects have been completed as part of this program, and the results of these projects are helping to create a solid foundation for the future growth of our industry. This year, we will continue our active engagement in technical research and development that supports the industry as a whole.

In 2013 we also expanded our certification services to include certification of maritime education & training institutes, certification for Road Traffic Safety Management Systems and verification of GHG emission volumes. Going forward, we will continue to draw on the technical expertise we have developed from our long history in ship classification to enhance our activities in these new fields and improve our services.
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2013 was also the final year of our Global Approach 200, our first mid-term management plan. I am pleased to announce that we succeeded in achieving all five of the plan’s goals, which were:

1. Establishing a stable financial foundation for future growth
2. Reaching more than 200 million gross tons on our register
3. Improving the quality of services and increasing our global presence
4. Expanding business operations
5. Promoting new research and development

In 2014, we will embark on a new mid-term management plan entitled ClassNK Global Challenge 250. The aim of this second three-year plan is to achieve further growth by building on the successful results of Global Approach 200 plan. We will make every effort to ensure that we attain these goals in the years to come.

In 2013, we continued to expand our service network to meet the changing needs of our clients, opening a total of 7 new offices in South East Asia, the Middle East, and Europe. With these new additions, our global service network now stands at 128 offices worldwide.

Beyond expanding our service network, we also wanted 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.

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2013 At a Glance

ClassNK Register Reaches more than 220 Million Gross Tons and 8,500 Vessels

At the end of December 2013, the ClassNK had register reached a total of 220,979,362 gross tons, marking the first time that the Register had exceeded 220 million gross tons. The size of ClassNK’s register has grown every year since 1988, reaching 100 million gross tons registered in 1997 and a record breaking 200 million gross tons registered in mid-2012. Topping the 200 million mark was an important milestone in ClassNK’s history, and marked the first time a classification society had achieved such a figure. In 2013, this increased further with 8,525 vessels totaling more than 220 million gross tons at years end.

While the figure of shipbuilding is on the decrease, thanks to an increase in the number of existing vessels transferring from other classification societies to register with ClassNK, the Society’s registered vessels has continued to rise.

ClassNK works to constantly expand our service network in line with the needs of our clients and changing market trends. In 2013, we expanded our network with new offices in Yangon, Myanmar; Chittagong, Bangladesh; Klaipeda county, Lithuania; Ebeltoft, Denmark, Asuncion, Republic of Paraguay; Wurzburg, Germany; and Helsinki, Finland.

Since establishing its Joint R&D for Industry Program in 2009, ClassNK carries out a wide variety of joint R&D with industry partners each year. In 2013, ClassNK and its research partners completed 66 joint research projects as part of this program.
2013 At a Glance

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ClassNK Registers More Than 20 Million Gross Tons for Third Straight Year

Over the course of 2013, 859 vessels totaling more than 20.5 million gross tons were newly added to the ClassNK register, marking the third straight year that ClassNK has registered an annual total of more than 20 million gross tons.

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ClassNK Announces New Mid-Term Management Plan

In 2013 ClassNK published the following technical guidelines. These guidelines are available to download via the Society’s homepage after logging into “My Page.”

- Guidelines for Large-capacity Storage Batteries
- Environmental Guidelines V.3
- Guidelines for Type Approval of Products for Marinas (use for EU
- Guidelines for Gas Fuelled Ships V.2

New Authorizations
Eared from Germany, Romania, Serbia and Finland.

In 2013, the Society was granted authorization to carry out a full range of surveys, audits and issue certificates for SOLAS, MARPOL and other conventions on behalf of the governments of Germany, Romania, Serbia, and Finland. With these additions, ClassNK is now able to carry out surveys on behalf of 110 flag states and administrations.

ClassNK Grants Approval to Minimal Ballast Water Ship (MIBS) VLCC Design

ClassNK announced that it granted AIP (Approval in Principle) to the MIBS (Minimal Ballast Water Ship) VLCC design developed by Namura Shipbuilding Co., Ltd. in cooperation with the Shipbuilding Research Centre of Japan (SRC). Namura’s new MIBS VLCC design addresses ballast water management related challenges by using a revolutionary new hull form, which greatly reduces the amount of ballast water necessary for safe operations. The MIBS design reduces the weight of ballast water required in normal ballast conditions by around 65%, paving the way for the use of smaller ballast water treatment systems and reducing fuel consumption. The MIBS design also has a flatter bottom and standard breadth hull. This allows for a dramatic reduction in the amount of ballast water needed, while maintaining the dimensions of a standard VLCC.

MOL and NYK Sign Contract for ClassNK Archive Center Service

ClassNK announced that NYK Line Co., Ltd. (NYK) and Mitsui O.S.K. Lines (MOL) Co., Ltd. had signed a preliminary agreement to become the first users of the ClassNK Archive Center’s Automated Document Storage Service (ADSS). This agreement was made in cooperation with Mitsubishi Heavy Industries Co., Ltd. (MHI) and Imabari Shipbuilding Co., Ltd., the builders of the vessels that will utilize this service. Under the agreement, a total of three vessels will utilize ADSS, including NYK’s Elegant Taurus, a 95,000dwt bulk carrier built at Imabari Shipbuilding’s Nagasaki Corporate Headquarters; as well as MOL’s Japan, a 95,000dwt bulk carrier built at Imabari Shipbuilding’s Nagasaki Corporate Headquarters; and Horason, a 300,000dwt VLCC built at Mitsubishi Heavy Indukousi Nagasaki Shipyard.

ClassNK Signs Comprehensive Collaboration Agreement BKI

The Society announced that it had entered into an agreement with Indonesian classification society PT Bisnis Klipatasi Indonesia (Persero) (BKI). This new agreement was created to establish an even closer level of cooperation between ClassNK and BKI as they work to support the development of Indonesian maritime industry. The new agreement will allow for closer cooperation on joint technical research in a variety of fields, as well as cooperation in rule development, and the education and training of surveyors.

ClassNK Recognized at International Awards

Over the course of the 2013, ClassNK was recognized at awards events around the world for its contribution to innovation and safety in the maritime industry, including:

- Seatrade Asia Awards 2013: The Technical Innovation Award
- Seatrade Asia Awards: Safety at Sea Award
- Seatrade Asia Awards 2013: The Technical Innovation Award and the Classification Society Award
- In addition, ClassNK Chairman and President Noboru Ueda was honored with the Seatrade Asia Management Award of the Seatrade Asia Awards on 21 June 2013 in recognition of his outstanding contributions to the development of the maritime sector in Asia

Responding to Maritime Casualties

Following the loss of a ClassNK-registered container ship in the Indian Ocean in June 2013, ClassNK immediately established a special Casualty Investigation Team to investigate the casualty and develop measures to prevent future such casualties from occurring in the future. ClassNK will continue to work to ensure the safe operation of the world’s merchant fleet and use the results of this investigation to secure an even greater level of safety for the entire maritime industry.
2013 At a Glance

ClassNK Announces New Mid-Term Management Plan

Following on the success of ClassNK’s “Global Approach 200” mid-term management plan which was completed in 2013 ClassNK has announced its new new “ClassNK Global Challenge 210” management plan for the period from 2014-16. The new mid- 

3 Dec.

ClassNK joins with “Maria Tsakos” Foundation for Joint Research on Maritime Safety & Environmental Protection

ClassNK and the “Maria Tsakos” Foundation-International Center for Maritime Research and Tradition, was founded in 2008 by the family of Captain Panagiotis N. Tsakos, one of Greece’s most renowned shipowning companies. Since its founding, the Foundation has grown to become one of the leading maritime NGOs and philanthropic organizations in Greece, and is known internationally for its relentless efforts in support of the maritime industry and seafarers.

The first project under the co-operation scheme is a research study to improve seafarer health and welfare, largely financed by ClassNK.

6 Mar.

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10 Dec.

ClassNK Signs Comprehensive Research Pact with Rio Tinto Iron Ore

ClassNK and Rio Tinto Iron Ore, a subsidiary of global mining group Rio Tinto, announced that they had signed a comprehensive collaborative agreement to carry out research related to bulk carry safety. The new agreement provides an open-ended framework for cooperative research between ClassNK and Rio Tinto Iron Ore covering a variety of subjects related to the safe carriage of iron ore and other carring materials. Through this agreement, Rio Tinto and ClassNK will be able to share their decades of specialized knowledge and expertise related to the maritime transport of solid bulk cargoes in an effort to improve marine safety.

26 Sept.

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ClassNK continues to expand its extensive worldwide survey network, with the number of exclusive survey offices totaling 128 locations around the world at the end of 2013. In addition to these offices, ClassNK also maintains six Plan Approval Centers located in the major shipbuilding regions of the world.

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**Worldwide Service Network**

ClassNK Annual Report 2013

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**New Offices Opened in 2013**

- **1/Jul.**
  - Chittagong, Bangladesh
  - Klaipeda, Lithuania

- **1/Dec.**
  - Helsinki, Finland

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**Survey Offices in Japan**

ClassNK Annual Report 2013
ClassNK in Action

ClassNK maintains an ever expanding global service network of more than 120 survey offices and five plan approval centers in major port cities and shipbuilding regions around the world. ClassNK totaling more than 20.5 million gross tons were added to the ClassNK register in 2013, marking the third straight year that ClassNK has registered an annual total of more than 20 million gross tons.

Class Surveys and Statutory Surveys

Class Surveys
Over the course of the year, ClassNK surveyors carried out a total of 15,092 classification surveys around the world. Of these, 859 were initial surveys, and 14,233 were class maintenance surveys.

Statutory Surveys
ClassNK is recognized and authorized 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 on behalf of 110 flag administrations around the world. In 2013, the Society carried out inspections and issued more than 36,000 statutory certificates based on these authorizations as follows:

- International Tonnage certificates: 928
- International Load Line certificates: 2,888
- SOLAS related certificates: 18,882
- MARPOL related certificates: 12,551
- Anti-fouling system certificates: 1,347

New services for incoming regulations
Over the past few years, the IMO has adopted a number of new conventions to address environmental issues facing the maritime industry, including the Ballast Water Management Convention and the Ship Recycling Convention. ClassNK offers a wide variety of certification services to support owners efforts to achieve compliance with new regulations. In 2013, ClassNK issued numerous certifications or statements of compliance in accordance with new conventions, including the following:

- Ballast Water Management System certificates: 147
- Ship Recycling Facility certificates: 3
- Inventory of Hazardous Materials: 100
- EEDI certificates: 42
- SEEMP certificates: 684
- Approval of manufacturers and service suppliers

In addition to classification and convention related surveys, ClassNK also carries out audits and certifications for companies who provide testing and measurement services related class and equipment maintenance surveys. As part of these activities, ClassNK certified the following number of firms in 2013:

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- SEEMP certificates: 684

Approval of manufacturers and service suppliers
ClassNK in Action

Port State Control (PSC)
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 its Annual Report on Port State Control (August 2013), a compilation and analysis of PSC-related statistics for the previous year, and distributed it to shipowners, ship managers, and other stakeholders. In addition, high-ranking ClassNK staff visited key maritime authorities around the world, including the Australian Maritime Safety Authority (AMSA) and China MSA during the course of the year. ClassNK also sent representatives to bilateral Korea-Japan meetings and China-Japan meetings, held in Takamatsu, Japan and Shanghai, China respectively, to discuss inspection related matters and present ClassNK efforts being taken to reduce the detention ratio of NK classed ships.
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Approval of manufacturers and service suppliers

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1. In-water survey of ships: 28
2. Thickness measurements on ships: 23
3. Radio inspection services: 21
4. Maintenance of firefighting systems and equipment: 29
5. Maintenance of life-saving equipment and appliances: 17
6. BLACH: 35
7. Voyage data recorders: 20
8. Hatch tightness testing: 1

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During 2013, ClassNK issued Statements of Compliance to 40 vessels under the Society’s Condition Assessment Program (CAP). Statements of Compliance were also issued for the ballast water management plans of 526 ships. As of the end of 2013, the aggregate total number of Statements of Compliance issued by the Society stood at 331 for CAP and 6,300 for ballast water management plans.

No one is immune to the risk of incidents at sea as the rate of ship casualties in 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 2013, this team was called into action for 4 incidents related to maritime casualties to provide technical support. In 2013, 105 vessels newly registered for the Society’s ERS service, bringing the total number of vessels registered for the service to 1,170.

### TECHNICAL SERVICES

#### Audit and Registration of ISM Code and ISPS Code and MLC 2006 related Systems

In addition to its work carrying out audits and issuing certificates for ISM and ISPS Codes, ClassNK also began carrying out inspections and issuing certification in line with the Maritime Labour Convention (MLC) in 2013. Over the course of the year, the Society scarcely registered 68 companies and 917 ships in accordance with ISM requirements, bringing the total number of companies and vessels registered with the society to 677 companies and 5,270 ships respectively. As of the end of 2013, NK is authorized to conduct ISM audits on behalf of 77 Administrations. The Society registered 904 ships to ISPS Code requirements during the year, bringing the total number of ships registered with the Society to 4,693. NK currently conducts ISPS audits on behalf of 60 Administrations. The Society registered 4,534 ships to MLC Code requirements during the year, bringing the total number of ships registered with the Society to 4,408. ClassNK currently conducts MLC inspections on behalf of 48 Administrations.

#### New Services

In addition to Quality Management, Environmental Management, and Occupational Health & Safety Management Systems, ClassNK also provides a variety of other certification services related to maritime education and training, as well as GHG emissions. In 2013, ClassNK issued the following certifications as part of these activities.

- **Maritime Education & Training:**
  - **Course Related to Existing Ships**
    - Damoga (Hull) Course
    - Damoga (Machinery and Electrical Installations) Course
    - Safety Equipment Course
    - Port State Control (PSC) Course

### CERTIFICATION SERVICES

#### Quality, Environmental Management, and Occupational Health & Safety Management Systems

ClassNK also provides certification services for 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 OHSAS 18001 standard. In 2013, ClassNK certified a total of 58 organizations in line with ISO 9001, bringing the total number of organizations registered with the Society to 440. ClassNK also provided certifications to 10 organizations in line with ISO 14001 and 5 organizations in line with OHSAS 18001 bringing the total number of organizations registered with the Society to 114 and 12 respectively.

### EDUCATIONAL & TRAINING SERVICES

#### ClassNK Academy

Drawing upon its extensive expertise in the survey of ships and audit of ship management systems, ClassNK established the ClassNK Academy in 2009 to provide the necessary basic knowledge to those involved in the shipbuilding, maintenance, and transport industries. Over the course of 2013, more than 4,500 participants took part in ClassNK Academy courses held in 18 countries around the world. Courses offered during 2013 included:

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

- **Courses Related to Ship Management**
  - Incident Investigation & Analysis Course and Risk Management Course
  - ISM Internal Audits Course

- **Courses Related to Existing Ships**
  - Damoga (Hull) Course
  - Damoga (Machinery and Electrical Installations) Course
  - Safety Equipment Course
  - Port State Control (PSC) Course

### Newbuildings

- **Indonesia**
  - 135,000 gt CRUDE OIL CARRIER built by SURABAYA SHIPBUILDING CO., LTD. UNDER CONTRACT for SUNEAGLE MARINE CORPORATION

- **Japan**
  - 123,000 gt OIL TANKER built by KANAGAWA SHIPBUILDING CO., LTD. UNDER CONTRACT for KANAGAWA SHIPBUILDING CO., LTD.

- **Korea**
  - 43,013 gt BULK CARRIER built by TSUNEISHI SHIPBUILDING CORPORATION

- **Spain**
  - 3,383 gt SUPPLY VESSEL built by COLOMBO DOCKYARD PLC

### Courses Related to Existing Ships

- **Palestine**
  - 796 g t OIL CARRIER built by SHANDONG MARINE ENGINEERING CORPORATION

- **Singapore**
  - 2,500 gt GENERAL CARGO built by HIGAKI MITSUốSHI SHIPBUILDING CO., LTD. UNDER CONTRACT for JAPAN MARINE CORPORATION

- **United States**
  - 7,114 gt OIL TANKER built by ASTELLAS MARINE ENGINEERING CORPORATION

- **Vietnam**
  - 2,022 gt SURF OWNED TANKER built by INDIAN MARINE ENGINEERING CO., LTD.

### New Shipbuilding Course (Hull)

- **United States**
  - 132,587 gt ORE CARRIER built by NAMURA SHIPBUILDING CORPORATION

- **United States**
  - 3,383 gt SUPPLY VESSEL built by COLOMBO DOCKYARD PLC

### New Shipbuilding Course (Machinery & Electrical Installations)

- **Japan**
  - 123,000 gt OIL TANKER built by TSUNEISHI SHIPBUILDING CORPORATION

- **Korea**
  - 47,914 gt LPG CARRIER built by MITSUBISHI HEAVY INDUSTRIES, LTD. NAGASAKI SHIPYARD & MACHINERY WORKS
During 2013, ClassNK issued Statements of Compliance to 40 vessels under the Society’s Condition Assessment Program (CAP). Statements of Compliance were also issued for the boldest water management plans of 526 ships. As of the end of 2013, the aggregate total number of Statements of Compliance issued by the Society stood at 331 for CAP and 6,300 for boldest water management plans.

No one is immune to the risk of incidents at sea as the rate of ship casualties in 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 2013, this team was called into action for 4 incidents related to maritime casualties to provide technical support. In 2013, 105 vessels newly registered for the Society’s EMAS service, bringing the total number of vessels registered for the service to 1,170.

Audit and Registration of ISM Code and ISPS Code and MLC 2006 related Systems
In addition to its work carrying out audits and issuing certifications for the ISM and ISPS Codes, ClassNK also began carrying out inspections and issuing certification in line with the Maritime Labour Convention (MLC), in 2013. Over the course of the year, the Society newly registered 68 companies and 917 ships in accordance with ISM requirements, bringing the total number of companies and vessels registered with the society to 677 companies and 5,270 ships respectively. As of the end of 2013, NK is authorized to conduct ISM audits on behalf of 77 Administrations. The Society registered 906 ships to ISPS Code requirements during the year, bringing the total number of ships registered with the Society to 4,563. NK currently conducts ISPS audits on behalf of 60 Administrations. The Society registered 4,534 ships to MLC requirements during the year, bringing the total number of ships registered with the Society to 4,468. ClassNK currently conducts MLC inspections on behalf of 40 Administrations.

Quality, Environmental Management, and Occupational Health & Safety Management Systems
ClassNK also provides certification services for 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 OHSAS 18001 standard. In 2013, ClassNK certified a total of 58 organizations in line with ISO 9001, bringing the total number of organizations registered with the Society to 440. ClassNK also provided certifications to 10 organizations in line with ISO 14001 and 5 organizations in line with OHSAS 18001 bringing the total number of organizations registered with the Society to 124 and 12 respectively.

New Services
In addition to Quality Management, Environmental Management, and Occupational Health & Safety Management Systems, ClassNK also provides a variety of other certification services related to maritime education and training, as well as GHG emissions. In 2013, ClassNK issued the following certifications as part of these activities.

- Maritime Education & Training: 21
- Training for Maritime Instructors: 62
- Seafarer Recruitment and Placement Services
- Maritime Education & Training: 21
- Port State Control (PSC) Course
- New Shipbuilding Course (Machinery & Electrical Installations): 64
- Verification of SHS Emissions: 1
- Road Traffic Safety Manager System (ISO 39001): 2
- Incident Investigation & Analysis Course and Risk Management Course
- Classification Societies and Statutory Issues Courses
- New Shipbuilding Course (Hull): 32
- New Shipbuilding Course (Machinery & Electrical Installations): 13
- Material and Welding Course

ClassNK Academy
Drawing upon its extensive expertise in the survey of ships and audit of ship management systems, ClassNK established the ClassNK Academy in 2009 to provide the necessary basic knowledge to those involved in the shipbuilding, maintenance, and transport industries. Over the course of 2013, more than 4,500 participants took part in ClassNK Academy courses held in 18 countries around the world. Courses offered during 2013 included:

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

-Courses Related to Ship Management
  - Incident Investigation & Analysis Course and Risk Management Course
  - ISM Internal Audits Course

EDUCATIONAL & TRAINING SERVICES
- New Services
  - Training for Maritime Instructors: 62
  - Maritime Education & Training: 21
  - Port State Control (PSC) Course
  - New Shipbuilding Course (Machinery & Electrical Installations): 64
  - Verification of SHS Emissions: 1
  - Road Traffic Safety Manager System (ISO 39001): 2
  - Incident Investigation & Analysis Course and Risk Management Course
  - Classification Societies and Statutory Issues Courses
  - New Shipbuilding Course (Hull): 32
  - New Shipbuilding Course (Machinery & Electrical Installations): 13
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CERTIFICATION SERVICES
- New Services
  - Training for Maritime Instructors: 62
  - Maritime Education & Training: 21
  - Port State Control (PSC) Course
  - New Shipbuilding Course (Machinery & Electrical Installations): 64
  - Verification of SHS Emissions: 1
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  - Incident Investigation & Analysis Course and Risk Management Course
  - Classification Societies and Statutory Issues Courses
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  - New Shipbuilding Course (Machinery & Electrical Installations): 13
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TECHNICAL SERVICES
- New Services
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  - Maritime Education & Training: 21
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  - New Shipbuilding Course (Machinery & Electrical Installations): 64
  - Verification of SHS Emissions: 1
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Training
ClassNK actively runs and participates in a number of different training activities both for internal staff development and in cooperation with external organizations. These training programs cover everything from surveys 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 conducted in 2013 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 66 surveyors around the world during the year. In addition to the training provided by the Society’s Head Office, 48 surveyors also underwent additional survey training at one of the Society’s local offices either in Japan or overseas, as well as underwent specialized engine training conducted at the Yanmar Co. Ltd’s Amagasaki Factory T.T. School.

Marine Management Systems Auditor Training
ClassNK conducted Marine Security Auditor Training for 21 surveys at the Society’s Training Center in Japan as well as for 43 surveys at its Shanghai, Singapore and London Offices.

Maritime Labor Inspector Training
ClassNK conducted Maritime Labor Inspector Training for 19 surveys at its Training Center in Japan as well as for 40 surveys at the Society’s Shanghai, Singapore, Genova, London, New York, and Varna Offices.

Internships
In response to requests from numerous universities ClassNK offered 27 internships to students from Japan, China, India, and Indonesia.

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 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 2013 ClassNK conducted a variety of lectures at the request of the Japanese Ministry of Land, Infrastructure, Transport and Tourism (MLIT), including a lecture on Principles of Ship Security Risk Assessment at Classification Societies” at MLIT’s 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 a training course held by Japan Marine Science Inc. for junior technical superintendents.

ClassNK Technical Seminars
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. Over the course of 2013, PrimeManagement Seminars were held in Bulgaria and Ukraine drawing a total of 100 participants.

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ClassNK Technical Seminars

Providing our customers with the latest technical information is one of our top priorities. ClassNK holds various technical seminars in order to provide the shipping and shipbuilding industries with the latest technical information. The following are just some of the presentations held by ClassNK at Technical Seminars in 2013:

1. Investing for the future - Creating Cleaner & Smarter Technology for Maritime Industry -
2. Recent topic at IMO – MEPC65 & MSC92 -
3. Ballast Water Management Convention - Update -
4. Movement of NOx Reduction Technology
5. Ballast Water Management Convention – Update –
6. Recent topic at IMO – MEPC65 & MSC92-

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ClassNK in Action
Based on its annual Research and Development plan, ClassNK carried out a variety of classification related research with the aim of creating new guidelines and expanding its technical services, including the following:

Due to their cargo loading/unloading requirements (i.e. Roll-on & Roll-off), Pure Car Carriers have a number of unique structural features including multi-car decks, and limited numbers of transverse bulkheads. In response to the expansion of the Panama Canal, new Over-Panamax PCCs are now being designed, and many new designs utilize more complex bulkhead free hull structures in order to improve loading efficiency.

In response to these changes, ClassNK is developing new Guidelines for Pure Car Carriers to provide ship designers and shipyards with rational guidelines that are applicable to both existing PCCs and new designs. As part of this research, ClassNK carried out investigative research on the assessment of Racking strength, which is the unique structural issue for PCCs. Calculations on sea-keeping and wave load analyses were conducted on PCCs of various sizes and dominant sea-states for the Racking strength were established. Based on this investigation, drafts of simplified formulas specifying designed loads for the assessment of the Racking strength were proposed based on ClassNK’s the Guidelines for Container Carrier Structures (Direct Strength Analysis) established in 2003 and amended in 2011.

Based on this research, ClassNK is now verifying the Guidelines through integrated analyses of wave loads and structure responses and calibrating the structure criteria of the Guidelines prior to their expected publication in 2014.

Research and Development Related to Ship Classification

Based on its annual Research and Development plan, ClassNK carried out a variety of classification related research with the aim of creating new guidelines and expanding its technical services, including the following:

Development of Guidelines for Pure Car Carriers (PCC) structures

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ClassNK Annual Report 2013

ClassNK in Research

In order to fulfill its mission of protecting life, property at sea and the maritime environment, ClassNK carries out a wide variety of classification related research & development, as well as actively participates in joint development projects with industry partners to address the broad needs of the maritime industry.

**ClassNK in Research**

**Research and Development Related to Ship Classification**

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Beginning in 2009, ClassNK established a new joint research scheme to contribute financial and technical support to numerous joint research projects with various external institutions. At the end of 2013, a total of 144 projects had been completed as part of this program, with 105 further projects underway. 2013 also saw the completion of Japan’s first national program to reduce GHG emissions from ships, which ClassNK had supported as part of its joint research initiatives since 2009.

Joint Research to meet the demands of the Industry

In 2009, Japan’s Ministry of Land, Infrastructure, Transport & Tourism launched a four year national project to support the development of new technology to reduce Greenhouse Gas (GHG) emissions from ships. With the support of ClassNK, the Nippon Foundation, and the Shipbuilding Research Centre of Japan, this program brought more than 40 maritime companies and organizations together to carry out 22 joint research programs in 6 key technical domains as shown below.

Japanese National Project to Reduce Maritime GHG Emissions

- Developing hull forms with reduced resistance and high propulsion efficiency
  - Development of minimal ballast water ships
  - Development of optimum hull form for contra-rotating propeller
  - Development of optimum bow design in waves for container carriers
  - Development of highly efficient container ships (inc. Hull shape + WRM)

- Developing technologies for reducing the frictional resistance of hulls
  - Development of micro-bubble lubrication (air lubrication) system
  - Practical application of an air lubrication system to shallow-draft, twin screw ships
  - Development of extremely low resistance hull coatings

- Improving propeller efficiency
  - Development of non-hub vortex propellers
  - Development of a propeller attachment to improve thrust efficiency
  - Development of a load fluctuation stabilizer using shaft driven generator and controllable pitch propeller

- Improving the efficiency of diesel engines and exhaust heat recovery
  - Development of technologies to optimize combustion in large slow speed diesel engines
  - Development of a high efficiency heat recovery system for small size diesel engines
  - Development of a small size dual fuel diesel engines
  - Development of a hybrid turbocharger for marine use

- Improving operational and steering efficiency
  - Development of an optimum weather routing system reservation systems
  - Development of port congestion management and berth reservation system
  - Development of efficient maneuvering system for large car carriers
  - Development of an optimum routing management system
  - Development of detailed data measurement and analysis systems for improved ship operations

- Developing hybrid propulsion systems
  - Development of Igossu (high capacity nickel-hydrogen cell) battery/PV cell hybrid power system
  - Development of next generation sail assisted cargo ships
  - Development of lithium ion battery/PV cell hybrid power systems

The results of several of these projects are introduced below.
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#### Developing hull forms with reduced resistance and high propulsion efficiency
- Development of minimal ballast water ships
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- Development of optimum bow design in waves for container carriers
- Development of highly efficient container ships (incl. Hull shape + WHR)

#### Developing technologies for reducing the frictional resistance of hulls
- Development of micro-bubble lubrication (air lubrication) system
- Practical application of air lubrication system to shallow-draft twin screw ships
- Development of extremely low resistance hull coatings

#### Improving propeller efficiency
- Development of non-hub vortex propellers
- Development of a propeller attachment to improve thrust efficiency
- Development of a load fluctuation stabilizer using shaft driven generator and controllable pitch propeller

#### Improving the efficiency of diesel engines and exhaust heat recovery
- Development of technologies to optimize combustion in large slow speed diesel engines
- Development of a high efficiency heat recovery system for small size diesel engines
- Development of a small size dual fuel diesel engines
- Development of a hybrid turbocharger for marine use

#### Improving operational and steering efficiency
- Development of an optimum weather routing system reservation systems
- Development of port congestion management and berth reservation system
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#### Developing hybrid propulsion systems
- Development of an optimum weather routing system reservation systems
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- Development of detailed data measurement and analysis systems for improved ship operations

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ClassNK in Research
Practical application of an air lubrication system to shallow-draft, twin screw ships

- **Participants**
  - Mitsubishi Heavy Industries (MHI)
  - NYK Line (NYK)
  - Monohakobi Technology Institute (MTI)
  - ClassNK

- **Overview**
  This project aimed to validate the effectiveness of air lubrication systems via the permanent installation and testing of such a system on a module carrier, which due to its flat-bottomed, shallow draft, twin-screw construction was considered to ship-type that would benefit most from the application of air lubrication.

- **Target**
  10% GHG emission reduction

- **Results**
  Verification tests on the subject vessel confirmed that the air lubrication functioned properly and reduced CO₂ emissions by 10% during sea trials.

Development of extremely low resistance hull coatings

- **Participants**
  - Nippon Paint
  - Nippon Paint Marine
  - Mitsui O.S.K. Lines (MOL)
  - ClassNK

- **Overview**
  By further developing friction reducing components included in self-polishing coatings (SPC), this project aimed to develop an ultra-high efficiency, ultra-low friction hull coating and verify its effectiveness via model testing and application on actual vessels.

- **Target**
  10% GHG emission reduction

- **Results**
  A new ultra high efficiency, anti-fouling coating (A-LFC) was developed and applied to actual vessels. Analysis data from the vessel operations confirmed a 7-10% reduction of GHG emissions depending on the vessel type.

Development of technologies to optimize combustion in large slow speed diesel engines

- **Participants**
  - Mitsui Engineering and Shipbuilding
  - ClassNK

- **Overview**
  This project aimed to comprehensively optimize large engine fuel efficiency by optimizing fuel injection patterns and the timing of exhaust valve opening and closing to ensure optimized operations at a variety of engine loads, as well as application of an exhaust energy recovery system.

- **Target**
  9% GHG emission reduction

- **Results**
  As a result of this research, a new hydraulic exhaust heat recovery system was developed, and combined with an electronically controlled engine and a variable mechanism to partially improve load performance. Evaluation during shop tests confirmed that the system reduced GHG emissions by 10%, surpassing the project’s initial reduction target.

Development of a hybrid turbocharger for marine use

- **Participants**
  - NYK Line (NYK)
  - Monohakobi Technology Institute (MTI)
  - Mitsubishi Heavy Industries (MHI)
  - Universal Shipbuilding Corporation (now Japan Marine United)
  - ClassNK

- **Overview**
  This project aimed to develop a new hybrid turbocharger containing a high-speed electric generator that would use exhaust gas from the vessel and reduce fuel consumption.

- **Target**
  2% GHG emission reduction

- **Results**
  The hybrid turbocharger developed as part of this project was installed on an actual vessel and monitored during voyage. Analysis of this data confirmed that CO₂ emissions decreased by 1.8% over the course of the total voyage (including periods when both the hybrid turbocharger and diesel generator were operated simultaneously).
Practical application of an air lubrication system to shallow-draft, twin screw ships

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- **Target**
  10% GHG emission reduction

- **Results**
  Verification tests on the subject vessel confirmed that the air lubrication functioned properly and reduced CO2 emissions by 10% during sea trials.

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Based on the success of this program, the Ministry of Land, Infrastructure, Transport and Tourism decided to launch a new scheme in fiscal 2013 to provide continued support for the development of GHG reduction technologies. ClassNK will continue to play an active role in this program and provide vigorous support to each of the research projects being carried out as part of the program.
ClassNK in International Affairs

International Maritime Organization (IMO)

As one of its many important international activities, ClassNK contributes to the International Maritime Organization (IMO) on a wide range of technical issues. In 2013, 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 to Conventions at the major IMO meetings such as Maritime Safety Committee (MSC) and the Marine Environment Protection Committee (MEPC) are regularly provided to ClassNK clients via email and are also uploaded on the IMO International Convention Calendar on the ClassNK website.

International Association of Classification Societies (IACS)

ClassNK plays an active role in the activities of IACS, including serving as Chairman of the organization from during 2010-11 and Vice-Chairman during 2011-2012. In 2013, ClassNK staff served as the Chair of the Survey Panel, one of four panels of the IACS including the Hull, Machinery, and Statutory Panels, and also served as the Chair of the Expert Group on IMO Goal Based Standards (GBS).

ClassNK also contributed to the development of the 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 2013, ClassNK participated in the IACS meetings listed to the right.
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International Maritime Organization (IMO)

<table>
<thead>
<tr>
<th>Meeting</th>
<th>Date</th>
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<tbody>
<tr>
<td>56th Sub-Committee on the Protection</td>
<td>January</td>
</tr>
<tr>
<td>17th Sub-Committee on Bulk Liquids and Gases</td>
<td>February</td>
</tr>
<tr>
<td>59th Sub-Committee on Stability (ocean) and Fishing Vessels</td>
<td>February</td>
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<tr>
<td>21st Sub-Committee on Flag State Implementation</td>
<td>March</td>
</tr>
<tr>
<td>5/7th Sub-Committee on Ship Design and Equipment</td>
<td>March</td>
</tr>
<tr>
<td>44th Sub-Committee on Standards of Training and Watchkeeping</td>
<td>April</td>
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<tr>
<td>69th Session of the Maritime Environment Protection Committee</td>
<td>May</td>
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<tr>
<td>92th Session of the Maritime Safety Committee</td>
<td>June</td>
</tr>
<tr>
<td>18th Sub-Committee on Dangerous Goods, Solid Cargoes and Containers</td>
<td>September</td>
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</tbody>
</table>

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In 2013, ClassNK participated in the IACS meetings listed to the right.

<table>
<thead>
<tr>
<th>Meeting</th>
<th>Frequency</th>
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<tbody>
<tr>
<td>Council Meeting</td>
<td>Twice</td>
</tr>
<tr>
<td>General Policy Group Meeting</td>
<td>Twice</td>
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<tr>
<td>Quality Committee Meeting</td>
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<tr>
<td>Consultative Small Group Meeting (CSR, Quality Policy (2 Groups))</td>
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<tr>
<td>Experts Group Meeting (EEDI, EU Environment etc. (8 Groups))</td>
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<td>Technical Panel (Hull, Machinery, Survey, Statutory)</td>
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<tr>
<td>Project Team Meeting (14 Teams)</td>
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<tr>
<td>Harmonization and Writing Group Meetings (Hull Structural Approach for the Developments of Rules)</td>
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<tr>
<td>Steering Committee Meeting (harmonization of IACS)</td>
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<tr>
<td>Workshops on Harmonized CSR and GBS</td>
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<tr>
<td>High Level Meeting with Industry</td>
<td>2 times</td>
</tr>
<tr>
<td>Industry Presentation on Harmonized CSR</td>
<td>5 times</td>
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</tbody>
</table>
The Association of Asian Classification Societies (ACS), was formed in 2010, following nearly two decades of informal meetings between its members. As well as taking an active part in the planning of the Executive Committee and technical management activities, ClassNK also served as the Chair of the ACS Ship Recycling and GBS working groups.

ClassNK also contributed to ACS independent Technical Seminar (July), served on the Safe Navigation & Environment Committee for the Asian Shipowners’ Forum (ASF/ASNEC), and served as the ACS Liaison to ARF/AMC. ClassNK also represented the association at the Asian Shipbuilding Experts’ Forum (ASEF) held in November.

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### Executive Committee Meeting
- Once

### Technical Management Group Meeting
- Twice

### Technical Seminar
- Once

### Ship Recycling Seminar
- Once

### Working Group Meeting (4 groups incl. GBS and Ship Recycling)
- 4 times

### Meetings with Industry (incl. technical seminars, meeting with ASEF)
- 3 times

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### International Committees

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<td>15 February</td>
<td>Kochi</td>
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<td>11th Philippine Committee</td>
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<td>19th China Committee</td>
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<td>4th Middle East Technical Committee</td>
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<td>4th North American Committee</td>
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<td>10th Turkish Committee</td>
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<td>24th Korea Committee</td>
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<td>11th Indonesian Committee</td>
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### Authorization Granted to ClassNK

**As of the end of December 2013**

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Abbreviations :
- ★: Authority has been delegated
- •: Authority has been delegated subject to some conditions
- LL: International Load Line Certificate
- SC: Cargo Ship Safety Construction Certificate
- SE: Cargo Ship Safety Equipment Certificate
- SR: Cargo Ship Safety Radio Certificate
- ISM: International Safety Management Code
- ISPS: International Ship and Port Facility Security Code
- SOLAS: International Convention for the Safety of Life at Sea
- MARPOL 73/78: International Convention on the Prevention of Pollution from Ships
- Note1: Effective from 1 January 2014
Organization

ClassNK in Committee

ADVISORY COUNCIL

Member
Chang Yung-fei
Frank I. K. Y. Paci
Sumalee Samhanvee

Chairman
Organization

Member
Group Chairman
Group Chairman
President

Chairman
Member
Member
Member
Chairman
Member
Group Chairman
Regional Container Lines Group

Chairman
J. G. Davis CBE
F. M. Marchant MBE
Douglas W. Long
Chris Bailey
Sanil Mathur
Michael G. Peters
Ermomarino A. G. E. Embiricos
Philip O’Neill
Adriel Fontaine
Adriel P. Postume
Michael K. Dayton

Member
Organization

Member
F. M. Marchant MBE
Diploma

Chairman
Managing Director
Chief Operating Officer
Chairman
Chairman
Chairman
Technical Director
General Manager
General Manager
Farmer Chairman
Operations Director

Member
Baltic Exchange

Member
MF (International Maritime Industries Forum)

Member
Anglo-Eastern (UK) Ltd.
BP Shipping Limited
British Marine Plc
CMA CGM (UK) Holdings Limited
Emirates Shipbuilders Ltd
Grieg Ship Management Limited

Member

Member
Volvo S.A

Member

Member
Bourbon Offshore Maritima
Exxon M.A.
Estaleiros Atlanticos Sui
Mi do Brasil Representantes Ltds
Papit Detention

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HONG KONG COMMITTEE

Chairs

Member
Sabine S. M. Chau
Y. Q. Huang
Chen Hsin-Chuen
Robert Alexander Ho
Andrew Y. Chen
Arthur Bowing
Frank W. K. Tsoo
Ch. N. Lee
Josh Hai
Kwai Sai Mei
Jan Hintha
Loi Lam Yat
M. Ting
Peter Cheng
Li Ru
Kenneth C. C. Lo
Edward S. C. Cheng
Predaok Boaivo
Wong Wai Keung
Roy Mathew

Managing Director

Techno Director

Fleet Director

Technical Manager

Member

INDIAN COMMITTEE

Chairs

Managing Director

Vice Chairmen

Member

Executive Chairman

Consultant

Vice Chairman

Chairman

Member

Director

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ClassNK in Control

ClassNK Annual Report 2013

Classification Committee

Chairman
Shinji Hayama
Hideomi Otsubo
Hitoshi Hosaka
Naoto Tsukamoto
Kimio Kiriake
Yoshiyuki Nakajima
Kenji Shikano
Kiyotaka Yoshida
Koichi Yoshida

Vice Chairman
Takashi Uemura
Sadatoshi Obata
Takahiro Kajita
Takashi Inomata
Tetsuya Kinoshita
Tetsushi Agata
Koichi Fujiwara
Noboru Ueda
Yasuhide Sakinaga
Kazuya Kobayashi

Members
Koichi Yoshida
Takashi Uemura
Sadatoshi Obata
Takahiro Kajita
Takashi Inomata
Tetsuya Kinoshita
Tetsushi Agata
Koichi Fujiwara
Noboru Ueda
Yasuhide Sakinaga
Kazuya Kobayashi

Technical Committee

Chairman
Koichi Yoshida
Hidemitsu Ichino
Takahiro Kajita
Takashi Uemura
Takahiro Kajita
Tetsuya Kinoshita
Shinji Hayama
Koichi Yoshida

Vice Chairman
Shinji Hayama
Hidemitsu Ichino
Takahiro Kajita
Takashi Uemura
Takahiro Kajita
Tetsuya Kinoshita
Shinji Hayama
Koichi Yoshida

Members
Koichi Yoshida
Hidemitsu Ichino
Takahiro Kajita
Takashi Uemura
Takahiro Kajita
Tetsuya Kinoshita
Shinji Hayama
Koichi Yoshida

Quality Committee

Chairman
Hidemitsu Ichino
Norihide Oda
Takahiro Kajita
Yasuhide Sakinaga
Tetsuya Kinoshita
Koichi Yoshida
Shinji Hayama
Noboru Ueda

Vice Chairman
Hidemitsu Ichino
Norihide Oda
Takahiro Kajita
Yasuhide Sakinaga
Tetsuya Kinoshita
Koichi Yoshida
Shinji Hayama
Noboru Ueda

Members
Hidemitsu Ichino
Norihide Oda
Takahiro Kajita
Yasuhide Sakinaga
Tetsuya Kinoshita
Koichi Yoshida
Shinji Hayama
Noboru Ueda

ClassNK Annual Report 2013

Organization
## ClassNK in Control

### Officers

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chairman &amp; President</td>
<td>Shinji Hayama</td>
</tr>
<tr>
<td>Managing Director</td>
<td>Toshiharu Nomoto</td>
</tr>
<tr>
<td>Managing Director</td>
<td>Naoki Ueda</td>
</tr>
<tr>
<td>Managing Director</td>
<td>Miki Ueda</td>
</tr>
<tr>
<td>Managing Director</td>
<td>Nakatani Iriki</td>
</tr>
<tr>
<td>Managing Director</td>
<td>Toshio Araki</td>
</tr>
<tr>
<td>Managing Director</td>
<td>Tetsushi Agata</td>
</tr>
<tr>
<td>Managing Director</td>
<td>Yasushi Nakamura</td>
</tr>
<tr>
<td>Managing Director</td>
<td>Takuya Yoneya</td>
</tr>
<tr>
<td>Managing Director</td>
<td>Shosuke Kakubari</td>
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### Directors

<table>
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<tbody>
<tr>
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</table>

### Auditors

<table>
<thead>
<tr>
<th>Role</th>
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<tbody>
<tr>
<td>Managing Executive Director</td>
<td>Kunihiro Yoshida</td>
</tr>
<tr>
<td>Managing Director</td>
<td>Hiroshi Nakamura</td>
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<tr>
<td>Managing Director</td>
<td>Shinji Hayama</td>
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</table>

### Classification Committee

<table>
<thead>
<tr>
<th>Role</th>
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<tbody>
<tr>
<td>Chairman and President</td>
<td>Akira Tagane</td>
</tr>
<tr>
<td>Executive Vice President</td>
<td>Hiroshi Nakamura</td>
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<tr>
<td>Executive Vice President</td>
<td>Toshiharu Sato</td>
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## Technical Committee

### Chairman

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### Vice Chairman

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### Members

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### Quality Committee

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