

ClassNK

M A G A Z I N E

2004 56th EDITION

Special Article

MODAL SHIFT

A Key Component of Japan's Response to Global Warming



Focus On Japan:

Hiroshima

Recent Developments in
LNG Carrier Technology

PrimeShip-HULLCare

NK Around the World:
Piraeus and India

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Chairman's Message:

ClassNK Magazine 2004



Welcome to the 2004 *ClassNK Magazine*. As Chairman and President of a large organization like ClassNK, there are many tasks one is required to do. Frankly speaking, not all are fun or interesting, so I must say I am always glad to have the opportunity to review and introduce the annual *NK Magazine*.

This year's magazine, as always, has an interesting cross-section of articles and a strong environmental theme running through it. The Special Article looks at the concept of "Modal Shift" as part of Japan's response to global warming. Modal Shift officially refers to the shifting of cargo transport from high CO₂-producing transport modes to lower CO₂-producing transport modes. In reality, it means shifting cargo from trucks to rail and sea transport. Of course, as the article mentions, not everyone is convinced that global warming is even a real phenomenon. However, I suspect that among those of us living here in Japan, who have just experienced a summer with a record-breaking 38 days in a row with temperatures over 30°C, there are few non-believers.

Among the various ways that many countries are tackling the global warming issue, one is by increasing the use of so-called "clean energy" sources, including LNG. As a consequence, there is increased demand for more and bigger LNG carriers. The first of this year's two technical essays

looks at recent NK research and development related to this topic, with emphasis on the issue of sloshing pressure. Increased demand across almost all shipping sectors has also brought into focus the issue of aging vessels and maintenance. It has been often been argued that a well maintained ship of age will often be superior to a poorly maintained younger ship. Surprisingly, though, despite a tidal wave of new regulations in response to various casualties, there has been little formal regulation regarding ship maintenance and little in the way of systematic support for good maintenance. Now, as part of the PrimeShip suite of products and services, ClassNK has developed an advanced hull maintenance information service called "PrimeShip-HULLCare," which is introduced in the second technical essay. PrimeShip-HULLCare is an advanced, information-based support system for hull maintenance, based on and utilizing the wealth of detailed information that is routinely collected through classification surveys, including, for example, thickness measurements and photos.

"Focus on Japan" this year visits the NK Hiroshima office, one of the larger and older offices in NK's domestic network of 21 offices. Personally, I think Hiroshima and its surrounding area is one of the more interesting and beautiful places in Japan, so I am pleased that this year's article, while not forgetting the history behind

Hiroshima, also introduces other aspects of Hiroshima that I think readers will find interesting.

The NK global office network continues to expand, now with over 90 offices across Japan and around the world. In this Olympic year, the General Manager of the NK Piraeus office has written a short profile for our readers. Similarly, covering the territory that is all of India and Sri Lanka is no doubt a challenge, so I'm sure you will be interested to read the profile covering the NK Mumbai and Chennai offices.

Returning to the environmental theme, this year's "Stories from the Sea" section covers three very topical issues: wind power generation (not on land, but on ships!); the coming into force of the MARPOL Annex VI, covering various types of air pollution; and, finally, the challenges of ship recycling. Topics and Events include the ISPS Code, occupational health and safety, two new committees in Singapore and Turkey, and more, so I hope you enjoy reading this year's magazine as much as I have. ■

Kenji Ogawa
Chairman and President.

Recent Developments in LNG Carrier Technology

Recent expansion of global consumption has led to great increases in energy demand. In particular, LNG demand has increased dramatically, due largely to its reputation as an environmentally friendly, clean energy source.



Fig. 1 Image from video of sloshing tank model test

In response to increasing global LNG demand, considering the efficiency of scale they offer, large LNG vessels up to 250,000 cubic meters are being developed. There are various types of LNG carrier currently on the market, including the so-called MOSS type or IHI-SPB type. However, for very large vessels, often the membrane tank type LNG vessel is the first choice.

Until recently, almost all LNG vessels were built and sailed under long-term charters, meaning a vessel almost always sailed a fixed route over the long term, with a relatively known, fixed cargo loading. These known conditions were usually considered during the design and construction of the vessels. However, recently LNG spot trading has increased, whereby the route and service area of a vessel is decided based on spot market cargo trading. In this case, design and construction of the vessel must accommodate a wide range of route options and different cargo loading conditions, such as part loads.

An important design consideration when dealing with part loads, is the so-called sloshing pressure. MOSS-type and IHI-SPB-type LNG vessels have no limita-

tions to their loading conditions because the MOSS-type vessels do not experience strong sloshing pressures on tank boundaries, and in the IHI-SPB-type tank, the sloshing pressure is reduced by the damping effect of the internals.

However, membrane-type LNG tanks are not usually designed to take into consideration part or half-loading condition tanks and may therefore be subject to sloshing pressure under those conditions.

Since membrane Tank-type LNG vessels are often the first choice for new very large vessels with potentially variable loads and trading conditions, it is important to be able to accurately estimate the sloshing load on the tank plates of membrane-type LNG tanks.

The sloshing fluctuates greatly and it is a result of the “resonance” between the liquid in LNG tanks and the tank motion that comes from the ship’s rolling and pitching. Because of this, the sloshing

effect has strong non-linearity and the CFD (Computer Fluid Dynamics) method is most useful for motion analysis of the sloshing.

In order to confirm the accuracy of the CFD analysis, the Society carried out extensive tank model tests (see Fig. 1).

Fig. 2 shows a comparison of the resonance period for (1) an “experiment”, i.e., the data obtained by the model tests, (2) predictions under Linear Theory and (3) predictions under CFD analysis. Fig. 3 shows a comparison of sloshing pressure on the sidewall under the liquid waterline. These tests confirmed that the CFD method can be used to accurately estimate liquid motion and sloshing pressure from tank motion.

Fig. 4 shows the pressure at the ceiling of the tank. There is some rise in impact pressure where the liquid collides with the wall, but unfortunately the CFD method could not estimate this impact pressure

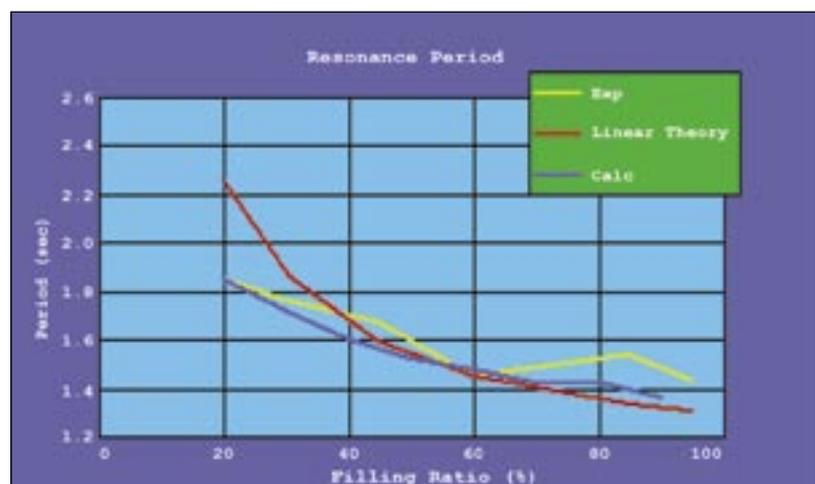


Fig. 2 Resonance period

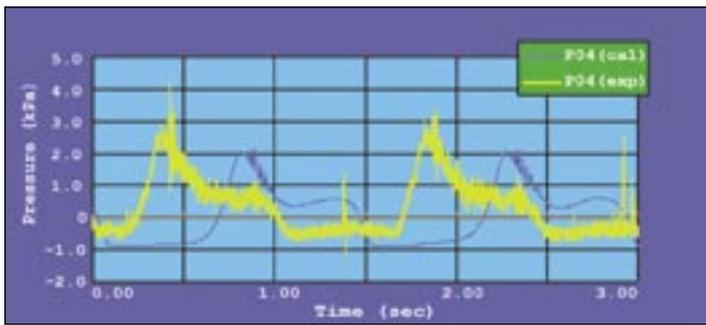


Fig. 3 Pressure on sidewall under liquid waterline

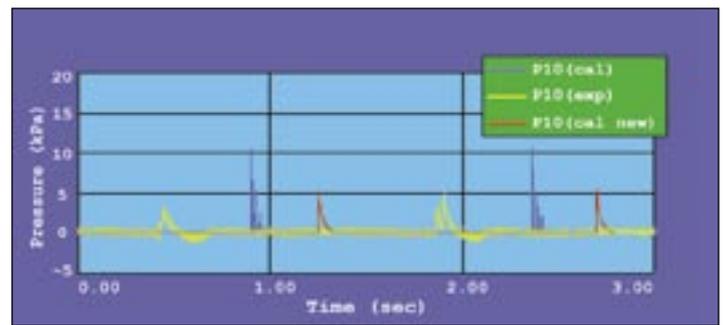


Fig. 4 Sloshing pressure at tank ceiling

exactly as the pressure from the wave has a lot of fine thread pulses. The pulse occurs due to the change of the boundary condition from the free-surface boundary condition of liquid to rigid wall boundary condition, and it is difficult to estimate by numerical analysis. The NK experiments showed that while CFD analysis can estimate the sloshing liquid motion accurately, it cannot estimate the sloshing impact pressure exactly.

Based on the above data, and with the support of the Society, Dr. Makoto Arai, a Professor of Yokohama National University, revised the sloshing analysis program.

With this revision, a new concept has been introduced relating to the boundary conditions, and the problem identified in the NK study has been solved. In Fig. 4, “calculation new” shows that this method was able to reproduce the impact pressure exactly. Using the previous calculation method, the value of the impact pressure would change in the case of the change of time step, but the new calculation results can show it steadily.

Design load should usually be the

maximum load a vessel will face in her life (Fig. 5). In the case of normal loads, where there is no significant non-linearity effect, frequency response and short-term distribution are calculated by linear analysis. Then, using joint wave statistics data of the wave height and the wave period of the vessel’s navigation route (usually the North Atlantic Ocean is used as a worst case scenario), the long-term distribution of the load will be calculated. Based on the results of long term distribution, the maximum load will be calculated against a probability exceeding 10^{-2} .

However, in the case of sloshing loads (where there is a big non-linearity effect), the above method cannot be used. In the case of linear response, it is possible to calculate the response at a short-term sea-state, consisting of several wave components, by the summation of frequency response against each wave component. But in the case of non-linearity, the summation cannot be produced, and it is impossible to calculate the short-term sea-state response by the summation of frequency responses.

NK has now developed an analysis system to calculate the maximum sloshing load. In this new system, the software program described above has been included as the core of the analysis. The system selects various sea-states consisting of the most severe wave frequency and the most severe wave height from the statistical wave data of the navigational route. Random waves under the conditions of the above sea-state will be produced on the computer, and random ship motion will be calculated by frequency response. Then, a sloshing simulation analysis of the ship motion will be carried out and fluctuations of liquid and maximum pressure will be calculated (see Fig. 6). By using such simulation analysis, in the case of the sloshing phenomenon with its non-linearity the maximum load the ship will face in her life can be calculated, and hence the design load can be calculated.

NK believes this newly developed Analysis System for Sloshing Design Load will be a major new support tool in the design of membrane-type LNG tanks. ■

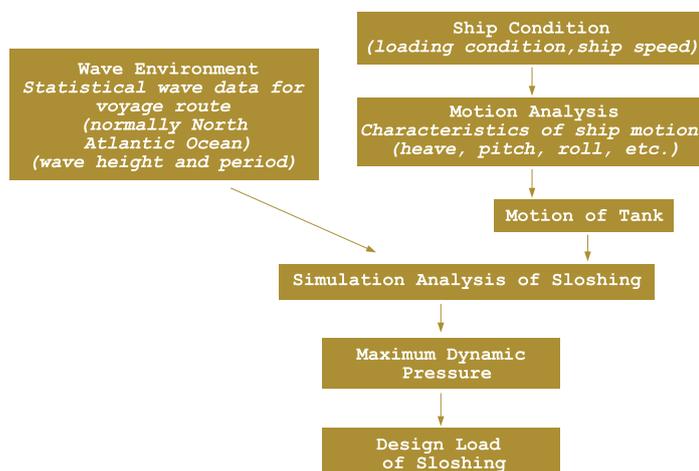


Fig. 5 Design load

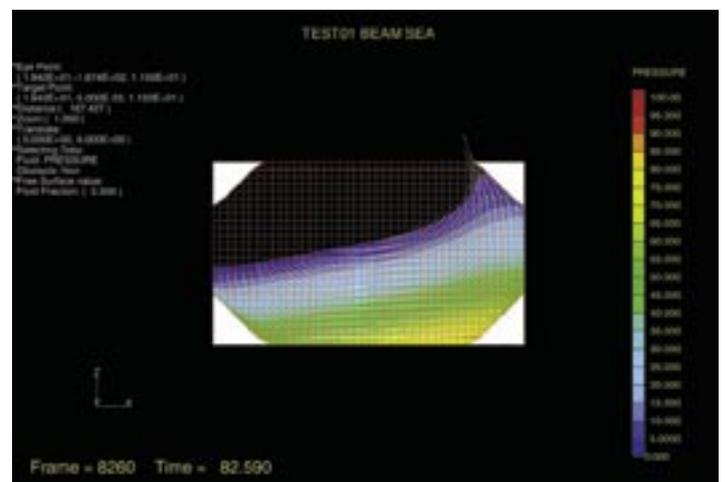


Fig. 6 Simulation of sloshing

PrimeShip-HULLCare

Over the last few years, there have been a number of regulatory responses to marine casualties, which have dictated age limits for ships in a variety of circumstances. This has provoked vigorous debate about the issues of age and ship maintenance.



Fig. 1 Window for login to the PrimeShip-HULLCare Internet service

It has been argued that a well-maintained ship of age will often be superior to a poorly maintained younger ship. Surprisingly, there has been little formal regulation regarding ship maintenance and little in the way of systematic support for good maintenance. Now, as part of the PrimeShip suite of products and services, ClassNK has developed an advanced hull maintenance information service, called “PrimeShip-HULLCare.”

PrimeShip is the name of ClassNK’s comprehensive set of software and technical services, based on the concept of “total lifetime ship care.” ClassNK’s advanced technologies have been incorporated into PrimeShip, together with the vast experience we have accumulated to date. Two years ago, ClassNK launched “PrimeShip-HULL,” which provides strength assessment services for hull structures at the design stage, and this service has gained a very good reputation. Now, NK will offer this new technical service for owners and/

or operators to support them during a ship’s operating stage in order to fully realize the concept of “total lifetime ship care.”

At each periodical survey undertaken by class, a huge amount of data, particularly thickness measurement data, is collected. Thickness measurement data, consisting of several thousand measurement points per survey, are recorded and filed in time order (from old to new). Currently, if a surveyor would like to review the earlier data (in order to prepare for a survey), or if a superintendent or staff from the ship management company would like to prepare a plan for repairs at the next docking, they have to review all the current and earlier data from the existing paper files. This has been a time-consuming and difficult job, with obvious scope for error.

Understanding the importance of systematically reviewing the previous survey history and data, the Society has been investigating how to more effectively use

this data collected at each survey in order to utilize it for more effective maintenance of the ship.

The Society decided that despite the enormity of the task, by converting existing data, and collecting all new data in digital format, then by taking advantage of advances in information technology, the surveyor or the superintendent would be able to access the data anytime or anywhere, greatly increasing its usefulness in preparation for surveys or maintenance schedules. Similarly, as a result of recent advances in information technology, 3D hull structure modeling has become common. It was realized that if the above data (especially thickness measurement data) were reflected in the 3D model, then much more effective ship maintenance could be achieved.

Putting all this together, the Society has developed the “PrimeShip-HULLCare” system in order to organize the mounds of regularly collected data into a new techni-



Fig. 2 3D hull model with various types of survey data

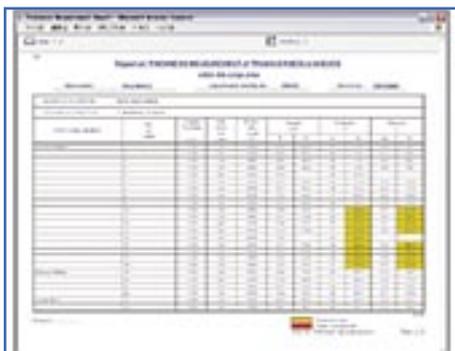


Fig. 3 Thickness measurement data

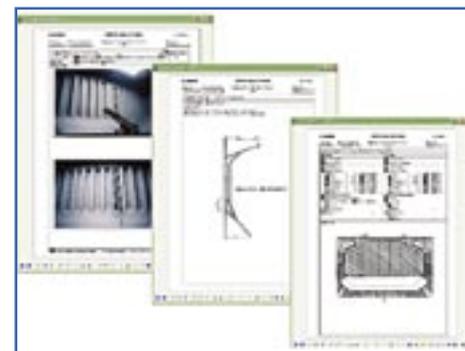


Fig. 4 Photos taken during the survey and plans

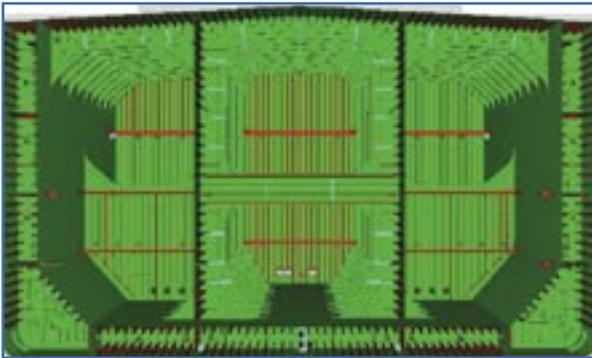


Fig. 5 Virtual reality of ship structure

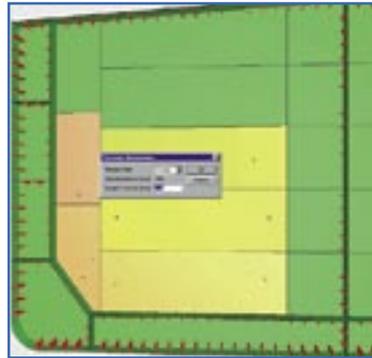


Fig. 6 Corrosion distribution

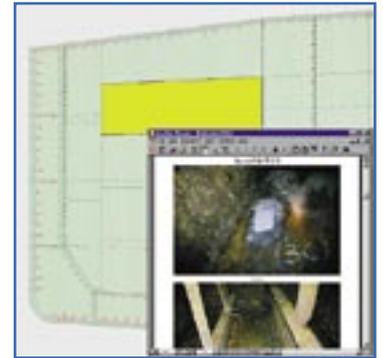


Fig. 7 Photos fitted onto 3D model

cal service that will revolutionize ships' maintenance.

PrimeShip-HULLCare is an advanced, information-based support system for hull maintenance, based on and utilizing the wealth of detailed information routinely collected through classification surveys. The survey data in the PrimeShip-HULLCare database is accessible through the Internet 24 hours a day, 7 days a week, and is accessible anywhere the Internet is available (see Fig. 1).

In addition to the basic Internet service, a 3D modeling service is also available. NK will produce the 3D model at the request of the ship owner and develop the model complete with maintenance information, such as thickness measurement data, photos, and repair plans, etc. (see Fig. 2).

It will provide users with the following detailed class survey data in digital format for individual ships:

- Classification information
- Thickness measurement data (see Fig. 3)
- Photographs and drawings resulting from the class survey (Fig. 4 shows sample windows)
- Condition Assessment Scheme (CAS) reports
- Requirements of hold frame replacement for the individual bulk carriers (requirements of IACS UR S31)

One great advantage of 3D modeling is that it offers a very easy grasp of the ship

structure. Fig. 5 shows the tank construction of a VLCC tanker. Various survey data will be added to the model and users can easily understand the ship's current condition at a glance. Fig. 6 shows distribution of diminution on a bulkhead. In the figure, the color of excessively corroded plates will change to a deeper color. Photos are also added to the model and users are only a click away from reviewing the condition of the structural member (see Fig. 7). Strength assessments based on current

thickness data can also be carried out.

Fig. 8 shows the result of such assessment.

By taking advantage of advances in information technology PrimeShip-HULLCare offers easy access, all the survey data collected at each survey to the ship owners in order to facilitate more effective ship maintenance. The Society expects this service will contribute to improved medium- and long-term safety. ■

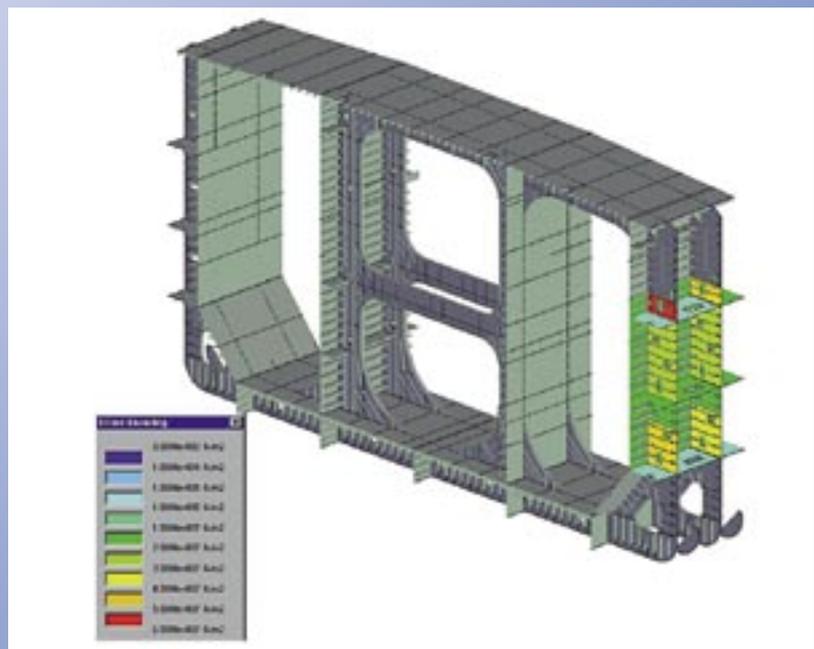


Fig. 8 Strength assessment of current thickness



The Sunflower Tomakomai

MODAL SHIFT

A Key Component of Japan's Response to Global Warming

Although special interest groups and scientists had been interested in global warming for decades, it was only in the 1980s that the general public and politicians became interested in the subject.

The impact of the so-called “greenhouse gases” had long been speculated on. In 1988, the United Nations Intergovernmental Panel on Climate Change (IPCC) brought together the world's leading scientists in the field to investigate the topic. They reported that, on balance, the evidence indicated that global warming was probably occurring. Subsequent IPCCs, each using more and newer data every year, have confirmed that global warming is most likely occurring. Of course not all scientists agree, but on balance worldwide opinion is that global warming is and will continue to be a growing issue.

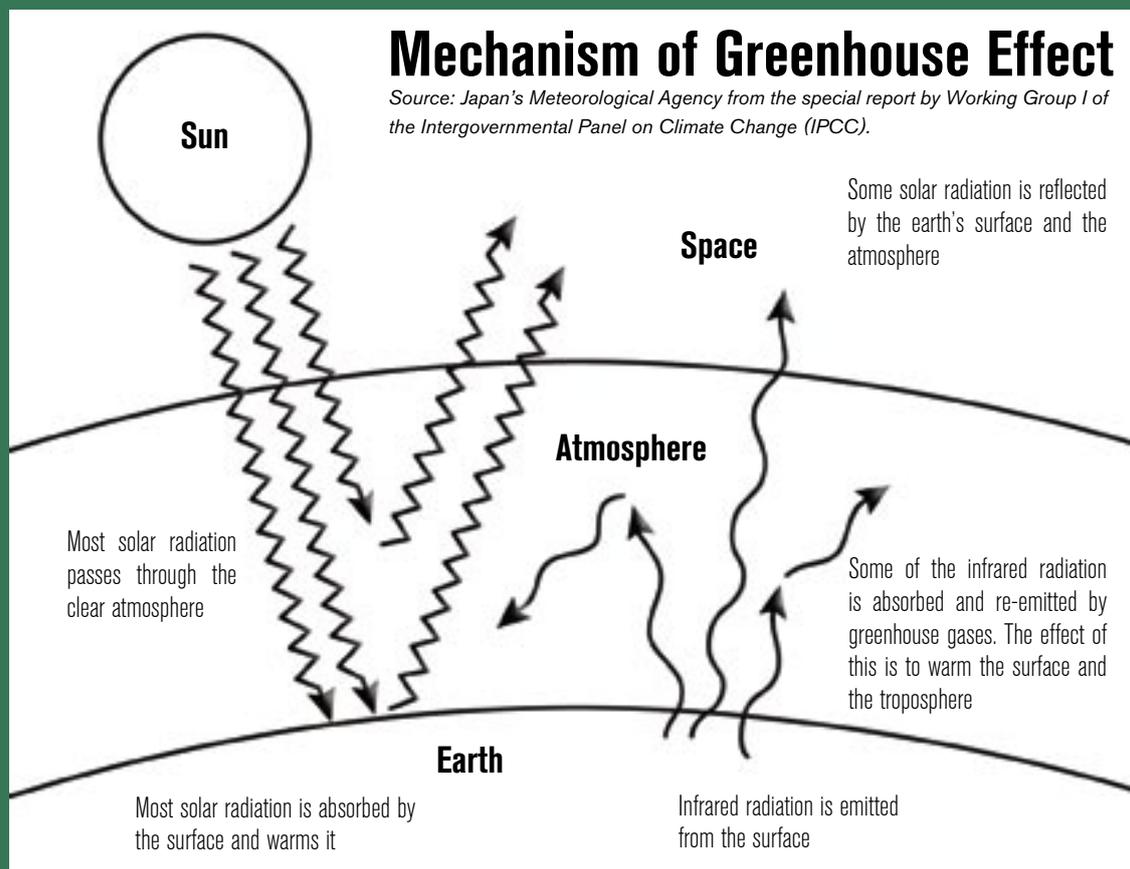
In 1997, the United Nations held a “Climate Convention” in Kyoto. From this convention came a set of targets for nations to reduce their greenhouse gas emissions from an arbitrary base year of 1990. Of course not all nations have agreed, but Japan has committed itself to this so-called “Kyoto Protocol.” The protocol requires developed countries to reduce their aggregated average annual emissions of greenhouse gases by 5% from the 1990 level, from 2008-2012. However, Japan, which is the fourth largest emitter of these gases, is required to achieve a 6% reduction. It is well known that a number of so-called greenhouse gases contribute

What Is Global Warming?

One of the most abundant and important elements that make up the earth as we know it is carbon. It exists and is stored in various forms, such as the solid carbon in the plant and animal matter covering the land, as gaseous carbon such as CO₂ in the atmosphere and in the oceans that also contain plant and animal matter and where it is dissolved in the water.

Because the carbon can and does change form, there is a cycle called the carbon cycle whereby the carbon moves between these main storage areas (called carbon pools or carbon sinks), and a balance is maintained between the carbon in the atmosphere and the rest. In fact the balance has historically been a little in favor of the land and sea pools.

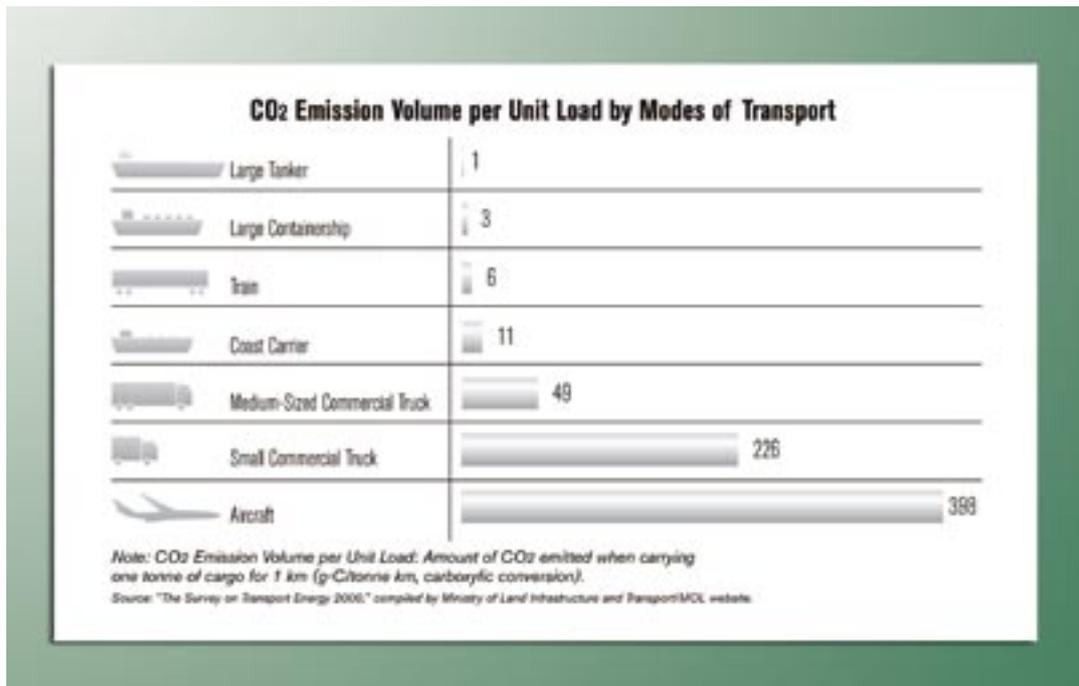
Unfortunately, it seems that human activity has upset this balance, with activities such as burning fossil fuels like coal and oil, releasing huge amounts of extra carbon into the atmosphere. The carbon cycle cannot recycle this extra carbon fast enough and it accumulates in the atmosphere. This extra carbon in the atmosphere disrupts the amount of solar radiation (heat from the sun) that is reflected off the earth. The result is that the heat is trapped in the earth's atmosphere and we get global warming.



to global warming, but in Japan, over 90% of the contribution of greenhouse gases to global warming comes from carbon dioxide (CO₂), of which 20% comes from the transport sector. Of course, most of this comes from automobiles but all transport sectors contribute.

To help combat global warming, the Japanese government has developed a range of policies to help meet the CO₂ reduction

targets set in the Kyoto Protocol, and one of the most important policies has been the promotion of Modal Shift. Modal Shift officially refers to the shifting of cargo transport from high CO₂-producing transport modes to lower CO₂-producing transport modes. In reality, it means shifting cargo from trucks to rail and sea transport. This is because modes of transport that have larger transport capacity have smaller CO₂ emissions per unit load (i.e.,



the amount of CO₂ emitted to carry 1 tonne for 1 km). For example, a coastal freighter will have a CO₂ emission volume per unit of 11, compared to a small commercial truck with 226, almost 20 times more.

Japan's official Outline for Promotion of Efforts to Prevent Global Warming action plan, announced in May 2003, set a goal of reducing 4.4 million tonnes of CO₂ emissions through Modal Shift. This would need the shifting of about 20 billion freight tonne kilometers off the roads and on to trains and coastal shipping.

While rail is often seen as a more practical alternative to truck transport, many believe coastal (and inland waterways) shipping to be the better alternative for a number of reasons. Firstly, railways have a limited finite capacity, building new lines is expensive, as is maintenance, and freight trains compete with passenger trains which also make an arguably bigger contribution to greenhouse gas reduction by keeping the worst culprit, private cars, off the roads. The seaways on the other hand already exist and are free, requiring no maintenance beyond the expected respect for the environment. In addition, there is far greater scope to increase the capacity of the seaways by adding more vessels.

Japan has long had a strong history of coastal and inland waterway shipping of goods, which has waxed and waned with changes in technology, attitudes and demand. Long-distance

(greater than 300km) coastal Roll on Roll off (RoRo) ferries have operated across Japan since the early 1960s. Now, around a dozen operators running over 60 vessels ply over 25 different routes around Japan's coast. Having said that, Japan also has a highly developed national expressway system that directly connects all four major islands, so sea voyages are not actually much shorter than truck routes and competition is intense. As a result, most RoRo operators are replacing older vessels with faster ships.

One good example is the 564 nm route from Tokyo to Tomakomai in the far north island of Hokkaido. This route was traditionally serviced by three vessels capable of around 20 knots, doing the trip in around 30 hours. It is now serviced by just two vessels capable of 30 knots doing the trip in just 20 hours. The first of these vessels, the fastest of their type in the world was the *Sunflower Tomakomai*, built to NK class and selected in April 2000 by the Japan Shipbuilders Association as "Ship of the Year."

There is no doubt that Japan is serious about supporting and promoting modal shift as a key component of its response to global warming, and there is no doubt that Japan's maritime industry is ready, willing and able to contribute. ■

Case Study: Kobe Steel

Kobe Steel, Ltd., one of Japan's leading steel manufacturers, has been conducting a five-year trial using ships to transport steel plates to the Chubu Region, in central Japan. The trial started on the 1st of October 2002, with the joint cooperation of two transportation service companies, Kobelco Logistics, Ltd., an affiliate company of Kobe Steel, and Isewan Terminal Service Co., Ltd., a port transportation company mainly serving the Chubu Region.

The demonstration trial focused on a modal shift from truck transportation to sea transportation. The project is designed to improve transportation efficiency and reduce environmental impacts and is certified by Japan's Ministry of Land, Infrastructure and Transport as an effort to promote environment-friendly logistic systems.

The targeted area for the modal shift covers Aichi and Nagano prefectures in the Chubu Region, where the volume of shipments from Kakogawa Ironworks in Hyogo prefecture in the Kansai Region amounted to 5,700 tonnes per month in the second half of fiscal 2002.

For most shipments from Kakogawa Ironworks to the Chubu Region, Kobe Steel traditionally used the major highway route, though some shipments were transported by sea. In the trial, 3,400 tonnes of the total monthly shipments were sent by sea instead of by truck. Through this trial, Kobe Steel and its partner companies estimate an annual reduction in CO₂ emissions from the current 2,069 tonnes to 1,109 tonnes, a 46% reduction. The targeted reduction in CO₂ emissions will amount to 4,800 tonnes over the five-year experiment period.

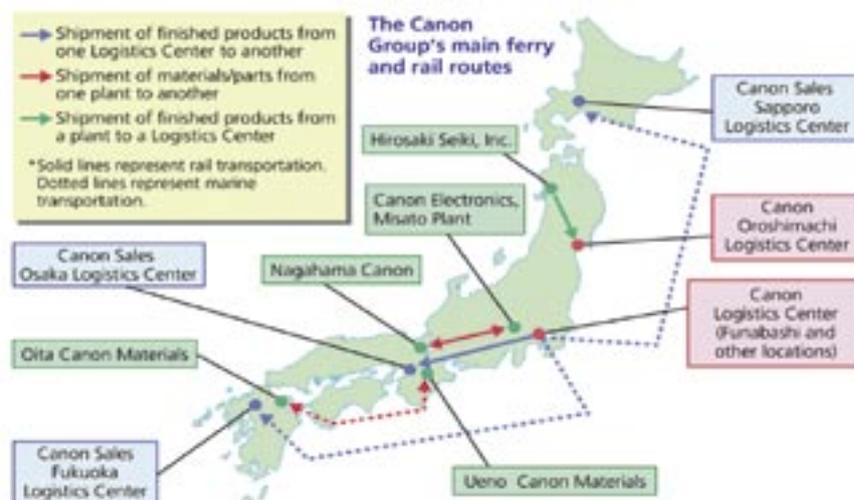
Sources: Kobe Steel website & Japan for Sustainability website.

Case Study: Canon

Canon Inc. is a well known Japanese manufacturer of electronic goods and precision equipment that has a genuine commitment to protecting the environment across all areas of its business. In line with the Japanese government Guidelines for Measures to Prevent Global Warming, in 2002, Canon established a Group goal to reduce logistics-related CO₂ emissions, using 2000 figures as a base. The target was a reduction of 20% per unit of sales by 2006. To help achieve this, they created an Environmental Logistics Sub-committee, which manages related programs. They categorized logistics activities as being related to procurement, production, products or sales and created working groups to address

CO₂ emissions from these activities. Each of these working groups sets reduction targets and performs other roles, examining ways to reduce CO₂ emissions through joint logistics or modal shifts.

Pursuing Modal Shift in Japan: Canon is actively changing its long-distance transportation methods for product logistics. In 2002, they began using ferries to ship products from their Kanto Logistics Center to their Fukuoka Logistics Center (trains carry products from the Kanto Logistics Center to their Osaka Logistics Center). For the October-to-December period of 2002, Canon used these new transportation modes to move 85% of the products bound for Fukuoka and 35% of the products bound for Osaka (52% overall). As a result, they were able to cut product logistics CO₂ emissions by 14% (annualized).



Source: Canon website



Miyajima Otorii



This year's Focus on Japan takes us to Hiroshima in Japan's south...or west if you are a Japanese reader! For those missing the "in joke," let me explain...

HIROSHIMA



Jooutaki waterfall

Picture in your head the Japanese archipelago, the four main Islands of Hokkaido, Honshu, Kyushu and Shikoku, with the capital Tokyo right around the middle. Most non-Japanese, if asked to divide the country in two, will draw an imaginary line at Tokyo, dividing the country into north and south halves. However for a variety of historical reasons, while the Japanese draw their imaginary line across the country a little south of Tokyo as well, they refer to the two halves as east and west. Well, stepping off the plane from an already hot and humid Tokyo summer into an almost tropical very hot and very humid Hiroshima, this writer can tell you that while Hiroshima may well be a little west of Tokyo, it is very definitely, very south!

The airport is a good hour's drive from downtown Hiroshima, but this location

has allowed the creation of a very eco-friendly facility that is almost totally surrounded by parklands and forest. Sitting in the air-conditioned rent-a-car remembering the urban and industrial wastelands that surround many airports, I was very appreciative of the efforts made to create this green haven around Hiroshima airport. That was of course until moments later as we pulled into a visitor area and my business department colleague Matsumoto-san announced he wanted to hike through the park to see a famous waterfall, called *Jooutaki*. Mercifully, a check of the area information board identified another car park, further on and a mere ten minutes walk from the fall. Although quite pretty and interesting in terms of structure, not even this writer's often-generous literary license could be stretched to describe it as spectacular. Only after Matsumoto-san

explained its role as the background setting for the screen credits on *Mouri Motonari*, one of Japan's most popular television samurai dramas, did I understand why it is such a popular tourist spot.

Arriving at the Hiroshima branch office, we were first welcomed by the office staff, including administration chief Mr. Takayama and Mr. Yabe, who had generously suggested and arranged much of our schedule. The Hiroshima office is led by General Manager Mr. Katashima. Originally hailing from the Hiroshima area, he clearly enjoys being back, and one suspects he will use all of his considerable influence within NK to stay in this role until retirement beckons. Katashima-san's vast experience in NK includes opening the Milan office in Italy and a stint as General Manager of the Survey Department in Head Office. He currently leads a team of twelve surveyors, with three others having been temporarily poached for short-and medium-term special assignments overseas. Although he grumbles about this poaching of his staff, he surely knows it is also a testament to the training and experience they have received under his leadership. Nevertheless, the office is one of the busier Japan offices, undertaking 546 surveys last year, including 13 new-buildings and 106 ISM audits.

With only a few hours before our official welcome party, we decided that it was the right time to visit Hiroshima's most famous sites. Although an interesting city in its own right, there is no doubt that around the world Hiroshima is most famous as the first city ever to have had an atomic bomb dropped on it. Nowhere is the tragedy of this event more poignantly recorded than at the Peace Memorial Museum, a short drive from the NK office. An hour or so touring the exhibits leaves one vastly better informed, but not unexpectedly somber. A walk through the surrounding Peace Memorial Park, reading the various memorials and messages of peace and hope does, however, help restore the spirits.

In the far corner of the park is the most famous symbol of the Hiroshima bombing, the Atomic Bomb Dome. The twisted steel and concrete remains of this once fine commercial building, located at approximately the bomb epicenter, are the only building remains that have been permitted to stand, and are a UNESCO-registered world heritage site. A further 10 minutes' walk is Hiroshima Castle, rebuilt in 1958 and now serving as a local museum.

Returning to the NK office, we had an opportunity to meet most of the other staff at a welcome party for us and Mr. Hong Wang, a new surveyor from the NK Shanghai office, who had arrived for training in Hiroshima a day earlier. It wasn't long, however, before GM Mr. Katashima invited

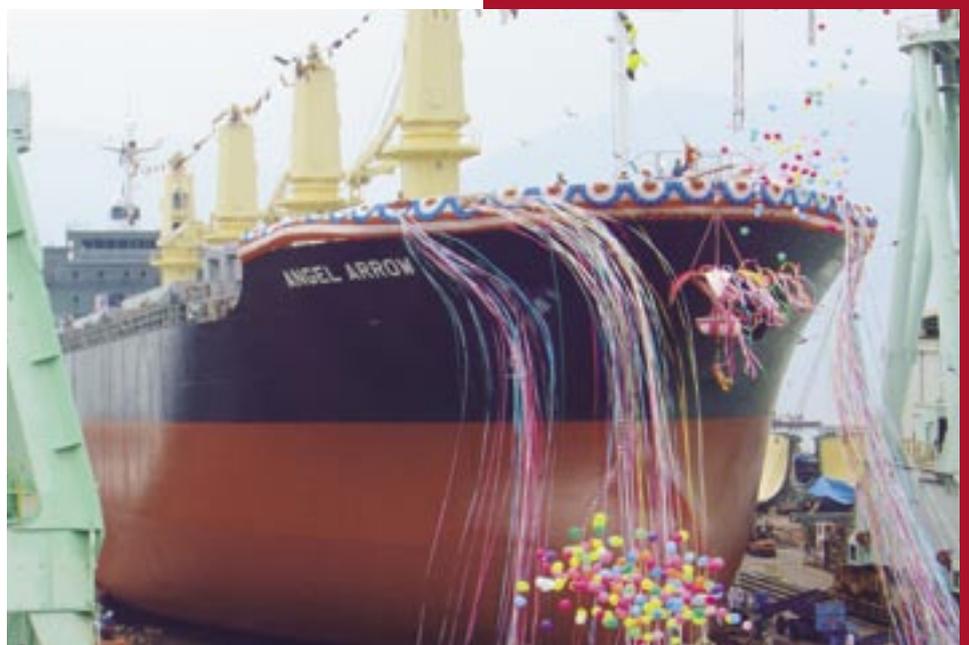
us to head off to sample Hiroshima's most famous culinary attraction, *okonomiyaki*, at his favorite local *okonomiyaki* store.

Day two saw us leaving the Hiroshima branch office at 8 a.m. for the drive to Kanda Shipbuilding and our main event, the launch of their latest newbuild. Established in 1937 and incorporated in 1948, Kanda employs almost 350 regular staff—swelling to almost 900, including sub-contractors. Located in a picturesque bay near Kure, about an hour and a half south east of Hiroshima, they have an impressive range of capabilities, including passenger vessels, bulk carriers, pure car carriers and even patrol boats for the Japanese Self-Defense Force.

The number two building berth is the



Launching of the *Angel Arrow* at Kanda Shipbuilding





The Atomic bomb dome known as *Genbaku Dome*

Hiroshima has grown beyond the history and is worth visiting in its own right.



Brush-making demonstration by a local artisan

largest, and curiously juts right into the property in front of the main administration building, so when driving up to the building, it appears as if the latest new-building has been grounded right there in front of you. On this day, we had come for the launch of the *Angel Arrow*, a new 32,000-dwt open hatch bulk carrier built for NYK Global Bulk for charter to Japanese interests. We were met by Mr. Etsuo Nakayasu, Chief of the Inspection Section, and his able offsider Mr. Shinji Tanaka, who took us for a tour of the facility and helped us scout the best spot to photograph the launching ceremony. Not surprisingly for one of Japan's leading medium-sized ship builders, the yard is extremely efficiently organized and well laid out, producing seven to eight vessels a year depending on size and type, and is basically fully booked for the next two years. The launching went off like clockwork, with the usual pomp and ceremony, and I was not surprised to see that no sooner had the VIPs filed off for refreshments that the building berth was immediately swamped with workers who were making preparations to receive a waiting block for the next newbuild.

Politely begging off the refreshments due to our tight schedule, we headed for

Hiroshima's next most famous attraction, the nearby Island of Miyajima. Frequently listed among the top three visited locations in Japan, Miyajima is about an hour's drive and a short ferry trip from downtown Hiroshima. The 10-minute ferry trip is short but important as it affords the best view of the famous *Otorii*, or "large gate." This traditional gateway, painted bright red/orange, is one of the largest in Japan and is built 200m offshore from the most famous shrine, which is Itsukushima-Jinja Shrine. The Shrine, the sea in front of it, including the *Otorii*, and the forest in the background were named a World Heritage site in 1996. The main shrine building is painted in red/orange lacquer and stands out against forest behind. Built right out from the water's edge in a small inlet, at high tide the shrine looks like it is standing in the middle of the sea. The idea of using the inlet as the grounds for the shrine was originally conceived in the 6th century, when it was first decided to build a shrine here. But the 17 individual shrines and the corridors connecting them were only finally built in the 12th century by a wealthy warlord of the time called Tairano Kiyomori.

Our last day in Hiroshima started early, with a visit to check out the newest con-



Crane unloading container

tainer port facilities. Although we had pre-arranged the visit to take photos by phone call and fax, we were nevertheless a little surprised that given the current hype surrounding the ISPS code, we were not even asked for identification to enter the port. Quite new, the port was, however, a model of organized efficiency, and we were able to take photos of unloading in progress.

The rest of the day was dedicated to exploring what makes Hiroshima tick. Interestingly, two of the main drivers of the local economy represent two extremes of tradition and modernity. Calligraphy, either as art or for practical purposes, is one of Japan's most treasured traditions. Skill with the calligraphy brush is admired and envied by most Japanese, young and old. Notwithstanding the years of training and practice, part of the secret of good calligraphy lies in the quality of the brush. And the answer to where to find the best brush is just to the east of downtown Hiroshima in the area known as Kumano-cho. The area has a 160-year history of brush-making and now produces over 80% of all brushes made in Japan, not just for calligraphy but also for industrial and cosmetic use as well. To ensure this history was not lost, a Brush Museum was established in 1994. Besides showcasing the largest brush

in the world, there are craftsmen (and women) constantly in residence demonstrating the art of brush making. There are various displays of brushes from throughout history, a gallery for famous works and a workshop where hands-on activities can be undertaken. Special exhibits include famous calligraphers and the calligraphy of the famous. On the day we visited, the special exhibit was the work of Ken Ogata, the famous Japanese actor.

The biggest driver of the local economy, if you'll pardon the pun, is Mazda and we decided a quick tour of the Mazda museum was the best way to fill the remaining few hours before our flight back to Tokyo. Established in Hiroshima in 1920, the company has grown to directly employ over 19,000 locals. It is estimated that if you include indirect employment, such as local parts suppliers and the like, then as many as one in five Hiroshima-ites owe their livelihood to Mazda. The museum tour offers a detailed insight not only into the way cars are developed, but also into the way the company has developed, from its origins making three-wheeled mini trucks for farmers, to its place as one of the most successful and well known vehicle manufacturers in the world. The tour includes a walk through the actual

assembly floor of the current main production facility, a fascinating experience where you cannot help but be mesmerized by the buzz of activity as over a thousand men, women and robots work in harmony like one big well-oiled machine to turn out a new vehicle, on average, every four minutes. The plant, of course, also has a private port where three PCCs were berthed ready to load for export to all corners of the world. However, unfortunately we were not able to enter the dock area for safety and security reasons.

Returning to Tokyo just days before the annual commemoration of the atomic bombing, I thought while it is important not to forget the history, we should also recognize that Hiroshima is a city that has grown beyond the history and is worth visiting in its own right. ■



NK Hiroshima office



GM Mr. Katashima (front center) and the NK Hiroshima staff

Wind Power Generation Systems on Ships

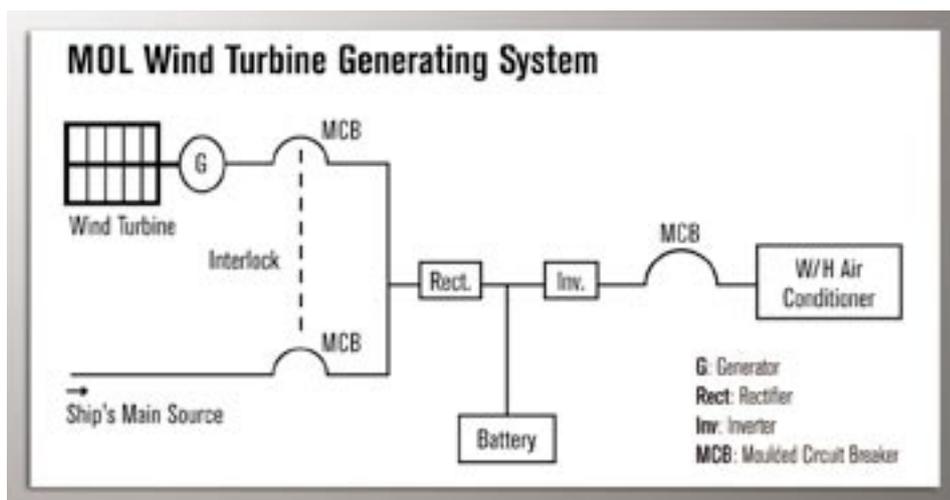


The MOL (Mitsui OSK Lines) *Taiho Maru*

As you will read elsewhere in this year's magazine, shipping is making a great contribution to the reduction of greenhouse gases to combat global warming, through the role it plays in Modal Shift. One other strategy that land-based industry has developed to reduce greenhouse gases to combat global warming is "Wind Power Generation."

Wind Power Generation is seen as clean energy, using wind power as a virtually unlimited and free source of energy. In these systems, a "Windmill" transforms "wind energy" into "mechanical energy" and usually a "horizontal axis-type windmill" having three propellers is used. Regular readers of *ClassNK Magazine* will recall from last year's profile of Hakodate that such windmills are in operation at nearby Setana-cho in Hokkaido.

Ironically, given its place in history as the primary energy source that drove ships for centuries, since the introduction of mechanical propulsion the wind has rarely been harnessed to power commercial ships in any way. Recently, however, two experimental wind power generation systems have been trialed on ships by Nippon Yusen Kabushiki Kaisha (NYK Line) and Mitsui O.S.K. Lines, Ltd. (MOL), in order to explore their potential for future practical



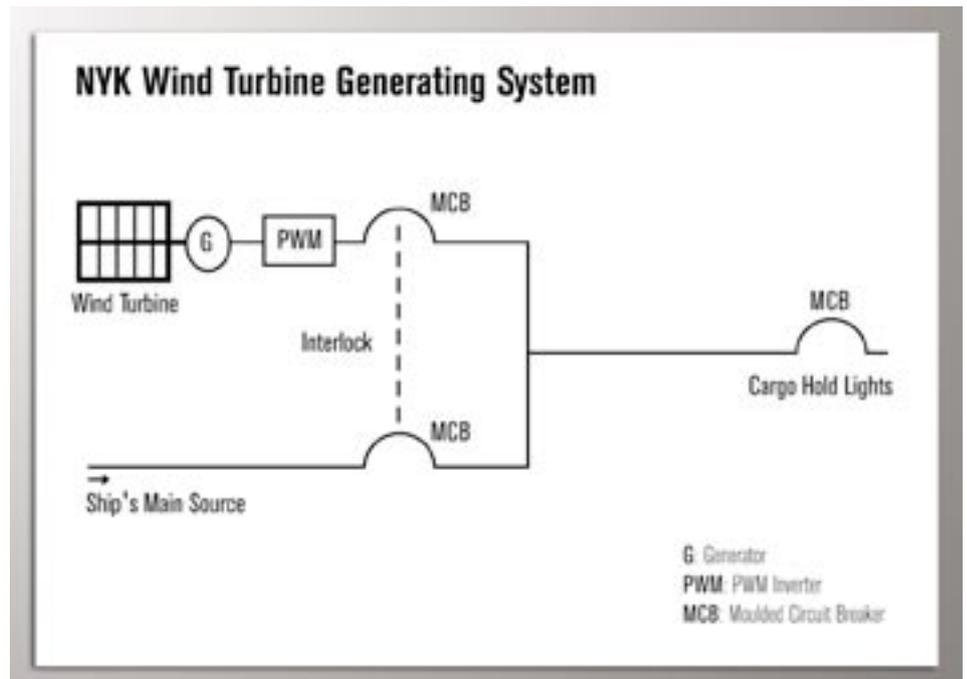
use. Although the nature of the marine environment is expected to result in fluctuations in the electrical power from "Wind Power Generation," it is considered to have good potential.

In these NYK Line and MOL trials, an innovative "vertical axis-type windmill"

with vertical wings and developed at TOKAI University is being used. The "vertical axis-type windmill" has an "omni-directional nature" and maintains rotation irrespective of the direction of the wind. It is considered that this "vertical axis-type windmill" is the most effective type for

marine use because the wind direction (relative direction to the ship) changes frequently due to changes in a ship's course or other natural reasons.

The NYK Line trial involves TOKAI University, TECHNOVA INC. and NIPPI Corporation. The system consists of a "Windmill" with three vertical fins (propellers) and an Induction Generator driven by the "Windmill." The diameter of the rotor is 4 m and height is 7 m and the output of the generator is three phase alternating current 220V and 30 kW. The system was installed on the garage Deck of a PCTC (Pure Car and Truck Carrier) in August 2004 to supply electric power to the lighting in the cargo holds. The system was adjusted to "cut in" (start generating) at wind speeds over 5 m/s and "cut out" (stop generating) at wind speeds over 25 m/s. Electrical power from wind power generating systems fluctuates relative to the rotating speed (i.e., change of wind speed) and the output frequency fluctuates as well. Therefore, in order to properly power the equipment it is necessary to transform it to a stable frequency. In this trial, a Pulse Width Modulation (PWM) inverter was installed, which transformed the electrical power from the wind generation system to direct current and then re-transformed power to a stable frequency alternating current (AC by wind power to



DC to AC 220V three phases) (see NYK diagram). The system is expected to supply 50 MW of power per year. After further trials, it is expected that more wind power generators for the supply of electrical power to ships may supply up to 30% of the ship's electrical power demand.

Similarly the MOL trial involves TOKAI University and NISHISHIBA Electric Co., Ltd. The generating system is similar to the above NYK project. However, the windmill

is smaller, with a height of 2 m, and the diameter of the rotor is 2.5 m. The generator driven by the windmill is a Permanent Magnet Synchronous Generator with three-phase alternating current 100V and 3 kW output. The system was installed on the Captain Deck Starboard Side of the *Taiho Maru* in March 2004 in order to supply electrical power for the air conditioning system in the Navigation Bridge Deck (see MOL diagram). In this system, in order to maintain the stable frequency, the alternating current generated by the wind power is rectified and charges a battery. It is then transformed to an AC 100V source using a frequency inverter. The system is expected to supply 7-9 MW in a year.

ClassNK actively supports and encourages shipping and shipbuilding activities that contribute to protection of the environment. ClassNK recognized these two projects for wind turbine generation as contributing to clean energy development, and worked with the various parties to solve some problems in order to make the wind turbine generating system fit for practical use and to approve the installation of the systems. Naturally, approval was subject to various measures to ensure that the electrical power generated by the wind power did not affect the normal electrical power system of the ship. ■



NYK's wind power generation system

Ship Recycling and the Role of Class

Ships vary in size and complexity, from small coastal cargo ships to large bulk carriers and sophisticated gas carriers. One thing they all have in common, though, is that they don't last forever, and you can't just put them out with the bundle of newspapers on Saturday morning for the recycle truck to pick up!



Ship recycling in Japan (photo courtesy of the Japanese Association of the Ship Scrapping Promotion)

In days of old, an old salt upon accepting that his old girl had reached the end of her days, might shed a tear or two as she was abandoned in some final resting place to rot slowly, or be scuttled mercilessly in a deep far away hole. But times have changed and environmental concerns rank highly in all considerations these days, even in ship scrapping. Ship recycling has become big business and the economic lifeblood of a few specialist regions.

In the process of ship recycling, little goes to waste. The largest component, the steel, is reprocessed as new steel since production from recycled steel requires only one third of the energy used for steel production from raw materials. Ships' generators and other equipment are often reused ashore, residual oil products are used as fuel in mills or brick kilns and even light fittings can find further use ashore. However, ships sold for scrapping may also contain environmentally hazardous substances, such as asbestos, heavy metals, and ozone-depleting substances, among others. Therefore, concerns have been raised about the impact of ship recycling on the environment, not to mention

the working conditions at many of the world's ship scrapping locations.

The IMO's role in the recycling of ships was first raised at the 44th Marine Environment Protection Committee (MEPC) session in March 2000. A new set of guidelines on ship recycling was developed by the MEPC, finalized at the MEPC 49th session in July 2003 and adopted at the 23rd Assembly in November-December 2003 as Resolution A.962(23). The guidelines recognize that, although the principle of ship recycling may be sound, working practices and environmental standards in yards are often not ideal. It has occasionally been suggested that class could play a role in supervising the destruction of vessels, just as it does in the construction. However, currently there is no framework in place to facilitate this and responsibility for conditions in the yards has to lie with the countries in which they are situated.

To this end, the concept of a "Green Passport" for ships is included in the guidelines. It is envisaged that this document, containing an inventory of all materials potentially hazardous to human health or the environment, used in the

construction of a ship, would accompany the ship throughout its working life. Produced by the shipyard at the construction stage and passed to the purchaser of the vessel, the document would be in a format that would enable any subsequent changes in materials or equipment to be recorded. Successive owners of the ship would maintain the accuracy of the "Green Passport" and incorporate into it all relevant design and equipment changes, with the final owner delivering it, with the vessel, to the recycling yard. Given that class already plays a significant role in the approval of materials and equipment from the safety angle, there may also be scope for class to contribute to the concept of the "Green Passport." Class could, for example, have a role in identifying and approving materials and equipment that are deemed "recycle friendly." Also, given its role in plan approval, another area that class may be able to contribute to is at the design stage, ensuring that ships are designed to be easier to dismantle. ■

Source: IMO website

MARPOL Annex VI and the Regulation of Gas Emissions from Ships

The air polluting substances subject to these regulations are ozone-depleting substances, NO_x, SO_x, and volatile organic compounds. Regulations covering shipboard incinerators and shore-based reception facilities are also included.

The typical ozone-depleting substances are halon and chlorofluorocarbons (CFCs), which have mainly been used as fire extinguishing materials and cooling mediums for refrigeration. Their production and consumption was regulated according to the Montreal Protocol on Substances that Deplete Ozone Layer, adopted in 1987 (based on the Vienna Convention for the Protection of the Ozone layer). Production was completely abolished at the end of 1995. Hydro-chlorofluorocarbons (HCFCs) were regulated to abolish their production gradually by 2020. Annex VI of MARPOL regulations on Ozone Depleting Substances is in line with this Protocol. Owing to these new regulations, new alternative coolants made from hydrofluorocarbons (HFCs), including R404A, R407C and R410A, have been developed and put into practical use. However, it has since been determined that these new coolants may contribute to global warming, and they are potentially subject to regulation according to the (still-pending) Kyoto Protocol adopted in December 1997 under The United Nations Framework Convention on Climate Change.

NO_x, on the other hand, is primarily generated by combining atmospheric O₂ under high temperature and high pressure with atmospheric N₂ and firing. Approximately 30% of the total amount of NO_x released is thought to emanate from ships. However, as the regulations for NO_x emissions from automobiles become stricter



and with a further so-called Modal Shift, from automobile transportation to marine transportation, the total amount of NO_x from ships in Europe may increase to about 40% by 2010.

Since NO_x on ships is mainly discharged from diesel engines, all diesel engines exceeding 130 kw on ships constructed on and after 1 January 2000 (or which have carried out major remodeling on and after that date) will be subject to regulation by Annex VI. Although engine manufacturers have made improvements to fuel injection valves and other small technical improvements to most diesel engines, the new requirements cannot be met with these comparatively small improvements in diesel engines. If the expected harsher rules become a reality, further improvements are likely to require more sophisticated larger facilities, such as water sprays and post-processing equipment.

Evaluations of NO_x emission are normally carried out at the engine manufac-

Seven years have passed since Annex VI of MARPOL, which regulates air pollution from ships, was adopted in 1997, and it will finally come into force on the 19th of May 2005. This will be the first set of international regulations for gas emissions from ships ever implemented.

turer and Engine International Air Pollution Prevention (EIAPP) certificates are issued to diesel engines meeting the regulation values.

Since SO_x emissions causing air pollution from ships depend on the sulfur content of fuel oil, the new regulations cover the sulfur content of the fuel oil. So, as a result, ships must keep a bunker delivery note and sample of the fuel oil. Also, ships servicing specified special sea areas, such as the Baltic Sea, must use fuel oil whose sulfur content is regulated more severely (0.15% or less). Otherwise, they must be equipped with an exhaust gas cleaning system. However, since exhaust gas cleaning systems for practical use have not been developed yet, ships will probably comply by changing fuel oil for the time being.

Regarding the potential leakage of volatile organic compounds during the loading of tankers, Annex VI regulates vapor emission control systems to prevent leakage in specified ports or terminals, which must now provide vapor collection systems. Similarly, regarding regulations for incinerating waste on board, the incineration of specific substances is prohibited. Other waste disposal is regulated according to the Standard Specification for Shipboard Incinerators provided by the IMO.

Although the new requirements are described above with regard to each separate air polluting substance, all ocean-going ships over 400 gt must obtain a comprehensive IAPP (International Air Pollution Prevention) certificate by the first survey/periodical docking after the commencement of Annex VI on the 19th of May 2005. Ship owners, operators and others are encouraged to prepare as necessary to comply with the new convention as soon as possible. ■



Piraeus harbor

Piraeus Office

For many in the shipping world, Greece is the spiritual home of modern shipping, with names like Onassis revered as icons. Indeed, Greeks have figured prominently in international shipping since time immemorial, and have over the years developed a great reputation for smart investing in quality second-hand tonnage, especially Japanese vessels.

It is therefore not surprising that NK has also developed a strong long-standing relationship with the Greek shipping community. These days, many Greek shipping companies are also venturing into newbuilding projects, and their experience with NK and NK class vessels means that many are also choosing to class their newbuilds with NK.

The NK Piraeus office was established in 1975, making it one of NK's oldest overseas offices. The office is responsible for surveys in Greece, the Middle East, the Eastern Mediterranean and the Black Sea, meaning it is always busy. Last year, class surveys were up 9%, while other surveys were up 75%. Piraeus also serves as a regional office, supervising and supporting NK offices in Dubai, Kuwait, Jeddah, Alexandria, Istanbul and Constanza. Last



Piraeus is the gateway to Greece's isles

As the main port town, Piraeus played a special role in this year's Olympics, including hosting 11 of the world's largest cruise ships

year as part of its regional role, a Training Course for Company Security Officers under the ISPS Code was conducted. Not surprisingly, the Society also has a strong Greek Committee, on which the Piraeus General Manager serves as Secretary. Currently, the Society has around 500 Greek-affiliated vessels. These belong to 280 companies, totaling almost 16 million gt under class.

Although always busy, this year has been especially busy in Piraeus due to a number of big events, notably the 2004 Summer Olympics, Posidonia and EURO

2004, Europe's football (soccer) championship.

Greece unexpectedly won EURO 2004. These championships were first held in France in 1960. This was Greece's first victory in 12 attempts. On the night of the Greek team's victory, people throughout Greece celebrated like it was Independence Day. Many local Greek football clubs are owned or sponsored by shipping personalities, so the win was especially welcome in shipping circles. Testament to the relationship is that the magnificent 33,000 spectator capacity Karaiskaki Stadi-

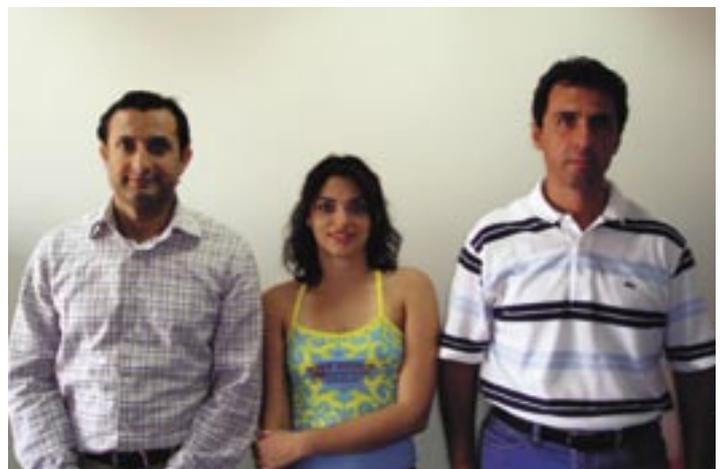
um in Piraeus played host to football competition at this year's Summer Olympics.

The biggest event to hit Greece this year was, of course, the Summer Olympics, returning to Greece for the first time since the first games in 1896. The first Olympic games, planned by Mr. Baron de Coubertin and Mr. Demetrius Vikelas, had 241 male participants from 14 countries, and they performed in 42 competitions. This year, 10,500 men and women from 202 countries participated in over 301 events. As the main port town, Piraeus played a special role in this year's Olympics, including hosting 11 of the world's largest cruise ships, which provided accommodation for various teams, officials and visitors.

While the Olympics may outgun almost everything else, the biggest event on the shipping calendar is undoubtedly Posidonia. Held every two years since 1968, Posidonia has grown to become one of the largest and most influential global maritime fairs. This year, the exhibition, held from the 7th to 11th of June, attracted a record 1,640 companies from 74 different countries and covered an area of 23,000 square meters. The exhibition was attended by a total of 17,000 shipping industry professionals, a fifth of which were international visitors. ClassNK had a very well attended stand within the Japan pavilion. ■



GM Mr. Iwamoto (front center of left photo) and the NK Piraeus staff





The Mumbai waterfront

Mumbai Office and Chennai sub-Office

Nippon Kaiji Kyokai commenced its activities in India in 1956 when Ericson & Richards was contracted to carry out surveys on behalf of NK. A wide network of surveyors in India enabled Ericson & Richards to handle ships surveys at almost all the ports of India.

As the first step in building its presence in India, NK established the Indian Technical Committee, the first meeting of which was held on the 15th of April 1968. Subsequently, the first Exclusive Office was established in Bombay in 1985, with Mr. T.S. Rajan as the first General Manager. With the growing importance of India to NK, the Indian Technical Committee became the Indian Committee, the first meeting being held on the 15th of December 1994. Mr. Mitsuo Abe, Chairman & President, represented NK and Capt J.S. Anand was the Chairman of the committee. Not long after, the NK Madras sub-office was also established, on the 1st of July 1995.

These days, the Mumbai office is in charge of all of India and Sri Lanka. The

Mumbai office operates with a total staff of nine, including three Exclusive Surveyors. They cover the entire region under NK Mumbai jurisdiction, but mostly handle all the ports on the West Coast of India. One of the Exclusive Surveyors is also an ISM Lead Auditor and Maritime Security Auditor. The Chennai sub-office handles the East Coast of India with two Exclusive surveyors, one of them being an ISM Lead Auditor and Maritime Security Auditor. The total staff at NK Chennai is four, including surveyors. Sri Lanka, which is under the NK Mumbai office, appeared to be reverting to its old unsettled political scenario. However, thankfully, the political activities do not seem to significantly affect the shipping activities and, in turn, ClassNK activity has remained relatively unaffected.

NK operations in India and Sri Lanka are also supported by nine acting surveyors located at different large ports of India, and in 2003 a total of 410 survey/audit applications were handled, including Type approvals for water ingress detectors, in water diving firms, ultrasonic thickness measurement firms, etc. India continued to distance itself from new shipbuilding activity and relied more on acquiring second-hand tonnage, although ship repair activity showed a marginal improvement, with some new entrants launching into the fray.

The Mumbai office increased its survey and audit work load arising from the buoyant economic situation in general and especially for shipping. The year 2004 started steadily for ClassNK in India, just

like many other ports in this region. Inflation remained at less than 5%, and the Indian Rupee was showing a steady strengthening trend. Overall, the Indian scenario was a busy one, with shipping activities in India that included exports of iron ore to China, grains to Africa and the import of petroleum products. Exports of Indian-made cars are also now highly visible, and generally the economy prospered. Survey activities were regular, but requests gradually increased at a brisk pace.

March this year saw the beginning of Maritime Security Audits under the ISPS code, which reached frenzied proportions in June. By the end of July, the number of audits and surveys carried out was 23%

Many corporate entities vie to establish working relationships with IITM and Mr. Ueda's visit certainly resulted in mutually beneficial arrangements

more than those carried out by the same date in 2003.

May saw the election of a new Indian Government, and significant policy direction changes are in the wind. The energy sector is struggling. However, it is believed that the fundamentals of the country are sufficiently strong to handle any pressures from local or global energy problems. The country has several alternative energy source options. However, they are more frequently discussed than actually implemented.

In December 2003, Managing Director Mr. Ueda represented HO at the 10th Indian Committee Meeting. However, before coming to Mumbai, he made a ground-breaking decision, when, along with Mr. T. Kinoshita (of the Business Department) and Dr. A. Rahim (previously of NK Singa-



NK Chennai staff

pore and now NK London) he visited the Indian Institute of Technology Madras (IITM), one of the premier institutes in India for technical studies. Many corporate entities vie to establish working relationships with IITM and Mr. Ueda's visit certainly resulted in mutually beneficial arrangements. This new relationship with IITM will benefit both ClassNK and the Institute. Thus in addition to being a good business year, NK Mumbai closed 2003 on

a high note with the newly formed relationship with IITM.

NK India is fortunate to be in a sound business position and, indeed, there are plans to increase the number of exclusive surveyors, by one each at Mumbai and Chennai. NK looks forward to continuing to maintain and build NK's strong standing in the region. ■



Mr. A.V. Pradhan (inset), GM of Mumbai office, and staff

Topics and Events

New Board

In March 2004, the Society announced changes to its Board of Directors.

Managing Directors Dr. M. Oka and Mr. T. Takano both retired, resulting in two new appointments. Mr. T. Kaji and Mr. K. Yamanaka joined the Board. Dr. Oka and Mr. Takano will remain with the Society in the role of Senior Adviser.

Clockwise from front center:

- Chairman and President K. Ogawa
- Executive Vice President Y. Tsudo
- Managing Director T. Akahori
- Managing Director K. Yamanaka
- Managing Director T. Kaji
- Managing Director N. Ueda
- Executive Vice President M. Murakami



ISPS Code Activities

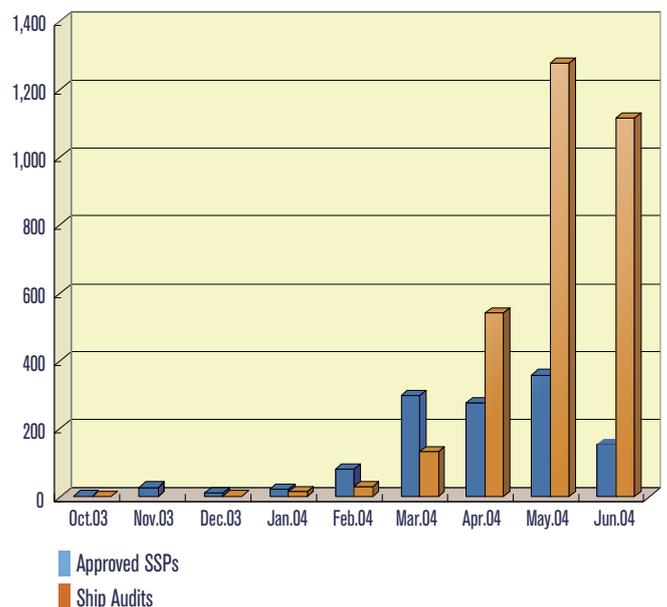
The International Ship and Port Facility Security (ISPS) Code came into effect from the 1st of July 2004.

NK has been actively involved in the preparations for and assessment of vessels for clients. NK activities have included:

- In July 2003, Rules for the Audit and Registration of Ship Security Management Systems were established. Approval of the Ship Security Plan was started in August, and Approval of the Shipboard Security Plan started in September.
- In order to provide detailed and up-to-date information and advice for clients, an ISPS Code website was launched and can be accessed via the NK website top page (<http://www.classnk.or.jp>).
- Training Courses for Company Security Officers (CSO) were run for applicants, both in Japan and outside, from May 2003. So far, the number of attendees has been about 1,000.
- Internal Training for Maritime Security Auditors (MSA) was carried out for qualified ISM Auditors from May 2003, and now NK has 234 Maritime Security Auditors around the world.
- As of the end of June 2004, the total number of approved Ship Security Plans was 1,234 and the number of International Ship Security Certificates, including statements of compliance, issued was 3,119.

As of the 1st of July 2004, NK had obtained approval from 39 flag states as a Recognized Security Organization (RSO) after they had evaluated our training organization, quality control and security expertise. NK has stationed the 234 Ship Security Officers around the world in order to respond to inquiries from customers.

Number of approved SSPs & Shipboard Audits (Monthly)



Occupational Health and Safety Management Systems

The importance of ensuring occupational health and safety in a company is widely recognized as a key corporate social responsibility. As a result, many companies are establishing Occupational Health and Safety (OH&S) Management systems and are turning their attention to the attainment of certification from Assessment and Registration Bodies in order to reduce OH&S risks and to continually improve their OH&S performance.

The NK Quality and Environment System Department established rules for assessment and registration of Occupational Health and Safety Management systems based on the Occupational Health and Safety Management systems specification "OHSAS18001." "OHSAS18001" was developed on the basis of the British Standard BS8800 in collaboration with the British Standards Institution and other Assessment and Registration

Organizations. "OHSAS18001" came into effect in April 1999 for the assessment and certification of OH&S management systems.

NK completed its education and training of auditors in August 2004 and commenced assessment and registration from September 2004. Taking advantage of its abundant experience in assessment and registration of ISO9001 (Quality Management Systems) and ISO14001 (Environmental Management Systems) standards, NK now offers high-quality assessment and registration services for "OHSAS18001."

As of January 2004, over 200 companies have already undergone assessment and registration based on "OHSAS18001" in Japan, and this number is expected to continue to increase.

Exhibitions

The Society exhibited at several major international maritime fairs this year.



LNG 14 from the 21st to 24th of March, held in Doha, Qatar



SEA JAPAN 2004 from the 14th to 16th of April, held in Tokyo, Japan



POSIDONIA 2004 from the 7th to 11th of June, held in Piraeus, Greece

First Meetings of the Singapore and Turkish Committees

As part of its ongoing strategy of building relationships with key industry players in key markets, NK recently established two new national committees in Singapore and Turkey. The Singapore Committee evolved from the previous South East Asia Committee, and the Turkish Committee was newly established.

The First Meeting of the Singapore Committee was held on the 8th of July 2004. The Executive Vice President, Mr. M. Murakami, delivered an opening speech expressing his sincere thanks to all committee members attending the first meeting of the Singapore Committee. He highlighted the importance of exchanging views with our customers due to the expansion of our role in the rapid globalization of the maritime industry. The meeting went on to the adoption of draft regulations of the Committee and election

of the Chairman, Mr. David T.E. Lim, Group President and CEO, Neptune Orient Lines Ltd., as first Chairman of the Committee.

The first meeting of the Turkish Committee was held on the 10th of February 2004. Executive Vice President Mr. M. Murakami delivered an opening speech and chaired the meeting as the temporary chairman until the formal election of a chairman according to the procedures of the first meeting. Mr. Yalcin Sabanci, President of YASA HOLDING S.A, was elected as the first Chairman of the Turkish Committee of the Society, and he subsequently chaired the meeting.

The meeting was a great success, with fruitful discussion and a most interesting exchange of views.



The first Singapore Committee meeting



The first Turkish Committee meeting

Opening of The Ho Chi Minh Office

ClassNK is proud to announce the opening of the Ho Chi Minh Office as a second survey site in Vietnam. Opened on the 20th of August this year, the new Office complements the survey and other activities that have been carried out by the Haiphong Office in Vietnam for nearly a decade in the region and further enhances the global ClassNK service network.

An opening ceremony was held on the 9th of August at the New World Hotel in Ho Chi Minh City, which was well attended by many guests and well-wishers, including the Vietnam Register of Shipping, shipowners, shipbuilders and other notable people from the region. The General Director of the Vietnam Register of Shipping, Mr. Nguyen Van Ban, made a congratulatory speech as a representative of the guests present, while the Regional Manager of the ClassNK Singapore Office, Mr. Masaru Sakamoto, greeted guests on behalf of the Society. ■



Mr. Masaru Sakamoto greeting guests at the opening ceremony

ClassNK

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Printed in Japan
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