



2004

NK

Striving towards a safer maritime world

PROFILE

Nippon Kaiji Kyokai, known as ClassNK or NK is a ship classification society. The principal work of the Society's expert technical staff is to undertake surveys to ensure that the rules which it has developed are applied to newbuildings and existing ships to ensure the safety of the vessels. The rules cover not only hull structures, but also safety equipment, cargo handling gear, engines, machinery, and electrical and electronic systems among others. By the end of December 2000, the Society had 6,399 ships totaling 111.5 million gross tons (gt) under class. This figure represents approximately 20 percent of the world merchant fleet currently under class. Although based in Japan, ClassNK has worldwide representation through a network of exclusive surveyor offices. ClassNK's surveyors work in shipbuilding and repair yards and at ports across the world, wherever they may be called upon to examine the condition of a ship, so that all of the Society's services are available worldwide. On November 15th 1999, Nippon Kaiji Kyokai celebrated the centenary of its foundation.

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The NK Mission

ClassNK is dedicated

*to ensuring the safety of life and property at sea,
and the prevention of 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, procedures and guidance,
and maintain and develop its commitment to scientific
and technological research, development and education.*

*Maintain and develop its global operations in line with the needs
of those using its services.*

ClassNK

Welcome to the Year 2000 ClassNK Annual Report. Following on from the excitement of last year's celebration of our 100th year anniversary, it was suggested to me on occasion, that this year had the potential to be something of a come down. But let me assure you this was far from the case. NK has continued to grow steadily, with gross tonnage now topping 111 million, while our international network grew to include Norfolk in the USA, not to forget a new office in Sendai, here in Japan.

Although there was some improvement in the domestic arena, I must say that it is the rate of growth of the shipbuilding industries in Korea and China, that clearly presents the greatest opportunities, and at the same time, the greatest challenges in this new century. Opportunities to develop new business relationships arise almost daily, and as you will read later, NK is supervising new building projects in Korea, China, Vietnam and Singapore among others. Also, increased trade, particularly with China entering the WTO, is also expected to result in an increased amount of regular survey work in the region. Needless to say NK's 8 offices in China and 3 in Korea are among the busiest. But as with any expanding service network, the biggest challenge lays in maintaining the highest quality, while meeting the growing needs of the clients. I believe that human resources and training are the key to meeting this challenge. Therefore we

have developed an extensive network of highly experienced local and expatriate surveyors and we are investing heavily in ongoing training of our exclusive surveyors. I am also pleased to say, that we have again this year renewed our commitment to cooperative training agreements with various local societies in order to contribute to the training of their surveyors to the highest international standards.

It would be difficult to review this past year without reference to the *Erika* incident. The *Erika* again reminded us of the many instances throughout the last century, where we humans have polluted and destroyed our living habitat. In response, in this new century, this April, the International Maritime Organization's MEPC (Marine Environment Protection Committee) will adopt the next MARPOL amendments, that will accelerate the phase-out of single skin tankers. Similarly, next July IACS will commence working under the enhanced survey requirements for tankers and bulk carriers of 15 years of age and over.

But the *Erika* aftermath is not the only issue being discussed at the IMO. Their schedule includes topics such as "Ballast Water Exchange in Deep Seas", tighter control on NOx and SOx emission and greenhouse gas emission controls. All key issues suggesting that protecting our future environment has become a more serious priority.

One interesting new aspect of this new century's environment protection legislation is the introduction of total

mass (actual quantity) restrictions, whereas in the past we have seen only percentage or ppm type controls used.

Traditional ways of doing business will not meet the requirements of these new trends in environmental rules. Certain industries will, may I suggest, be required to start producing a clear and fair statement of the quality and quantity of their by-products and to make this information open to the public. This may even lead to a need for a common market dealing with, for example emission rights, or a functional body to set prices on various emission rights to optimize the cost for a better environment.

I admit these concepts are quite challenging for me, but they are the type of challenges our industry must rise to, in the beginning of the new century.

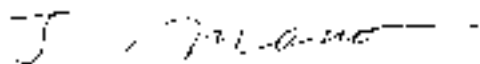
Turning to a less weighty matter, a highlight of this year was no doubt the commencement of construction of the NK Information Center which will be completed around the middle of this year. The center will serve as an information and communications hub for all the Society's offices in Japan and around the world. It will be an information warehouse and backup facility, specifically designed to withstand the worst natural disasters. It is also being designed to accommodate and serve if necessary, as an alternative head office, in the case of such a disaster affecting the existing head office. But I do want to say, since we must proceed with the computerization of

information, if we are to improve productivity effectively, it is not enough just to invest in facilities and equipment. We must also consider what we can do to enhance productivity and reduce costs in our daily tasks. A re-organization of the Society will be undertaken accordingly, but it is not enough just to change the organization, we must also reform our way of thinking. These days our world revolves around creating and communicating vast amounts of information.

Upon personal reflection, even I must admit that my sentences tend to be somewhat wordy. I think that we should all do much more to write more concisely. Clear and concise writing reduces the possibility of misunderstanding and also makes translation easier. Economizing our sentences as much as possible is also important if we are to proceed with the electronic management of information efficiently at all levels.

Applying this philosophy to the moment, let me finish by thanking all who have contributed to another successful year for the Society, and hope we can all work together, to achieve the same and better next year.

March 2001



Tadashi Mano
Chairman and President



(Clockwise, from lower right)
Chairman and President T. Mano, Executive Vice President M. Hidaka,
Executive Vice President K. Ogawa, Managing Director M. Murakami,
Managing Director Dr. M. Oka, Managing Director T. Takano,
Managing Director Y. Tsudo

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Seatrade Review announced EVP Hidaka's elevation to the Chairmanship of IACS, with this fun representation.

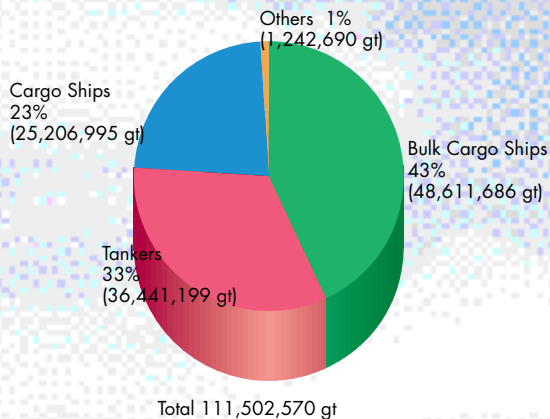


A shinto priest blesses the ground and construction of the new NK Information Center at commencement.

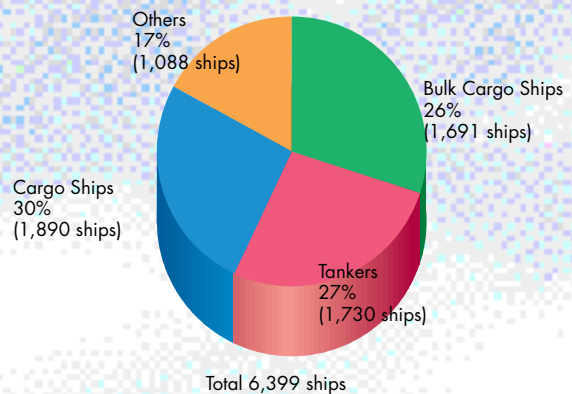


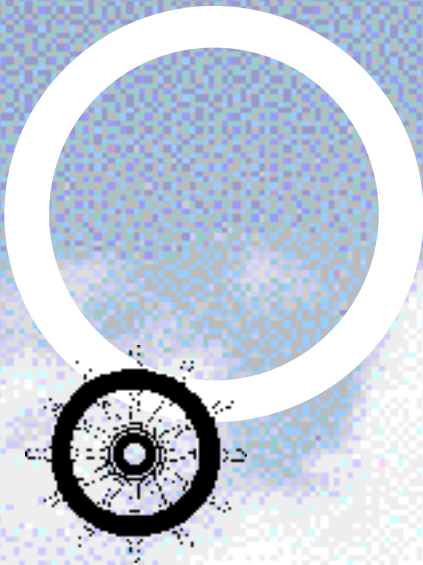
Mr. Hisayasu Jin, (center back) chaired the 49th IACS GPG Meeting at NK Head Office.

Breakdown of NK-classed ships by type
(Aggregate total gross tonnage)



Breakdown of NK-classed ships by type
(Total number)





NK Rotterdam office commenced Conformity Assessment and Certification under European Council Directive 96/98 EC on Marine Equipment.



PrimeShip-HULL and Nagasaki featured in this year's ClassNK Magazine.



NK exhibited at Posidonia (left) and Sea Japan (right).

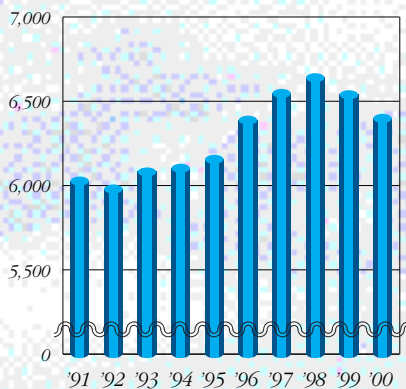


Mr. Yukio Yasuda (left) manages the new NK office in Sendai, North of Tokyo.

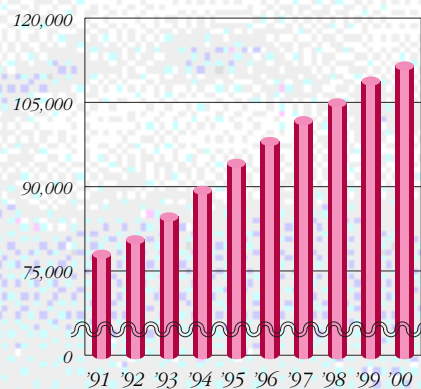


Many industry leaders lauded the inaugural meeting of the Taiwan Committee.

Total number of ships classed
(Number of ships)



Aggregate total gross tonnage of ships classed
(Thousand tons)





NK Action

“Opportunities to develop new business relationships arise almost daily, and as you will read later, NK is supervising new building projects in Korea, China, Vietnam and Singapore among others.”

T. Mano, Chairman’s Message

The Classed Fleet

Last year saw the emergence of a trend towards fewer, but bigger ships on the NK register, and this year the trend continued. As of December, 2000, the ClassNK Register totaled 6,399 ships, 140 less than the total of 6,539 in 1999, but with a total gross tonnage of 111,502,570 gt, was up 2,698,675gt from the total for the previous year. Of those, 5,203 ships, or 81.3% of the Register, were flagged outside Japan, with ports of registry in 66 nations and territories. Their gross tonnage, was 99,708,619 gt, or 89.4% of the total Register. Ships flying the flags of Panama, Japan, Singapore, Liberia and Malta accounted for 74.9% of the total number and 80.3% of the total gross tonnage classed by the Society.

Additions to the Register during the year amounted to 312 ships, or 8,119,811gt, 50 ships fewer than joined in the previous year but, again, an increase of 374,134 gt on the previous year. In all, 452 ships, of 5,480,412 gt, left the Register, 11 fewer ships than left last year, but representing of 1,520,914 gt, more tonnage than that "lost" in 1999. Of some interest is that of those ships, 120 vessels were removed for reasons of non-compliance with Society rules, while another 150 were transferred to other classification societies.

Glory Crystal—a 106,129 dwt oil carrier constructed by Namura Shipbuilding Co., Ltd. for Central Tanker S.A.



Washusan—a 281,050 dwt oil carrier constructed by Mitsubishi Heavy Industries, Ltd.

Newbuildings

At 272 (221 ships built by shipbuilders in Japan, 51 ships in other than Japan), the number of newly constructed ships classed by the Society dropped by 9.9%, over the previous year. However the 7,585,970 gt, classed, represented an increase of 342,967 gt over the total for the previous year. The number of new tankers and liquefied gas carriers fell 15.6%, to 65 vessels but gross tonnage was up 0.3%, to 2,713,987 gt. New Bulk Carriers added to the Regis-

ter dropped 2.1%, to 94 ships, but gross tonnage was also up 19.3% to 3,606,433 gt, while the number of new cargo ships dropped 28.6%, to 60, with a 14.5% reduction in gross tonnage, to 1,219,401 gt.

The Rules

The year 2000 was another busy year for the Development Department and their efforts in up-dating the cornerstones of the Society—the Rules, Regulations and Guidance.





Morning Express—a 105,578 dwt oil carrier constructed by Sumitomo Heavy Industries, Ltd. for Nakata Maritime Corporation

Along with keeping the rules up to date with constantly changing statutory requirements, the Society also strongly focuses on reviewing its rules to maximize the results of its research and development activities.

The Rules and Guidance amended by the Society in 2000 include:

1. RULES / GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

- (1) A part revision related to handling of ships laid-up (Part B)
- (2) A part revision related to surface treatment of crank-shafts (Part D)

- (3) A part revision related to the location of the main switchboard (Part H)
- (4) A part revision on allowable cargo mass for bulk carriers (Part C)
- (5) A part revision for setting up of requirements for “super high holding power” anchors (Parts C, CS, L & Q)
- (6) A part revision on Isolation of oil/dry cargo holds from other spaces in combination carriers (Part C)
- (7) Detailed requirements for means of escape (Part R)
- (8) A part revision in the requirements for environmental control for the carriage of Styrene Monomers (Part S)

- (9) A part revision related to fire detection and alarm systems, etc. (Parts A, D, H & R)
- (10) A part revision related to surveys for implementation of Unified Requirements of IACS (Part B)
- (11) A part revision related to steel coil loading (Part C)
- (12) A part revision related to welding materials for Aluminum alloy (Part M)
- (13) A part revision in the requirements for anchor chain cables (Part L)
- (14) A part revision related to the arrangement and segregation of pipe tunnels (Parts C & R)
- (15) A part revision in the requirements for fire hose couplings and nozzles (Part R)
- (16) A part revision related to alarms of fixed gas fire extinguishing systems (Part R)
- (17) A part revision related to machinery verification run (Part B)
- (18) A part revision related to inclining tests (Part B)
- (19) A part revision related to the dispensation of inclining test (Part B)
- (20) A part revision related to hydrostatic tests on free-standing fuel oil tanks (Part D)



Nord-Kraft—a 171,199 dwt bulk carrier built by Koyo Dockyard Co., Ltd. for Southern Route Maritime, S.A.



Far Eastern Media—a 74,078 dwt bulk carrier constructed by Imabari Shipbuilding Co., Ltd. for Far Eastern Silo & Shipping (Panama) S.A.

3. RULES AND GUIDANCE FOR HIGH SPEED CRAFT

- (1) A part revision related to “super high holding power” anchors
- (2) A part revision related to the dispensation of inclining test

4. RULES AND GUIDANCE FOR CARGO HANDLING APPLIANCES

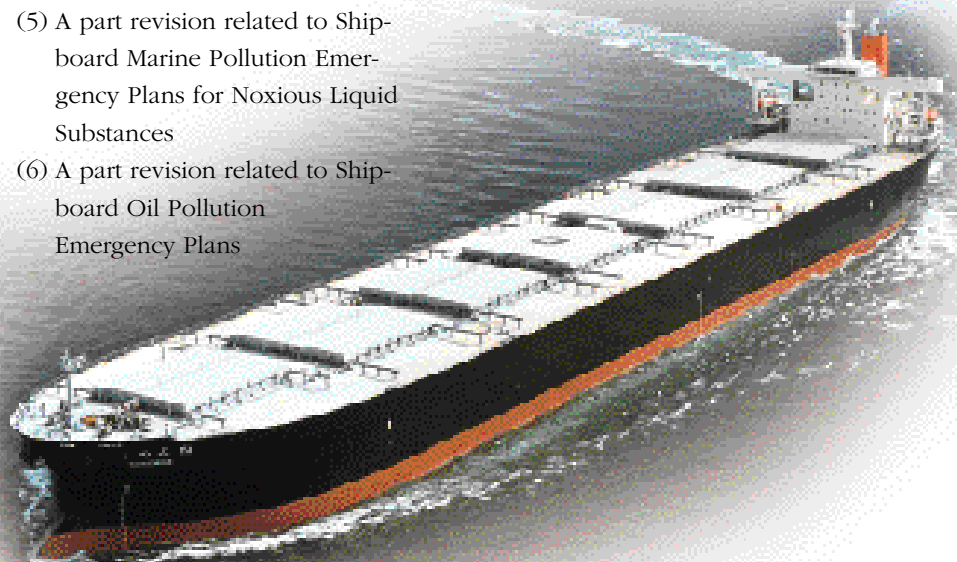
- (1) A part revision in the requirements for Periodical Surveys

- (21) A part revision related to adhesives used in, and fire tests for A class divisions (Part R)
- (22) A part revision related to ice strengthening of ships (Part C)

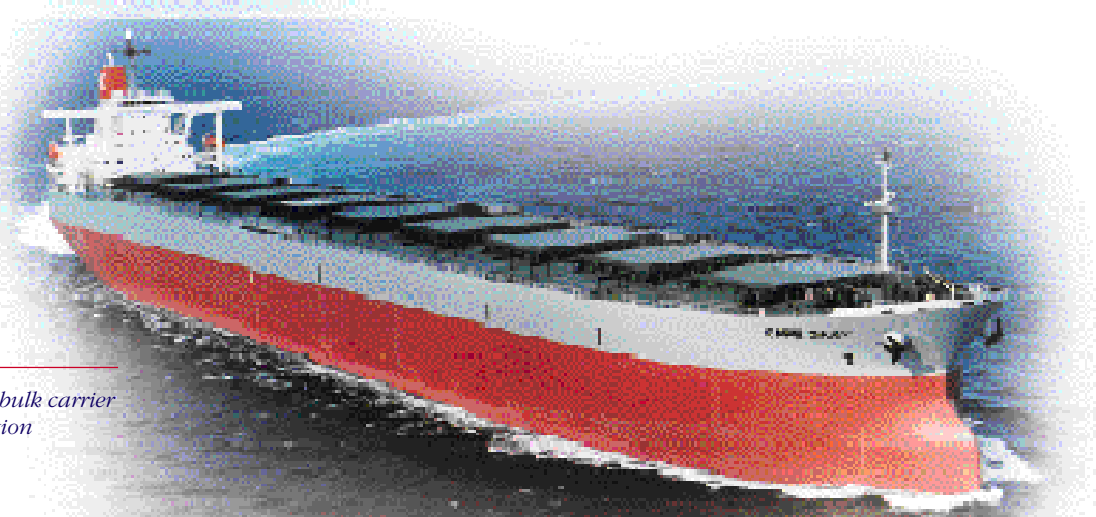
2. RULES AND GUIDANCE FOR MARINE POLLUTION PREVENTION SYSTEMS

- (1) A part revision related to classification of noxious liquid substances regarding liquefied gas cargoes
- (2) A part revision related to exemption from oil discharge monitoring and control systems
- (3) A part revision in the provisions related to COW verification
- (4) A part revision related to the amendment of the Reg.13G of Annex I, MARPOL

- (5) A part revision related to Ship-board Marine Pollution Emergency Plans for Noxious Liquid Substances
- (6) A part revision related to Ship-board Oil Pollution Emergency Plans



Tsunomine—a 152,400 dwt bulk carrier built by Tsuneishi Shipbuilding Co., Ltd. for Citrus Shipping S.A.



Cape Daisy—a 172,502 dwt bulk carrier constructed by NKK Corporation for Manel Shipping Co., Ltd.

5. GUIDANCE FOR THE APPROVAL AND TYPE APPROVAL OF MATERIALS AND EQUIPMENT FOR MARINE USE

- (1) A part revision related to “super high holding power” anchors
- (2) A part revision related to adhesives used in, and fire tests for A class divisions

Certification of Manufacturers

The number of marine-related manufacturer certifications made by the Society was 10 bringing the total to 93 an 8.1% increase from the previous year. Furthermore, approvals for firms engaged in thickness measurement

work on ships were 17, bringing the total to 114. Approvals for firms carrying out in-water surveys of ships were 44, bringing the total to 106, and approvals for radio firms engaged in services on ships were 54, bringing the

Los Vilos—a 46,541 dwt bulk carrier built by Oshima Shipbuilding Co., Ltd. for Stevens Line Co., Ltd.

total to 105. Separately, certifications for a wide range of materials and equipment totaled 284 for the year.

Machinery & Equipment Inspections

Although Annex VI of the MARPOL Convention has yet to come into force, the start date of January 1st 2000 has already passed and all applicable ships with keels laid on or after this date will eventually become subject (retroactively) to the provisions of the Annex. Consequently, most ships currently under construction will be subject to the NOx requirements set forth when Annex VI finally comes into force. This has led to a significant increase in the number of NOx statements of compliance for diesel engines issued by the Society, with 704 having been issued by the end of the year. Some 20 statements of compliance were issued to ships for which compliance, is not mandatory, but they elected to comply voluntarily.

Corona Horizon—an 88,315dwt bulk carrier constructed by Imabari Shipbuilding Co., Ltd. for Daisy Shipping Co., Ltd.

St. Clemens—a 47,131 dwt product carrier constructed by Onomichi Dockyard Co., Ltd. for Shenlong Maritime Pte. Ltd.



Sunny Joy—a 78,874 m³ LPG carrier built by Mitsubishi Heavy Industries, Ltd. for Lealty Marine Corp.

One of the main activities related to classification, undertaken by the Society relates to the inspection of specific materials, equipment and fittings.

Inspection of Materials, Equipment and Fittings included;

MATERIALS	AMOUNTS
Rolled steel	1,938,116 tons
Cast and forged steel	67,412 tons
EQUIPMENT	
Prime movers	1,193 units
Boilers	544 units
Deck machinery and equipment	1,333 units
Auxiliary machinery	16,382 units
FITTINGS	
Anchors	684 units
Chains	6,754 lengths
Freight containers	888 units

The total number of inspections decreased slightly this year as did the number inspections on testing machines, down to 8,725.

Audit and Registration of Safety Management Systems

On July 1st 2002, the ISM Code will become mandatory for all Phase II ships, namely “Other Cargo Ships” of 500 gt or more engaged in International Voyages, including container and refrigerated cargo ships. A brochure entitled “Ten Steps for Acquisition of ISM Code Certification” was issued (available in both English and Japanese languages) to companies who intend to acquire ISM certification for the first time. The Society distributed it to various ship management companies all over the world (340 companies in Japan and 240 overseas). During 2000, the Society assessed, and granted Documents of Compliance (DOCs) and Safety Management Cer-

tificates (SMCs) to 35 companies and 506 ships. As of December 31st, the total number of certifications had reached 409 companies and 2,669 ships.

Regarding the establishment of a Voluntary ISM Certification Service for Japanese domestic shipping companies, the Ministry of Transport (MOT) announced new regulations regarding a voluntary certification scheme and started to issue certificates similar to those required by the ISM Code to domestic shipping companies. Many companies have been requested by some sectors of the Japanese shipping industry to acquire such certification in order to ensure the safe operation of ships at sea. ClassNK has supported the intent of the MOT with the establishment



Sunny Iris—a 7,849 dwt oil/chemical carrier constructed by Fukuoka Shipbuilding Co., Ltd. for Solar Shipping and Trading S.A.



Eole—a 7,216 m³ LPG carrier built by Murakami Hide Shipbuilding Co., Ltd. for Yaoki Shipping, S.A.

of new Rules to implement this certification system. Explanatory brochures for shipowners entitled “Voluntary ISM Audit and Steps for Acquisition of Voluntary ISM Code Certification” were issued together with issuance of the “Rules for the Audit and Registration of Safety Management Systems for Ships not engaged in International Voyage or Less than 500 GT”.

Assessment and Registration Based on ISO Standards ISO 9000 Series

ClassNK is authorized by the Japan Accreditation Board for Conformity Assessment (JAB) and Raad voor Accreditatie (RvA) to provide assessment and registration services under the ISO 9000 series of international quality system standards. This authorization covers the following fields:

- Basic metals and fabricated metal products

- Machinery and equipment
- Electrical and optical equipment
- Shipbuilding
- Sea transport, and cargo handling and storage
- Crew manning
- Crew training
- Technical testing and analysis
- Rubber and Plastic products (authorized by JAB)
- Manufacture of articles of concrete, plaster and cement (authorized by JAB)
- Building of complete construction or parts thereof; Civil engineering (authorized by JAB)

In 2000, the Society assessed and registered 68 suppliers of various of

these products and services. As of December 31st 2000 ISO 9000 series registrations by the Society totaled 235 suppliers.

Assessment and Registration Based on ISO Standards ISO 14001

The Society commenced services for the assessment and registration of Environment Management Systems, based on the ISO 14001 in 1998. In June 2000, certification of accreditation was issued to the Society by JAB as a Registration Organization for EMS in fields such as Basic metals and fabricated metal products, Machinery and equipment, Shipbuilding and Other



Kouki Maru—a 9,190 gt cable layer built by Kanrei Shipbuilding Co., Ltd. for Dokai Maritech Co., Ltd.

social services (limited to sewage and refuse disposal, sanitation and similar activities). In the year 2000, 10 suppliers were assessed and registered under ISO 14001 and as of December 31st, 2000 ISO 14001 registrations by the Society totaled 16 suppliers.

SGS Certification for NK Quality Systems

To provide services of the highest quality in which clients can place their full trust, ClassNK strives to maintain the effectiveness of the quality system of its global operations. Since 1995 ClassNK has obtained ISO 9001:1994 certification with regard to Classification services for ships and offshore installations, Safety Management System and Technical services, from SGS European Quality Certification Institute E.E.S.V. accredited by Raad voor de Accreditatie of the Netherlands. This year the Head Office and 16 locations underwent a third surveillance, while the Head Office and another 19 locations underwent a fourth surveillance to maintain the certification.



Prestige Ace—a 55,878 gt vehicles carrier constructed by Imabari Shipbuilding Co., Ltd. for El Barrio Shipping S.A.

IACS QSCS

An IACS QSCS annual audit was carried out and the quality system of ClassNK was found to be in compliance with IACS Quality System Requirements. ClassNK maintained IACS QSCS Certification covering Head Office and all of its domestic branches and overseas offices.

General

With the completion of the first stage of the ClassNK GlobalWare project, all overseas offices were connected via the Internet. Groupware and business

applications are now available in all locations of the Society, allowing the supply and exchange of necessary information in a timely manner to improve the quality of service and enable prompt uniform action with respect to client requests.

A groundbreaking ceremony for construction of the Information Center (provisional name) was held on the 8th of June. The new Information Center will support the Society's information technology activities. It is expected to play the central role in the information technology activities of the

Sirius Leader—a 51,496 gt vehicles carrier built by Sumitomo Heavy Industries, Ltd. for Sirius Shipholding S.A.





Grand Race—a 50,309 gt vehicles carrier constructed by Kanasasbi Co., Ltd. for Fountain Navigation Ltd.

Society. It has also been designed to handle any crisis management of information systems in the event of a major catastrophe.

Technical Information No. 367 dated June 30th 2000 concerning the interpretation of damage stability requirements with respect to timber deck cargo as set forth in Regulation 25-8.1 of Chapter II-1 of SOLAS states that from January 1st 2001, consideration may be given to the buoyancy of timber cargo on deck when performing probabilistic damage stability calculations based on Chapter 4 in Part C of the Rules. Work to revise the Design-IPCA program to carry out these calculations was completed during the year, and the revised program was released to users on December 1st 2000.

The Hull Department has also developed a number of new calculation programs for use as tools in the

examination of hull structure plans. They include PrimeShip-BowImpact, PrimeShip-AdditionalHead (a program for calculating additional pressure at the time of ballast exchange by the flow through method), PrimeShip-WetHatch (a program for evaluating the amount of water ingress in the case of gasketless hatch covers onboard container ships), PrimeShip-MassChart (a program for preparation of the mass chart of bulk carriers), PrimeShip-BCS (a program for calculating required values for bulk carrier safety for existing and new bulk carriers), amongst others. These programs

have all been used in the examination of actual plans. All the programs can be used on personal computers and combine to form a system that simplifies the plan approval process.

The world's largest deep-sea science research vessel, which is scheduled to be built in part at MHI Nagasaki shipyard, will be the first NK classed ship [as part of a JAMSTEC project] to be equipped with next-generation medium-speed diesel or ADD (Advanced Diesel Engine Development) engines. Plan approval for these engines has already been completed. This installation of the four engines (two 12-cylinder and two 6-cylinder engines) on the JAMSTEC deep-sea drilling ship will be the first time that ADD engines will be installed onboard a ship registered with a classification society.

Technical Services

Condition Assessment Program (CAP) related work increased. The CAP established by ClassNK enables the

Aries Forest—a 32,834 dwt bulk/lumber carrier built by Kanda Shipbuilding Co., Ltd. for Frontier Ship Services S.A.





Elvira—a 10,309 dwt refrigerated cargo carrier constructed by Iwagi Zosen Co., Ltd. for Allied Reefer Carriers S.A. and managed by United Ocean Ship Management Pte Ltd

ship conditions to be assessed in detail and contributes necessary and important information on a ship condition to the owners for their maintenance work through a ship's service life. Condition assessments were completed for 5 ships during the year.

The Society continues to work with clients to develop and provide new types of services, including customized ship audit services. Several major ship chartering companies are developing their own safe navigation management

systems similar to the ISM Code and the ISO 9000 series to achieve safer navigation of ships under their control. To support such progressive safe operational management of ships, the Society began a new technical service, performing parts of ship audits, maximizing the experience it has accumulated performing ship surveys and ISM audits.

Authorization of the Society to carry out inspections of boiler and pressure vessels bound for Singapore as an inspection body on behalf of that government was extended (renewed) until January 2005.

Training and Public Benefit Information Provision

Experienced surveyors were sent from each branch office to attend a refresher training course at the Head Office newly developed as part of their formal training. The goal of this training is to update their technical knowledge in order to further improve overall survey performance.

International Cooperation

Training provided training for two surveyors from the Vietnam Register of Shipping (VR) for one week on the surveyor training system of the Society. Training was also provided for two surveyors from VR at Pusan Office for three months. Training focused on the actual conduct of on-site class surveys of existing ships. One VR surveyor received individual training over a 10 week period at the Head Office, Yokohama and Imabari Branch Offices at the request of JICA as part of the Training Course in Ship Safety and Marine Pollution Prevention 2000.

Pacific Logger—a 31,877 dwt bulk/lumber carrier built by The Hakodate Dock Co., Ltd. for Pacific Basin Agencies Limited, Hong Kong and managed by Wallem Shipmanagement Limited, Hong Kong



Being an independent technical organization, and having to have clear and firm grounds on which to base its rules and how it applies them in day-to-day surveys and service activities, “Research and Development” is a vital part of ClassNK.

Established in 1955 in west Tokyo, the Research Institute has been actively working on issues related to hull structure strength, machinery and materials. Recently their activities have expanded for example to include issues such as Formal Safety Assessment, Gas Emissions, and Information Technology.

Major projects during 2000 included the following;

The 4-year research project on wave loads on hulls, as part of a project for the development of a new hull structure rule began its final year. The research project was jointly conducted with a Japanese Government research institute. Vessel model experiments covered hull motion, longitudinal bending moment, dynamic wave pressure on cross section and the load on hatch covers, of a bulk carrier in high seas.

The year 2000 was also the final year of the research and development project on the vessel noise prediction system. The researchers developed a computer program for noise level

monitoring and noise level predictions, and confirmation experiments were executed on a bulk carrier with good results.

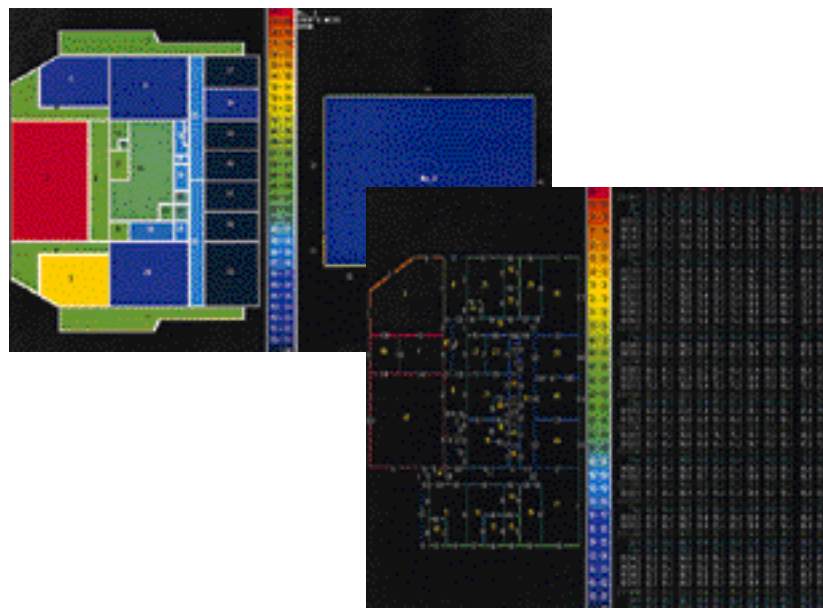
A study on the impact load on hull structure, is also in the final stage of a 3-year project. Experiments were conducted focusing on the impact area under peak sloshing pressure and on the structural elasticity of the wall under pressure. It was confirmed that the load estimation software currently in use by the Society makes accurate estimations. Some of the results of this study which is also a joint research project with a Japanese Government research institute, were presented at a conference held in Tokyo by the Research Institute last November.

Formal Safety Assessment research was in its 2nd year, where a trial assessment was conducted on bulk carrier accident scenarios. The study results are also contributing to 2 other separate projects, one by the Shipbuilding Research Association of Japan and another by IACS. A casualty database has been developed and is maintained in order to provide the FSA with practical data for its execution.

An in-service cargo ship has been carefully monitored in ClassNK’s Gas Emission Research. In this, the 2nd year of the study, a series of in-voyage NOx measurements were carried out on board the vessel from Japan to Singapore for the purpose of obtaining a time line of change in the NOx related performance.

A 3-year research project on the reliability of an in-service marine diesel engine began last year to benefit the Preventive Machinery Maintenance Scheme and Condition Based Maintenance Scheme. The research commenced with monitoring of vibration in relation to the wear of cylinder liners and piston rings in an in-service main propulsion diesel engine for one year.

On-site investigation of MEGA-FLOAT Phase II, a “Very Large Floating Structure,” was completed. Researchers successfully developed, through this 5-year research program, a framework for structural analysis and evaluation. Out of the building process and of experiments with the Phase II model, a



basic standard for survey and inspection of this kind of structure was also established.

In this, the 2nd year of one research project on Materials for Ships, steel forgings KSF80 and KSF110 were tested for their ultra high cycle fatigue strength at 10^8 cycles and above. The experiments revealed that, even in this ultra high cycle range, (low stress amplitude) fatigue cracking may be initiated at inclusions inside the crankshaft material and that the size and shape of the inclusion are the dominant factors in the reduction in fatigue strength.

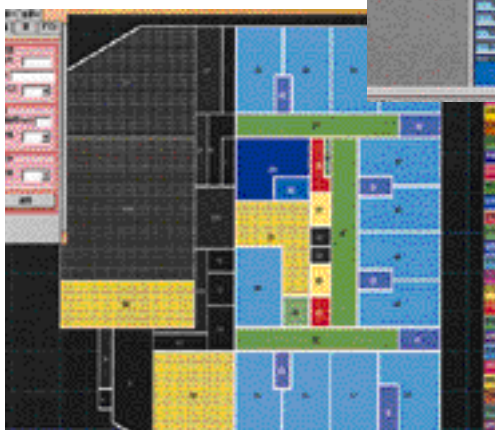
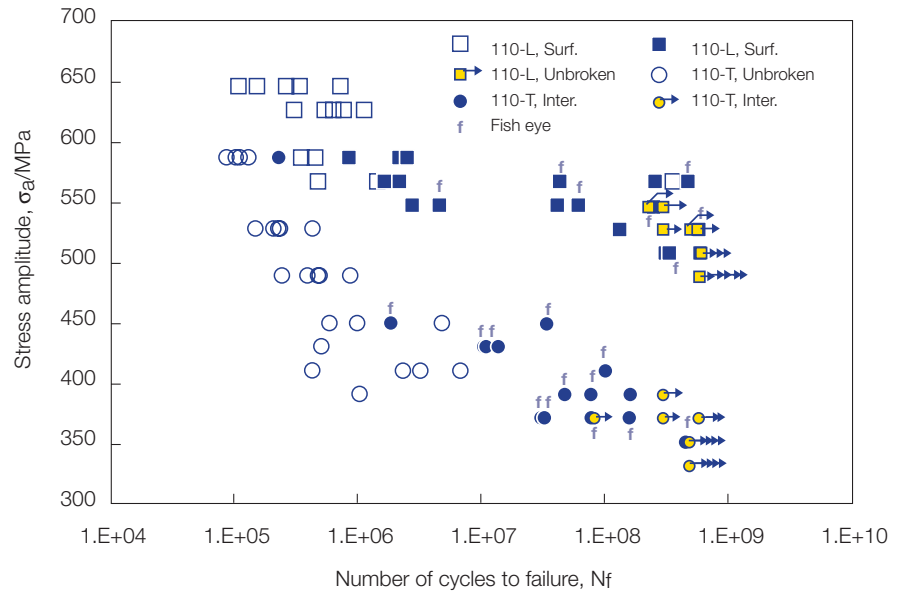
Other Projects in earlier stages of development or ongoing investigations include;

- Research to integrate various data processing systems,

- Research on fuel oil for ships and analysis and diagnostic technology for internal combustion engine cylinder lubrication,

- Research on the functional characteristic of equipment under actual ship operation conditions.

- Research on the practical application of fatigue strength evaluation and buckling / ultimate strength evaluation.





NK Around the World

*“As with any expanding service network, the biggest challenge
lays in maintaining the highest quality,
while meeting the growing needs of the clients.”*

T. Mano, Chairman’s Message

JAPAN

The looming July 2002 deadline for Phase II implementation has driven a concerted education program on the ISM code in Japan. Explanatory meetings were held in Tokyo, Kobe and Kitakyushu regarding acquiring ISM certification for general cargo ships (Phase II vessels) which will become subject to the ISM Code on July 1st 2002. Similarly, explanatory meetings for voluntary ISM certification were held in Tokyo, Kobe, Onomichi and Kitakyushu regarding acquiring ISM certification for Japanese flag vessels which are not subject to SOLAS requirements for safety management systems, in keeping with the start of voluntary audits for such ships.

The Society granted DOCs for ISM Code compliance to 30 companies, including Penta-Ocean dredging Co., Ltd., Mitsubishi Chemical Logistics Corporation and Excel Marine Co., Ltd. ClassNK's total number of ISM DOCs issued in Japan came to 237.

In other quality system related activities, an explanatory meeting was held on year 2000 revisions to ISO 9000 standards for ISO 9000 series registrants of the Society in Tokyo, Kobe, Okayama, Onomichi, and



LNG Jamal—a 135,333m³ LNG carrier constructed by Mitsubishi Heavy Industries, Ltd. for Osaka Gas International Transport Inc., Nippon Yusen Kabushiki Kaisha, Mitsui O.S.K. Lines, Ltd. and Kawasaki Kisen Kaisha Ltd.

Kitakyushu. The Society granted ISO 9001 certification to a total of 36 companies and ISO 9002 certification to a total of 24 companies including ISO 9001 certification for design, development, production and servicing during guarantee period of ships and floating structures to Yokohama Yacht Co., Ltd., and ISO 9001 certification for design, development, production, installation and servicing of equipment for pharmaceutical and food industries to Freund Industrial Co., Ltd.

The Society also granted ISO 9002 certification for production of hull blocks, and related painting and outfitting to Imabari Shipbuilding Co., Ltd. Saijo Works.

In good news for the environment, the Society granted ISO 14001 certification to a total of 10 companies, including; Matsuda Mfg. Co., Ltd. for design and production of shelters and cabinets for telecommunications equipment, Asahi Tanker Co., Ltd. for ship management of domestic oil tankers, Namura Shipbuilding Co. Ltd. Imari Shipyard for production of

merchant ships, floating constructions, steel structures such as bridges and gates and environmental equipment, Daihatsu Diesel Mfg. Co., Ltd. Moriyama Factory for production of diesel and gas turbine engines, reduction gears, light alloy wheels and associated equipment and devices

NK is widely recognized in Japan and abroad as an authoritative information source and therefore is frequently asked to be involved in a wide range of lecture meetings, seminars and conferences.

The 2000 NK Technical Research Conference



Sea Japan 2000



Surya Satsuma—a 23,097 m³ LNG carrier constructed by NKK Corporation for Mitsui O.S.K. Lines, Ltd.

Chairman Mano gave a lecture on “Shipping, Shipbuilding and Classification in Recent Times” at the 14th session of the International Ship and Offshore Structures Congress (ISSC 2000) held in Nagasaki, and Dr. H. Arai made a presentation on “Innovation of Classification Rules for Ships” at the ISSC 2000 Pre-Congress Symposium held in Tokyo.

A lecture was given on “Recent Engine Room Fires” and the “Ship

Condition Assessment Program (CAP)” at a training seminar sponsored by the Marine & Fire Insurance Association of Japan, Inc.

At the request of the Yokohama–Kobe Cargo Operation Safety Association a lecture was given on “International Regulation and Construction of

Chemical Tankers” at Yokohama and Kobe.

A lecture was presented on “Research on Ship Structural Safety for the Next Century” at the 23rd UJNR/MFP (United States–Japan Cooperative Program in Natural Resources/Marine Facilities Panel) held in Tokyo.

A lecture was presented on the audit and registration of safety management systems of ships at the 102nd lecture and research seminar of the Japan Institute of Navigation held in Tokyo.

A lecture was presented on the safe navigation and operation of ships to the NASDA committee tasked to consider the application of methods of safety related technologies in marine production to the field of space development, held at Tsukuba City in Ibaraki Prefecture.

NK also participated in, organized or held a range of seminars and conferences. The year 2000 ClassNK Technical Research Conference was held at the Nippon Kaiun Club in Tokyo. Papers were presented that introduced

Uni-Popular—a 15,418 dwt container carrier built by Evergreen Ship Yard Corporation for Uniglory Marine Corp. as the manager





Alam Mesra—a 46,644 dwt bulk carrier constructed by Mitsui Engineering & Shipbuilding Co., Ltd. for Ambi Shipping Pte. Ltd. and managed by Pacc Ship Managers Pte Ltd, launched with a burst of color

the results of technical research by the Society into such areas as condition monitoring of shipboard machinery, stern tube oil analysis, tank tests of sloshing loads, as well as on “Results of Research into Hull Monitoring System Research and Related Rules”. Suggestions were also made concerning future directions in the rules for hull structures.

The Society chaired the 6th International Symposium on Marine Engineering (ISME Tokyo 2000) held in Tokyo at which technical presentations were made in eight different fields.

The 3rd meeting of Shipbuilders was held in October under the sponsorship of the Tanker Structure Cooperative Forum in Tokyo. The meeting was jointly hosted by NYK, MOL, and the Society. A total of 118 persons from 86 companies and organizations, including shipbuilders, tanker owners and operators, classification societies, as well as many industry groups, from 19 countries, attended the meeting. Topics addressed a wide range of issues concerning tankers and tanker safety and Chairman Mano was invited in his capacity as Chairman of the Society of Naval Architects of Japan as a guest speaker during the dinner party of the first day, while VP Hidaka was invited to give an opening speech on the second day of the meeting in his capacity as Chairman of IACS.

The Society participated in the international marine exhibition Sea Japan 2000 in Tokyo where a presentation was given on the Technical Guide regarding the Strength Evalua-

tion of Hull Structures in a paper entitled “Structural Safety of Ship Hulls for the Next Century” .

In Training news, at the request of the Overseas Shipbuilding Cooperation Center, the Society dispatched 13 specialists to the “The Fifth Ship Safety and Prevention of Marine Pollution Course” sponsored by the Japan International Cooperation Agency (JICA). Lectures on the SOLAS and MARPOL conventions as well as on class surveys were given. The Society received one surveyor from Vietnam Register as a part of this training for 10 weeks and practical training was conducted at Yokohama and Imabari Branch Offices.

In local activities a technical seminar was held in Tokyo, Kobe, Onomichi and Fukuoka focusing on revisions to the technical Rules of the Society, and a general information lecture was held in Yokohama. In other local news a Sub-branch of the Tokyo Branch Office was established at Sendai and most pleasingly, classing of new buildings with NK has recommenced in Kobe, with the classing of the 50,000 dwt bulk carrier *Boron*

Navigator, at Kawasaki Heavy Industries, the first since the Hanshin earthquake disaster in 1995.

A record-breaking new shipbuilding rush gave NK Nagasaki its busiest year ever, a highlight being the classing of the LNG carrier, *LNG Jamal*, the first such ship in Japan on which an LNG Re-Liquefaction Plant has been installed.

Also in Nagasaki, 10 P type series container ships, all classed with NK, are now being constructed in a series at Evergreen Shipyard. It has also been decided that 5 new P type series container ships will be also constructed to NK class after 2001.

Of note in Nagoya was the LNG carrier, *Surya Satsuma*, which is the first membrane type Japanese flag ship, which was delivered by NKK Corporation in October.

NK Okayama was also busy including the classing of six bulk carrier new-buildings for a Singapore shipowner and three bulk carriers for a Swiss shipowner at Mitsui Engineering & Shipbuilding Co. Ltd. Three bulk carriers for a UK shipowner also started construction at Sanoyasu

Hishino Meisho Corporation. Importantly all these owners have chosen the Society for the first time.

As always, NK Onomichi was also busy, including the classing of the *Yasa Aysen*, constructed at Tsuneishi in October, which is the first ship of eight ships to be delivered to Turkish shipowner, YASA Denizcilik Sanayi Ve Ticaret A.S.

The Society authorized the following as in-water survey firms; Kaiyo Diving Co., Japan Underwater Co. Ltd., Kunitomi Co. Ltd. (Hiroshimanishi, Kokura, Kure, Nagasaki, Osaka & Tokyo branches), Ocean Construction Co. Ltd., Ocean System Research, Saikai Engineering Service Co. Ltd., and the Nippon Salvage Company. The following companies were autho-

rized as radio-service companies; Aichi Musen, Hiro Radio Corporation, Japan Tsushin Co., Ltd., Marine Communications, Miki Tsushin Kogyo Co., Ltd., Mitsuhashi Shoukai Co., Ltd., Motomachi Denki, Ochimusenparts, Optron, Sanyu Denpa Service Co., Shikoku Denpa Kogyo, Taiyo Denshi Kogyo Co., Ltd., Taniyama Musen Service and Yokohama System Marine Ltd.



THE AMERICAS

The highlight of the year at NK Buenos Aires, **Argentina**, was the delivery, in May, of the 27,000 dwt Bulk Carrier *Calanda*, built to NK Class at Astilleros Rio Santiago. Also in Buenos Aires the lead auditor carried out two annual audits on local companies DOCs and four intermediate audits on ships' SMS.

In Rio de Janeiro, **Brazil**, survey applications, at 275 decreased by 5% compared to last years 289. A Manufacturing Process approval was undertaken and the Society approved the manufacturing process for rolled steel from Companhia Siderurgica de Tubarao.

In **Canada**, NK Vancouver office noted that PSC has become very severe, especially for bulk carriers. A

number of approvals were granted to Canadian companies, including, Phoenix Marine Services, All-Sea Enterprise Ltd., and Pro-dive Marine Services N. S. Ltd. as in-water survey firms. Similarly Maritech Naval Inc. and Scantech Inc. were authorized as radio-service companies.

Ever since the Valparaiso office was established in **Chile**, the number of inspections carried out has been gradually increasing every year. It increased by 8%, to 94 during 2000, as compared to 87 during 1999. Also in Chile, Naval Radio Ltd. was authorized as a radio-service company. The Society also authorized Astilleros Y Maestranzas De La Armada, Asmar (T) and B & S Ingenieria Ltda. as thickness measurement firms.



Calanda—a 27,321 dwt bulk/lumber carrier constructed by Astilleros Rio Santiago for Calanda Shipping Co., Ltd. and managed by Columbia Shipmanagement Ltd.

At 241 during 2000, compared to 99 during 1999, the number of surveys for exclusive surveyors in **Panama** increased by almost 150%. Also in Panama, the Society authorized Underwater Services S.A. and Subwork S.A. as in-water survey firms.

A number of **United States** offices reported an increase in business activities. In Los Angeles the number of

Pacific Chikusa—a 16,870 dwt bulk carrier constructed by Shin Kochijyuko Co., Ltd. for Transpacific Shipping Inc. of Vancouver B.C. as the manager



NK AROUND THE WORLD

ships surveyed was steady at 84 during 2000. However the total number of ship-surveys has gradually increased at the LA office over the past four years by about 20%. The LA office also performed 4 shop test inspections of LNG/LPG pumps at RENO.

In the New Orleans office, the number of ships surveyed/audited increased by approx. 12% over that of last year from 288 during 1999 to 322 during 2000.

Across the US, the following firms were authorized as radio-service companies; Electro-Tech Inc., GS Industries, GSI Marine, Mackay Marine and Marine Radio & Radar. The Society authorized Baltimore Marine Industries, Inc. as a thickness measurement firm and also type approved the level gauging system from Consiliun US, Inc., as well as the non-metal clip from Thomas & Betts International Inc. Three firms, G&G Marine, Inc., National Marine Services, Inc., and Underwater Services, Inc. were authorized as in-water survey firms.

Pacemperor—a 74,381 dwt bulk carrier constructed by Sasebo Heavy Industries Co., Ltd. for Trans-Pacific Shipping Co. and managed by Lasco Shipping Company

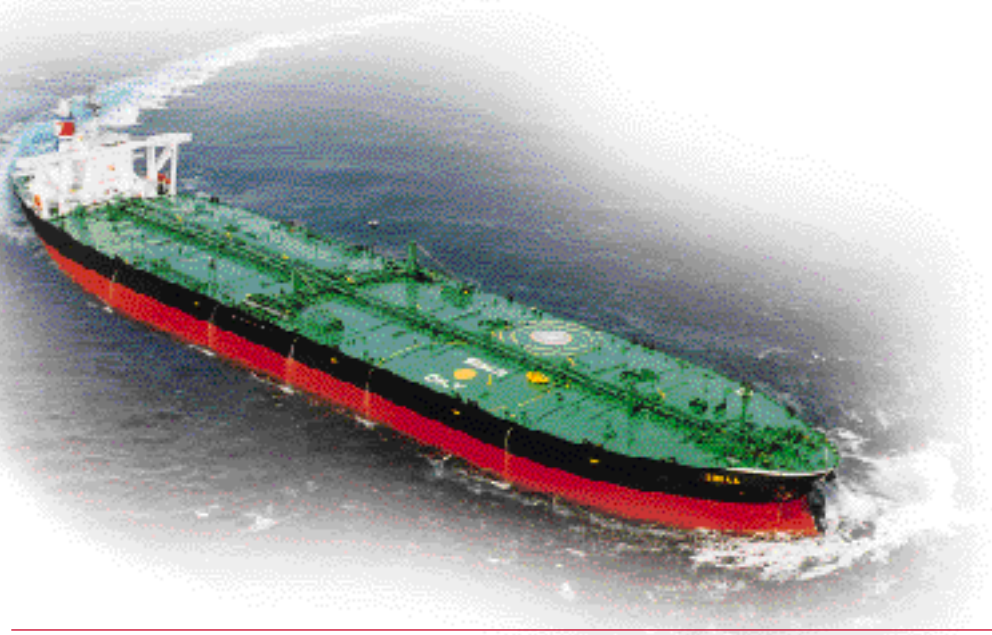


ASIA

Activity in **China** has increased, as expected given the increased activity of the local shipbuilding industry.

In Guangzhou for example the number of ship inspections performed increased by over 43%, to 90 during 2000, compared to 63 during 1999. This was especially so for inspections afloat, which is considered a good indicator of the recovery of the Chinese economy. Of particular interest, the first NK class newbuilding in Guangzhou, an L.O. Carrier for the Singapore ship owner, Hong Lam Marine Pte Ltd, had its keel laid at Guangzhou Hangtong Shipbuilding and Shipping Co., Ltd in December. In Qingdao a pusher barge built by Hangzhou Dongfeng Shipyard was delivered to a Japanese ship owner.

In Beijing in January, a lecture regarding structural analysis of bulk carriers was conducted at COSCO Tianjin and Xiangang Shipyards and in Hong Kong a one day Technical Semi-



Ural—a 279,999 dwt oil carrier built by Isbikawajima-Harima Heavy Industries Co., Ltd. for Tyrino Company S.A. and managed by World-Wide Shipping Agency (Singapore) Pte. Ltd.

nar organized by INTERCARGO was held at COSCO premises in November. This was the first attempt by INTERCARGO at organizing a technical seminar of this kind in Asia and Mr. Yamamoto from NKHN was invited to present a lecture on Ballast Water Exchange. In Shanghai a presentation was given on the “Stability of Ro-Ro Ships” at the MARIC Symposium (Marine Design & Research Institute of China, CSSC), and a presentation was

also made on PrimeShip IPCA for ship owners and builders.

Not surprisingly, given the increase in new shipbuilding in China, approvals of manufacturing process have increased and this year included; the manufacturing process of propeller castings from Dailian Marine Propeller Plant, the manufacturing process of

Great Pheasant—a 178,820 dwt bulk carrier built by Hyundai Heavy Industries Co., Ltd. for S.T. Cape Shipping Inc.





Sea Maple—a 45,710 dwt bulk carrier built by Tsuneishi Shipbuilding Co., Ltd. for C & I Shipholding S.A.

rolled steel from Liuzhou Iron and Steel (Group) Co., and from Wuyang Iron & Steel Co. Ltd., the manufacturing process of steel casting/forging from Hu Dong Forging Plant, the manufacturing process of steel pipes from Shanghai Steel Tube Co. Ltd. Welding consumables from Lincoln Electric (Shanghai) Welding Co. Ltd., were also approved.

Similarly, the following companies were authorized as radio-service companies; Dalian Ocean Electronic, Hostmost Engineering and Qingdao Ocean Telecommunication & Navigation Co. Ltd. The Society also authorized Dalian Thickness Measurement Center as a thickness measurement firm.

Individual Approval was granted to lifeboats from Wu Xi Hai Hong, while Type Approval was granted for the following; a lifeboat and an engine for lifeboats from Jiangyin Wolong F.R.P. Boat, a lifeboat from Jiangyin Xinjiang, Lifeboats from Jiangyin Norsafe F.R.P., divisions as fire protection equipment from Jiangyin Huangshan Marine Fitting Co., Ltd., and divisions as fire protection equipment from Jung Gong Ind. Co., Ltd.

In **India** two thickness measurement firms, Nutech Maritime Services, and Oceanic Enterprises were authorized by the Society. Sri Bhavani

Underwater Services was authorized as an in-water survey firm, while Electronics Marine was authorized as a radio-service company.

The year 2000 was a landmark year for NK in **Indonesia**. In the past, when there was a request for a survey in the region of Indonesia, NK Jakarta Office either had to request a BKI Surveyor to perform the survey as a Non-exclusive surveyor or had to have an NK surveyor dispatched from Singapore or Japan each time, because surveyors in the Jakarta office were not permitted to carry out surveys directly. However the Jakarta office was recently granted approval to conduct basic class related activities and statutory surveys in its own right. NK is the first society other than BKI to be granted such approval and the NK Jakarta Office is being upgraded accordingly. Also in Indonesia a technical seminar was held under the joint auspices of the Indonesian National Shipowners' Association (INSA) and the Society in Jakarta at which a number of presentations were made including, an overview of the activities of the Society, design and technical requirements of bulk carriers, PrimeShip-Hull, the state of PSC with respect to

Kota Jaya—a 24,921 dwt container carrier built by Shin Kurushima Dockyard Co., Ltd. for Kota Jaya Limited and managed by Pacific International Lines (Private) Limited



the ISM Code, Phase II of the ISM Code, bulk carrier damage, and boiler and pressure vessel damage. The Society authorized PT. Samson Tiara Diving as an in-water survey firm.

In **Korea** the overall number of surveys was slightly down, although in Pusan the number of Ship Surveys, saw an increase of about 18% over last year. The Pusan office saw the delivery of two Cape size bulk carriers, the *Seakob* and the *Great Pheasant*, that were newly built to NK class at Hyundai Heavy Industries Co., Ltd. Also in Pusan, two presentations were held, one, on Structural Analysis of a Container Carrier was held for Daewoo, Daedong & Samsung while another presentation on wave loads was held for Daewoo, Hyundai & Samsung.

Just like in China, the large number of newbuildings also meant a large increase in the number of Inspections of Materials and Machinery to about 1,050, a 40% increase on the previous year. The Society approved a flame



Vinh Thuân—a 6,520 dwt general cargo constructed by Bach Dang Shipyard for Vietnam Ocean Shipping Company

screen and a high velocity vent / vacuum relief valve fitted with flame screen from Tanktech Co. Ltd., approved Standardized Drawings for coolers from Dong Hwa Precision Ind Co. Ltd., and gave Individual Approval to a launching appliance as life saving equipment from Dae Ryuck Machinery, and a launching appliance as life saving equipment from Oriental Precision. The following companies were

authorized as radio-service companies; Dong Sung Mechatronics Co. Ltd., Dongbo Electric & Telecom Co. Ltd., Shinwoo Engineering Co. Ltd. and Total Telecom Co. Ltd.

Similarly the following Type Approvals were evaluated and granted; a division and a primary deck covering as fire protection equipment from Kang Rim Insulation Co. Ltd., a division as fire protection equipment from Hankuk Miboo Co. Ltd., a division as fire protection equipment from Kungang Korea Chemical Co. Ltd., divisions as fire protection equipment from Shin Sung Engineering & Architecture Co. Ltd., and from Bu-il Industries Co., Ltd., automatic equipment from Korea Marine Technology Co. Ltd., cable from LG Cable Ltd., float level switches and a level gauge from Miboo In-tech Co. Ltd., a fuse from SB Fuse Co. Ltd., a level gauge from Kukdong Level Co., and a pipe joint from Youngnam Metal Co. Ltd.

The society was again busy in **Malaysia** with 20 Tug boats and 4 barges being constructed to NK class in the East Malaysia area. Idrisko Tech-

Oceanic Pescadores—a 11,612 dwt general cargo built by Higaki Shipbuilding Co., Ltd. for Shib Wei Navigation Co., Ltd. as the manager





nology Sdn, Bhd. and Kencom Enterprise Sdn. Bhd. were authorized as radio-service companies and the Society authorized Borneo Subsea Services (Malaysia) Sdn. Bhd. as an in-water survey firm.

In **Pakistan**, United Marine Electronics was authorized as a radio-service company.

In the **Philippines**, the year 2000 saw the delivery of a 45,000 dwt bulk carrier, the *Nordholm*, constructed to NK class at Tsuneishi Heavy Industries (Cebu). The Society also granted ISO 9002 certification for repairing of merchant ships (except LNG carriers) to Tsuneishi Heavy Industries (Cebu) Inc., and Tsuneishi Technical Services (Philippines), Inc. was granted ISO 9001 certification for design of merchant vessels and other steel structures. In other ISO approvals, the Society granted ISO 9002 certification for crew manning to Magsaysay-Mitsui O.S.K. Marine Inc., to Maine Marine Philippines Inc., and to Maranaw Luzon Shipping Company Inc. Radio Service Company Delnet International was authorized as a radio-service company, as was Marzcom Engineering and Racomser, Incorporated.

New ships delivered to **Singapore** ship managers included; two VLCCs, the *Ubud*, and the *Ural*, built by IHI for World-Wide Shipping Agency (S)

Pte. Ltd., two 46,000 dwt bulk carriers, the *Alam Makmur*, and the *Alam Mesra*, built by MES for Pacc Ship Managers Pte. Ltd., and two 1,800 TEU container carriers the *Kota Jaya*, and the *Kota Jati*, by Shin Kurushima Dockyard for Pacific International Lines Pte. Ltd.

A technical seminar was also held in Singapore to explain about ISM Phase II ships and PSC matters related to the ISM Code. In other ISM-related business, the Society granted DOCs for ISM Code compliance to two companies, Pusaka Laut Pte Ltd. and Vanguard Shipmanagement (S) Pte. Ltd. ISO 9002 certification for thickness gauging, visual inspection and non-destructive inspection of hull, pipe and outfitting of marine structures was awarded to Sanki Marine Singapore Pte Ltd.

The Society also authorized MatEval NDT Services Pte. Ltd. and Weldtech Inspection Services (S) Pte Ltd as thickness measurement firms, and Semco Salvage and Marine Pte. Ltd. as an in-water survey firm.

The Society is very pleased to announce the formation of the **Taiwan** Committee, the first meeting of which was held in March. A technical seminar was held for shipowners, shipyards and others at which presentations were made on the activities

Surya Nawa 9—a barge constructed for Smc Offshore Services Pte. Ltd.

of the Society and an overview of a white paper on PSC, PrimeShip-Hull, recent developments in the design of bulk carriers, and the latest circumstances regarding NOx controls. The Society granted DOCs for ISM Code compliance to D. & S. Co., Ltd. Kaohsiung Office while Echo Electronic and Jenshine Marine Radio Co. were authorized as radio-service companies. The Society also authorized Seagreen Enterprise Co. Ltd. and Great China Diving Service, Inc., as in-water survey firms.

In **Thailand** the number of surveys for ships in service during 2000 increased by 7 % compared with the previous year and most surveys were carried out at sea anchorage which is far from Bangkok. In newbuilding news, Two 928 container ships will be built to NK class for Thai owners Bhureemas Navee Co., Ltd., at Mitsubishi Heavy Industry Ltd. Shimonoseki Shipyard and Machinery Works in Japan.

During the year, the GM of NK Bangkok office gave lectures on topics such as ISM Code Activities, HSSC and ClassNK Activities at four meetings or seminars organized by the Electricity Generating Authority of Thailand, the IESG Tanker Safety Sub Committee, Chulalongkorn University and the Petroleum Authority of Thailand. The Society authorized Siam Subsea Services Co., Ltd. and Mermaid Maritime Ltd. as in-water survey firms.

On the 1st of August 2000, in Haiphong, **Vietnam** the 6,500 dwt

newbuilding named the *Vinh Thuân* was successfully delivered from Bach Dang Shipyard to VOSCO. This was the biggest ever newbuilding in Vietnam and the first built to NK class. Following the delivery of this ship, Bach Dang Shipyard has already signed a contract with VOSCO to construct 2 sister-ships of 6,500 dwt and 5 dry cargo ships of 11,500 dwt. The first 11,500 dwt ship, and the second and third 6,500dwt sister-ships have already been decided to be con-

structed to NK class. The Society has received an application from Bach Dang Shipyard to carry out ISO 9000 audit and certification and a staff member from Head Office visited the shipyard to explain assessment and registration services under the ISO 9000 series.

Also in August at Hyundai Vanshin Shipyard, a ceremony was held to celebrate the 100th vessel docking since the Hyundai-Vinashin Shipyard's Opening in April 1999. Most of the

ships are large with ESP notation and so far 23 NK class ships have come to the shipyard for repair and inspection.

Recently, NK Haiphong completed the approval process for a Thickness Measurement Firm Approval, for APAVE Vietnam & Southeast Asia, following the documentation review and approval which had already been performed by NK Head Office. This company is the first Vietnamese company to apply for thickness measurement approval from a classification society.



EUROPE

In landlocked **Austria**, no ships were surveyed but the Society approved the manufacturing process of steel casting/forging from Voest-Alpine Stahl Linz Gnbh.

In Antwerp, **Belgium**, in February and March, lectures were given to Macgregor Co., Ltd. on the inspection of hatch covers. Also BMSL NV was authorized as a radio-service company and the Society authorized Hydrex N.V. as an in-water survey firm.

In **Denmark** the Society approved Standardized Drawings for an oil heat exchanger from Aalborg Industries A/S. and authorized Mortens Diver Inspektion as an in-water survey firm. A number of type approvals were granted including; an engine for lifeboats from Aabenraa Motorfabrik, a non-combustible material as fire protection equipment from Rockwool A/S., automatic equipment from DEIF A/S., an Alpha Lubricator Control Unit from MAN B&W Diesel A/S., and valves from Danfoss Industrial Refrigeration A/S.

Posidonia 2000



Aurora Sapphire—a 48,893 dwt bulk carrier built by Ishikawajima-Harima Heavy Industries Co., Ltd. for Aurora Shipping Inc., Manila

In **Finland** the Society approved cable from Helkama Bica Oy.

At NK Marseille, **France**, the number of surveys almost doubled to 91 in 2000 compared to 50 in 1999. The Society approved the manufacturing process of cast steel from Fonderies et Acieries de Provence L'Argentiere S.A. and made three Type Approvals for; approved flexible metal joints from Cryostar France SA., a tank pressure monitoring & alarm system from Auxitrol S.A., and valves from Dresser Products Industriels Division Masoneilan. The Society also approved Standardized Drawings for an accumulator from ROTH S.A.

Afloat Ship Surveys and Inspection of Equipment, Machinery increased slightly in **Germany**. Individual Approval was granted for a rescue boat from Deutsche Schlauchboot, launching appliances and lifeboats as life saving equipment from Ernst Hatecke, and two types of Launching Appliances as life saving equipment from Davit International. The Society approved the manufacturing process of steel casting/forging from Edelsrahl Groditz GmbH., and two companies, Elna and H. E. Eissing were authorized as radio-service companies. The Society also approved Standardized Drawings for coolers from KAESER Kompressoren GmbH.

Type Approvals included; an engine for lifeboats from Ernst Hatecke, a lifeboat and a rescue boat from FR. Fassmer, 2 types of diesel engines from MAN B&W Diesel AG., a bilge alarm monitor from Decma Hamburg GmbH., a division as fire protection equipment from Fehrmann GmbH., and from Thermal Ceramics Deutschland GmbH., cable from Sab Brockskes GmbH & Co., a turbo charger from Motoren-und Turbinen-Union Friedrichshafen, and valves from ARCA-Regler GmbH.

In February, on the day before a technical seminar, a somewhat belated congratulatory party was held in Athens, **Greece** to celebrate the 100th anniversary of founding of the Society. The party was attended by some 300 luminaries from the Greek maritime community, and was a great success. The next day a technical seminar was held for shipowners, shipyards and others in the marine industry in Greece. Presentations were made on the activities of the Society, the PSC white paper, ClassNK CAP, bulk carrier damage, and Regulation 13G of Annex I to MARPOL 73/78.

Naturally the Society actively participated in Posidonia 2000, one of the largest international maritime exhibition in the world, which was held in Piraeus in June and took the opportu-

nity to introduce many topics such as the IPCA bulk carrier safety calculation software. Chairman, Mr. Mano also took this opportunity to build relations with many Greek shipowners.

In less glamorous but no less important work the Society authorized Assodivers Ltd. and Psomakara Divers as in-water survey firms and eight companies were authorized as radio-service companies including; Aqua Marine Electronics, Elkime S. A., Marac Electronics, Nova Electronics S. A., Radio Marine Electronics, Selmar Electronics, Srh Marine Electronics S.A.

and Strofades Electronics. The Society also authorized Anco Maritime Activities as a thickness measurement firm.

A presentation on the ISM code and NK Activities was made during the annual training held in Genoa, **Italy** for newly appointed PSC officers. This training is organized every year by the Ministry of Transport and NK is a regular contributor. Periodical confirmation of ABB T/S Mass Production was undertaken (in Switzerland), and Compagnia Generale Telemar was authorized as a radio-service company. The Society authorized Alfa Laval - Gmu,

Monza as an approved manufacture, their purifier also gaining Type Approval. Other Type Approvals were, for 2 types of diesel engines from Wartsila NSD Italia S.p.A. and for a hydraulic hose assembly from Alfagomma S.P.A.

In **Lithuania** two thickness measurement firms were authorized by the Society CJSC Korsaras and Topmaris Limited.

The NK Rotterdam office in the **Netherlands** was designated by the Government of the Netherlands as a Notified Body in relation to the MED Assessment/Certification service.





Yasa Aysen—a 52,434 dwt bulk carrier constructed by Tsuneishi Shipbuilding Co., Ltd. for Yasa Denizcilik Sanayi Ve Ticaret A.S.

NK Oslo in **Norway** experienced a small increase in class surveys and inspections of equipment compared with 1999. Makers in Norway received many orders for equipment from Japanese yards including for LNG ships and consequently several new Type Approvals were granted including; automatic equipment from Jakob Hatteland Instrument A/S., automatic equipment from SpecTec AS., a hydraulic hose assembly from Gummi A/S K. Lund & Co., and launching appliances as life saving equipment from Umoe Schat-Harding.

In Gdansk, **Poland**, in addition to regular surveys, a Sulzer Diesel Engine received type approval and inspections were carried out on cylinder liners, a boiler burner and a Crane Jib.

In **Portugal**, NK Lisbon reported that at 67, Class/Statutory Surveys, including drydock surveys for existing ships, increased slightly compared with last years 61.

In Vladivostok, **Russia**, a lecture was presented concerning “Research on Ship Structural Safety for the Next Century” at the 14th Asia Technical Exchange and Advisory Meeting on Marine Structures (TEAM 2000).

In **Spain**, the Society authorized Alfa Laval S.A.- Madrid as an approved manufacture and approved the manufacturing process of rolled steel from Castinox, S.A. while Jose Luis Samper Sepulveda, S.L. and SCAMP Marine, S.L. were authorized as in-water survey firms.

In **Sweden**, the Society approved Standardized Drawings for plate heat exchangers from Alfa Laval Thermal AB., and from SWEP International. Type Approval was also granted for flexible metal hose from Witzenmann Sverige AB.

In **Switzerland**, Type Approval was granted for a diesel engine from Wartsila Switzerland Ltd. (conducted by NK Genoa).

In Istanbul, **Turkey** the number of class/statutory surveys increased by 30% during 2000. The *Yasa Aysen* was delivered in October to the Turkish owner Yasa Denizcilik Sanayi Ve Ticaret A.S., who have ordered 8 new ships from Japanese shipyards since the company was founded.

In ISO news the Society granted ISO 9002 certification for ship management of bulk carriers, chemical tankers and general cargo ships to Karsel Gemi Isletmeciligi Ve Ticaret A.S. and ISO 9002 certification for ship management for gas carriers to Habas Petrol Urunleri Sanayi Ve Ticaret AS. The Society also granted DOCs for ISM Code compliance to Habas Petrol Urunleri Sanayi Ve Ticaret A.S. Marin-Com was authorized as a radio-service company as was Polar Denizcilik Ve Deniz Mlz. A. S. while Tanmarine Denizcilik Ve Ticaret Ltd. Sti. was authorized as a thickness measurement firm. The Society also approved divisions as fire protection equipment from Izocam Ticaret Ve Sanayi A. S. Also NK held it's first ever technical seminar for shipowners, shipyards and others in the marine industry in Turkey

In the **UK**, two companies, A-N-D Group and Marconi Mobile Ltd., Marine Division were authorized as radio-service companies. The Society authorized Surtest Marine Limited as a thickness measurement firm and approved 9 types of automatic equipment from Mariner Systems (UK) Ltd. The Society also authorized UMC International Plc and Scamp Underwater (Gibraltar) Limited as in-water survey firms.

MIDDLE EAST & AFRICA

Activity in this region has gradually increased with the number of requests for ship surveys steadily increasing as owners realize that there is a new Exclusive Office at Durban, **South Africa**. More than 182 ships were surveyed by NK Durban Office during 2000. The Society also authorized Marscan NDT Services as a thickness measurement firm.

In **Bahrain**, Aeradio Technical Services was authorized as a radio-service company while in **Egypt** the Society authorized Al Assal Underwater Services & Marine Works as an in-water survey firm.

In **Kuwait** related business, the Marine & Industrial Dept. provided technical services for the fabrication of a new bedplate for an existing ship

of Kuwait Oil Tanker Co. in Korea and technical services were provided to owners of Kuwaiti Saudi Co. The Society authorized Kuwait Shipbuilding and Repairyard Co. as a thickness measurement firm and an in-water survey firm.

In neighboring **U.A.E.**, the Society granted DOCs for ISM Code compliance to Ghanim Marine Agency, Cape Diving International L.L.C., Nico International (Hydrospace) Fujairah, and UMC International Plc. (Dubai & Fujairah Branch) were authorized as in-water survey firms, while Elcome International L.L.C. (Dubai) and Sait Radio Holland BV ME, Sharjah were authorized as radio-service companies. Also in the U.A.E., NK Dubai office carried out a CAP on a workshop which was supporting petroleum bases. The office expects to be busier with the commencement of PSC in the region from last November.

OCEANIA

The number of ships surveyed in **Australia** reached over 280, which is the highest number since the Sydney office opened. While visiting Sydney, MD Tsudo and Mr. Sakamoto GM of SMD visited AMSA(Canberra) where they exchanged valuable information on the ISM Code and signed an agreement concerning the provision of survey and certification services for vessels registered in Australia. Three companies were authorized as in-water survey firms; Key Group and Pacific Marine Group Pty Ltd., and Bae Systems, and SSD was authorized as a radio-service company. The Society also authorized Pndt Pty Ltd as a thickness measurement firm and Gray Diving Services Pty Ltd as an in-water survey firm.

Survey activity in **New Zealand** increased almost 70% to 67 surveys during 2000. A highlight was the first full scale survey of a passenger vessel the *Clipper Odyssey*, in co-operation with a U.S. Coast Guard "Initial Control Verification Inspection (ICVI)" Team (for overseas ships trading U.S. ports).

MD Tsudo signs the revised agreement with Mr. Clive Davidson, CEO of AMSA, in Canberra, Australia





NK in International Affairs

“I am also pleased to say, that we have again this year renewed our commitment to cooperative training agreements with various local societies in order to contribute to the training of their surveyors to the highest international standards.”

T. Mano, Chairman’s Message

NK's International Activities are a key element of its success and many and varied elements contribute to these activities. One major element, is the work the society undertakes on behalf of foreign Governments. The number of countries which have authorized ClassNK to carry out surveys and issue certificates on their behalf now numbers 98, as at the end of 2000.

The Society also has a long and committed history of contributing to international bodies, such as IACS and the IMO. This year the Society's involvement with IACS was even greater than usual. NK Executive VP Masataka Hidaka assumed the IACS Chairmanship for a tenure of one year from July 1st by a resolution of the 41st IACS



EVP Masataka Hidaka was elected 22nd Chairman of IACS

Council held during the two day period of May 31st to June 1st. Mr. Hidaka assumed office at a most difficult and challenging time, when IACS as a whole was under a seemingly relentless barrage of critical fire from various sectors of the maritime industry as a result of several marine casualties, including the sinking of the oil tanker, *Erika*, as well as the bulk carriers, the *Leader L*, and the *Treasure*. Within that context Mr. Hidaka has worked hard to "steady the ship", rather than pursue any radical new agenda for change.

At the same time, Mr. Hisayasu Jin of the Society's Business Coordination Department, became Chairman of the IACS General Policy Group, which is the main policy development organ of IACS. A Meeting of the GPG was held at the Head Office of the Society in October.

Of course as a founding member of IACS, ClassNK has always supported the association's efforts to advance classification rules and procedures. The Society actively participated in the following IACS meetings during 2000:

Council: 2 meetings

Quality Committee: 2 meetings

General Policy Group: 2 meetings

Working Party: 6 meetings:

Ad-hoc Group 13 meetings:

Project Team on Formal Safety Assessment, Steps 2-5 on the watertight integrity of bulk carriers: 3 meetings

Major topics covered by the working groups included:

- IACS management politics
- Requests from related industries
- The role of Associate Members and the possibility of their joining IACS
- Future measures in response to the *Erika* accident
- Reports from the Quality Committee
- Responsibilities of Auditors
- Budget and Settlement of accounts

The Society also participated actively in a wide range of the United Nations' IMO meetings, as part of the Japanese delegation, taking part in the following committee meetings during 2000:

- the 43rd meeting of the Subcommittee on Stability and Load Lines, and on Fishing Vessels Safety;
- the 44th and 45th meetings of the Marine Environment Protection Committee;
- the 43rd meeting of the Subcommittee on Ship Design and Equipment;
- the 72nd and 73rd meetings of the Marine safety Committee;
- the 5th meeting of the Subcommittee on Bulk Liquids and Gases;
- the 44th meeting of the Subcommittee on Fire Protection; and

- the 8th meeting of Sub-committee of Flag State Implementation.

However needless to say, at the local level, the heart of NK's International Affairs is our International Committees. These are the key link between the society and the local maritime industry in many parts of the world. The society can learn about the interests or concerns in a local area, and can convey important information direct to the local maritime industry. The main subjects of this years meetings of International Committees were, the Technical Guide Regarding the Strength Evaluation of Hull Structures, Ballast Water Exchange and Recent Activity on Technical Matters at the IMO. International Committee Meetings held during 2000 were;

January 19th

16th Meeting of the Southeast Asia Committee, Manila

February 3rd

9th Meeting of the Greek Committee, Piraeus

March 24th

1st Meeting of the Taiwan Committee, Taipei

May 25th

6th Meeting of the China Technical Committee, Dalian

June 2nd

10th Meeting of the Denmark Technical Committee, Copenhagen

June 19th

11th Meeting of the Korea Committee, Cheju

September 7th

4th Meeting of the Thai Technical Committee, Bangkok

September 21st

26th Meeting of the Hong Kong Committee, Hong Kong

October 13th

7th Meeting of the Korea Technical Committee, Pusan

November 2nd

7th Meeting of the China Committee, Beijing

November 28th

4th Meeting of the Philippine Technical Committee, Cebu

November 30th

4th Meeting of Singapore Technical Committee, Singapore

December 14th

7th Meeting of the Indian Committee, Mumbai

Of special interest is that the March meeting was the first meeting of the new Taiwan Committee.

And on a sad note, the Society offers condolences to family, friends and colleagues of Mr. Miguel A. Magsaysay, (President of Magsaysay Maritime Corporation) who passed away in December. Mr. Magsaysay, a founding member, had recently retired from the Southeast Asia Committee after its fifteenth session. Chairman Mano expressed his thanks for the innumerable contributions and support extended by Mr. Magsaysay to the Society over 15 years.

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- Mr. Frank W.K. Tsao
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- Mr. Maeng-Kee Lee
Chairman
Korea Line Group
- Mr. Kou Ming Koo
Chairman
Valles Steamship Company, Limited

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- Mr. Liu Zheng
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China Shipbuilding Industry Corporation
- Mr. Wu Zhong Xiao
Executive Vice President
China Shipping (Group) Company
- Mr. Zhang Xi Ping
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China State Shipbuilding Corporation
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Deputy Managing Director
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China Shipping Development Co., Ltd., Tanker Company

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Kritsas Shipping S. A.
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Mr. Teruo Kondo

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Mr. Somsak Sucondhaman, NK Bangkok Office

(As of December 2000)

The past year has seen what seemed like an almost continuous parade of ships in crisis, from the *Erika* to the *Ievoli Sun* and the *Castor*. Most of these incidents have occurred in European waters, but the *Natuna Sea* incident off Singapore, was a timely reminder that Asia is far from immune to such problems. If any one of these incidents has prompted you to wonder how you might handle such a crisis, then NK's ETAS (Emergency Technical Assistance Service) is for you.

Part of the PrimeShip suite of products and services, ETAS is an emergency service which assists ship owners and their representatives, ensure ship safety and prevent or minimize the effects of marine pollution in the event of a serious ship casualty such as stranding, collision, explosion or fire. Working closely with the owner and salvage team, the ETAS team is often the brains behind the brawn, making sure that the salvage operations don't make the situation worse, or minimizing any necessary negative impact.

Preparing for a crisis starts with registering for the service. At this time all the relevant data of the ships registered for the PrimeShip-ETAS service are stored in a database for easy retrieval in order to be able to compute the damage stability and the impact of damage on for example, longitudinal strength in case of an emergency. Technical advice can then be provided as to the best course of action that may be taken to secure the safety of the vessel. In the case of an emergency, the ship/client should contact the ETAS team as soon as possible after the incident. The team takes the information provided by the ship and uses it together with the data previously registered in the database to

make the necessary computations. Technical advice is then provided concerning transfer or off-loading of cargo, fuel or ballast if necessary, as well as any necessary temporary repairs so that the Master and crew of the damaged ship can respond to the emergency as quickly and effectively as possible.

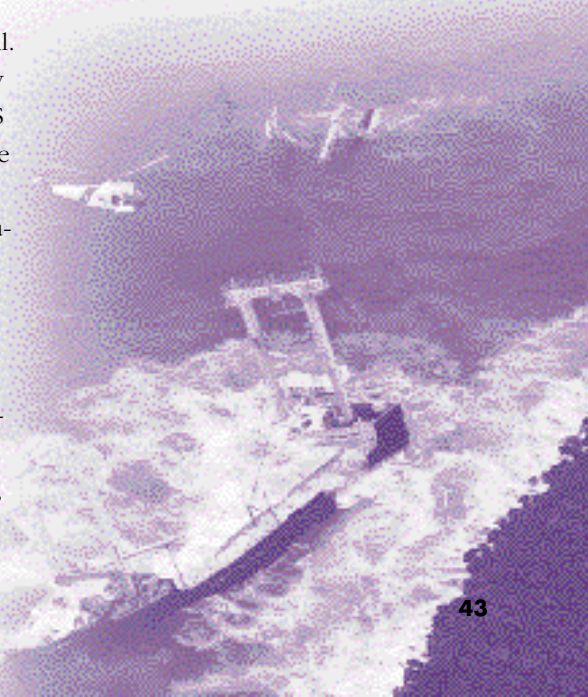
An ETAS team of highly trained specialists including experienced surveyors, naval architects, master mariners and chief engineers stand ready to respond to any client requests 24 hours a day, 365 days a year, as time is often a critical factor in crisis management. On this point, it is worth noting that although part of the PrimeShip suite of products and services, and therefore a natural complement to classing the vessel with NK, it is not actually necessary for a ship to be classed with NK in order to register for the ETAS service. Owners may need or want to class some of their vessels with another society, but still prefer to have the option to utilize the NK ETAS expertise when an emergency situation develops. Such a case was the recent *Natuna Sea*, a 90,000 dwt tanker that grounded on a reef south of Singapore in October 2000, initially spilling about 7,000 tons of oil. Although classed with another society the vessel was registered for the ETAS with NK. The ship's manager was able to make quick first contact with NK and an ETAS crisis manager and calculations specialist were able to be dispatched to Singapore within hours of the request. The specialists worked on-site with the salvors performing a myriad of calculations using the information originally registered in the ETAS database as well as on-site data, in order to determine how best to

stabilize the ship, unload the remaining cargo safely and re-float the ship without any further damage to the ship or environment. The operation was a clear success with over 30,000 tons of oil pumped off to other vessels, and the ship re-floated with virtually no oil spilt beyond that spilt at the original grounding.

Of course the ETAS team is able to respond and assist all over the world. In fact the first ETAS execution, in 1994, advised on the refloating of the vehicles carrier *Aya II*, which grounded at the mouth of the Schelde river near Antwerp.

Naturally ETAS complies with the relevant requirements set forth in the "Shipboard Oil Pollution Emergency Plan" required by the amended Annex I of MARPOL 73/78 as well as the "Vessel Response Plan" required for oil tankers entering any US port as stipulated in the provisions of the US Oil Pollution Act of 1990 (OPA 90).

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