ANNUAL REVIEW

2003

FOUNDED 1862 ABS

FOUNDED 1862

MISSION

The mission of the American Bureau of Shipping is to serve the public interest as well as the needs of our clients by promoting the security of life, property and the natural environment primarily through the development and verification of standards for the design, construction and operational maintenance of marine-related facilities.

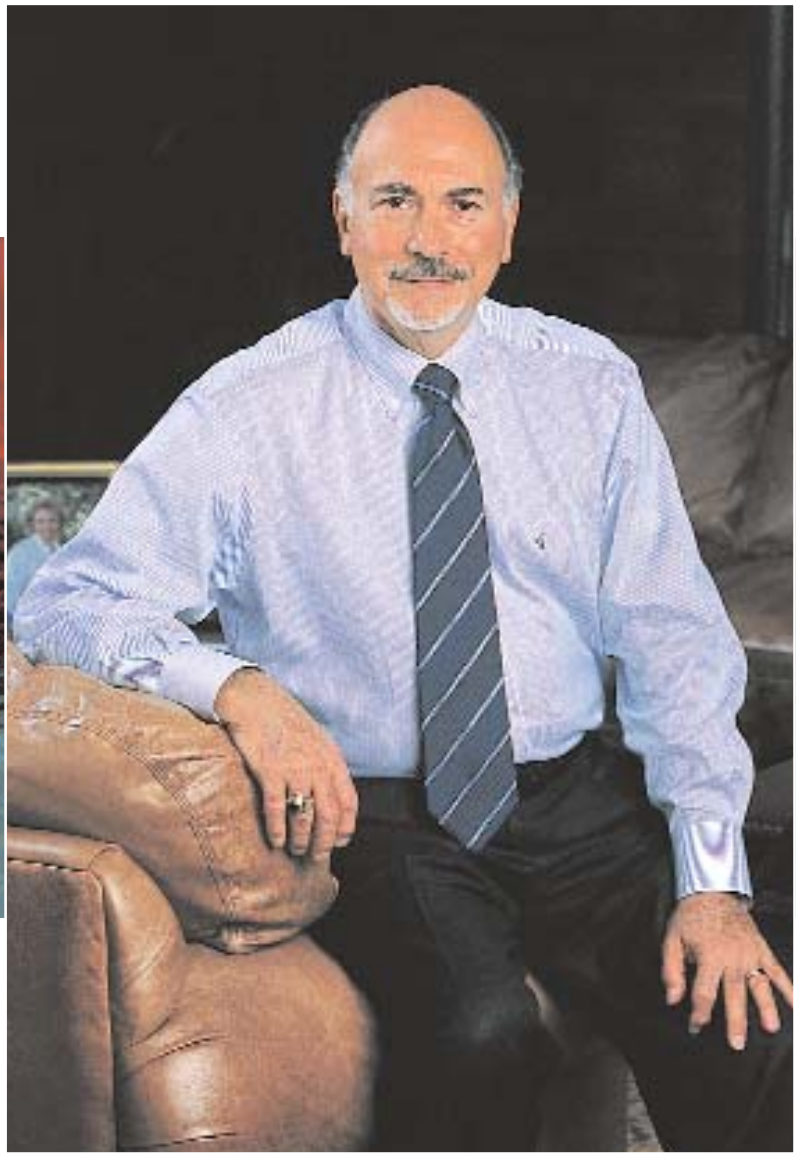
QUALITY & ENVIRONMENTAL POLICY

It is the policy of the American Bureau of Shipping to be responsive to the individual and collective needs of our clients as well as those of the public at large, to provide quality services in support of our mission, and to provide our services consistent with international standards developed to avoid, reduce or control pollution to the environment.

All of our client commitments, supporting actions, and services delivered must be recognized as expressions of Quality. We pledge to monitor our performance as an ongoing activity and to strive for continuous improvement.

We commit to operate consistent with applicable environmental legislation and regulations and to provide a framework for establishing and reviewing environmental objectives and targets.

TABLE OF CONTENTS



FRANK J. IAROSSI

Chairman

POSITIONED FOR THE FUTURE

Today ABS' classed fleet stands at record levels, its financial stability has never been stronger and its technology base is second to none. ABS' reputation for integrity, quality, knowledge and professionalism is accepted worldwide.

This success can be attributed to the dedication and commitment of the more than 1,700 ABS employees and their continuing willingness to embrace the difficult process of change within their organization. The pride of these employees in their technical leadership, in the quality of their survey and support services and in their unwavering commitment to their mission of protecting life, property and the natural environment, is well deserved.

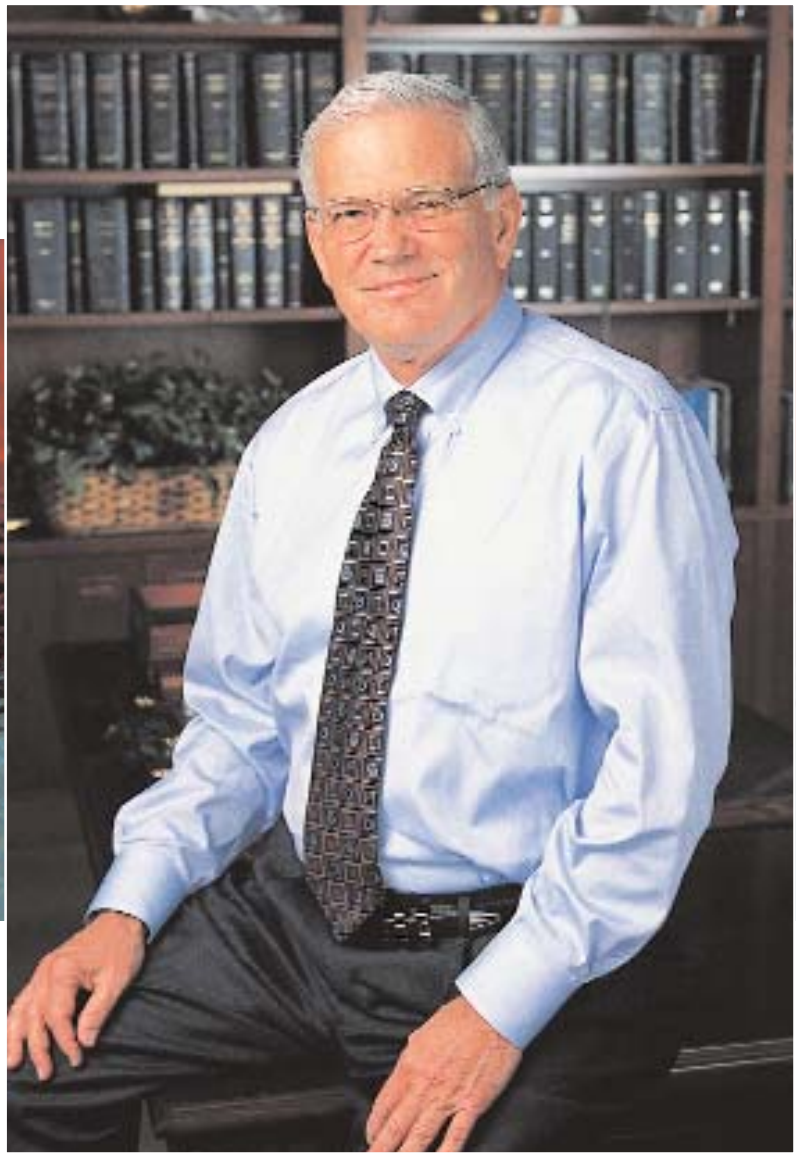
At various times in its history, ABS has been forced to sail through troubled waters. As I look ahead, I wish I could say that the voyage will become easier. But the issues facing ABS and the class profession today are just as challenging as those it has faced in the past.

ABS has improved its standards and its service delivery. The class profession has improved its performance and expanded its responsibilities. And the maritime industry's record for safety and environmental care continues to show sustained improvement. Yet the expectations of the public, and of their governments, have also risen, almost to a level of zero tolerance.

We cannot change this fact. It is more fitting for the management and employees of ABS to step forward and provide to the industry and to our clients that same strength of leadership, dedication and commitment that has served ABS so well in the past.

If ABS and class are to continue to provide a relevant, trusted method of self-regulation within the maritime industry, we cannot rely on others to carry the standard. It is incumbent on this organization to help frame the definition and operating environment of the independent profession of classification in the future.

As I prepare to end my 14-year tenure as the Chairman of ABS, I am confident that I leave this great organization well prepared to meet these future challenges. I am certain that the mantle is being passed to a new leader and management team who will guide ABS to future sustained success. I am proud to have been a part of ABS and extend my thanks to the many friends, Members and clients who have provided me with invaluable advice, guidance and support throughout my term.



ROBERT D. SOMERVILLE

President and Chief Executive Officer

A REMARKABLE PERFORMANCE

Success is all the more satisfying when it is hard earned. Future histories of ABS will show 2003 to have been a solid, successful year. Yet those same historical records will provide an account of difficulties that challenged everyone within ABS to display greater courage and renewed dedication for that hard fought success to be achieved.

Prominent in those future accounts will be the *Prestige*, the ABS-classed tanker that sank off Spain in heavy weather in late 2002. The reverberations were felt throughout this past year. It has been heartening to receive unreserved support within the industry as we respond to the baseless allegations that have been leveled against us. The legal battle will be long but we remain convinced that the outcome will fully exonerate ABS.

That said, the *Prestige* incident fueled a regulatory environment that encouraged the adoption of an accelerated phase-out of single hull tankers, posing both challenges and rewards for shipyards, shipowners and class alike. And it provided fertile soil within the IMO in which the seed of goal-based classification society standards could be planted, a proposal that will clarify, and change, the future role of class within the self-regulating mechanism that is essential to the conduct of international shipping.

ABS has overcome these and many other issues over the past year. In doing so we have maintained our fleet at a record level, lowered the average age of that fleet to the point where half of all ABS-classed tonnage is less than 10 years old, and introduced a range of new administrative and operating efficiencies that helped maintain robust financial health. These efforts speak directly to the commitment and remarkable efforts of our worldwide staff.

ABS operates in a more demanding environment than ever before. Regulators have zero tolerance for maritime casualties, particularly those that result in pollution. Class must provide the necessary services that assist owners as they strive to meet that goal.

At the same time, we must meet the constantly escalating demands of the owners themselves for more information, common robust standards and new services, such as security audits. And we must respond more quickly and more efficiently without compromising our inviolate commitment to safety.

As they have done, so many times in the past, the people of ABS responded to these demands in 2003. But our mission is not yet accomplished. We exist to set standards of excellence in marine and offshore classification. We cannot and will not waver from this goal.


ABS

MARINE ACTIVITY

ABS is a people driven, service organization. Without the extraordinary dedication and professionalism of the surveyors, engineers and administrative support staff at all levels within the Bureau, ABS would not, and could not, be the strong, expanding, successful classification organization that it is today.

As of 31 December 2003, the ABS-classed fleet stood at an all time, record high of 110.6 million gross tons. This was the eleventh year of uninterrupted fleet growth. The ABS orderbook increased by 70 vessels and more than 1.5 million gross tons over the already high levels of the previous year, to stand at 16.8 million gross tons. Strong deliveries meant that, for the first time in its recent history, 50 percent of the ABS fleet was less than 10 years of age as 2003 came to a close.

A fevered newbuilding market, buoyant charter rates and a scrap market that saw prices rise to unprecedented levels, all impacted the society's activities during the year. Throughout 2003 an average of more than one new vessel, every day of the year, was accepted into ABS class, representing an inflow of almost 9 million gross tons. At the same time, there was a steady outflow of 1970s built tonnage, particularly very large tankers, to the scrap yard continuing the transformation in the age profile of the ABS fleet.

Since ABS largely resisted the industry wide trend towards shorter life, lighter scantling vessels with a significant proportion of high tensile steel that were favored by builders and owners in the 1990s, its share of these vessels is disproportionately smaller than its overall market share.

2003 is a year in which ABS can reflect on its tough choice during the 1980s to insist on heavier scantlings. Although the ABS market share suffered at the time, the positive result is that the Bureau has relatively low exposure to these vessels as they enter the final, critical period of their service life and will have proportionately fewer single hull tankers subject to the accelerated phase-out requirements. As a consequence, ABS can expect that its fleet will become the youngest of all class societies within a relatively short period of time.

The ABS share of the newbuilding market continued at a very healthy level of around 20 percent, although a surge of deliveries did result in a slight softening towards year end that was quickly reversed. This contrasts with the ABS share of the existing fleet which

has hovered in the 16-17 percent range as a result of that market weakness in the 1980s.

During 2003, vessels were on order or under construction to ABS class at shipyards in 40 countries. The Bureau retained its position as the preferred non-national class society for orders placed with Japanese shipbuilders, outpacing the nearest competition by five percentage points.

A 25 percent share of all tonnage on order at the rapidly growing Chinese shipyards was to ABS class as 2003 drew to a close, representing a substantial lead over other classification societies. During the year, ABS-classed vessels were delivered by Dalian Shipyard, Guangzhou, Hudong-Zhonghua, New Century, Xingang, Zhenjiang, Jingjiang, Xinhe, Shanghai Waigaoqiao and other Chinese yards.

Throughout the year ABS continued to build its organization within China to meet this constantly expanding demand. By the end of the year ABS maintained a team of more than 100 surveyors and engineers, with principal offices in Shanghai and Hong Kong and a presence in many of the larger shipyards around the coast.

The one area in which ABS was unable to match its traditional performance was at the Korean shipyards. An analysis of the market clearly indicates the reason for the decline – the remarkable growth in orders, principally mega-containership orders, as a result of the successful German KG system that is driven by the German government's tax policies.

In past years ABS would have expected to have maintained its strong share of containership classification. However, many of our traditional containership owners have chosen to use the KG system whereby ownership is vested in a German fund and they become charterers rather than owners.

This trend shows no sign of lessening and it may take some time for owners, charterers and class societies to adjust to the widening use of this scheme by non-German owners.

As a consequence, the share of containerships on order declined to its lowest level since these specialized vessels were first ordered. However, with the delivery of several containerships during the year, including the then largest containership recognized as entering service, ABS maintained its 18 percent share of the delivered fleet.

By every statistical measure, the ABS fleet continues to be dominated by tankers. At the end of the year, tankers accounted for 43 percent of all tonnage entered into ABS class. And tankers continued to dominate the ABS orderbook, accounting for over 10 million of the 16.8 million gross tons on order.

This figure outstripped the competition, giving ABS an overall 29 percent share of all tankers on order, including a 32 percent share of the VLCCs on order, a 43 percent share of suezmaxes and a 24 percent share of the product tankers for which contracts had been let.

The orderbook also included a total 42 chemical tankers on order to ABS class marking a continuing resurgence in a market sector that had weakened in the mid-1990s.

During 2003, significant progress was made in the development of the new common Rules for tankers

JAMES B. LIEBERTZ

Vice President & President, ABS Pacific

Activity in Asian shipyards remained at unprecedented levels throughout 2003. ABS continued to increase its engineering and survey presence in China to meet the rapidly expanding new construction backlog at Chinese shipyards. And we continued to handle an extraordinary volume and range of projects at the more traditional yards in Japan and South Korea that were turning out new ships at a remarkable pace. Tankers, bulk carriers, containerships, semi-submersibles, FPSO conversions and a new generation of LNG carriers all featured strongly on our project list, to which new contracts are being added on a daily basis.

SHIPOWNERS maintained a torrid pace of ordering for new vessels in 2003, keeping the team of ABS new construction surveyors busy at shipyards in 40 countries around the globe. More than 9 million gross tons of new vessels were delivered to ABS class during the year, with their slots on the slipways and in the building docks being immediately filled with further orders.

ABS maintains large teams of surveyors in the three principal shipbuilding nations, Korea, Japan and China. A particular emphasis has been on the expanding Chinese shipbuilding industry where the extensive, professional experience of the ABS staff is valued by shipyards and owners alike, giving ABS the largest share of the tonnage on order.

With contracts for tankers comprising the largest segment of the ABS newbuilding orderbook, ABS surveyors were monitoring construction projects for these vessels in 32 shipyards in 10 countries including Croatia, Turkey, Italy, the US and Romania in addition to the big Asian yards.

The agreement within IMO in 2003 to accelerate the phaseout of existing single hull tankers by 2010 added to the demand for these vessels, with shipyard berths being booked as far ahead as 2009. ABS focused on the development of the ABS SafeHull Express design system for tankers during the year to help shipyards handle their burgeoning orderbooks.


NEW CONSTRUCTION

that are expected to be adopted by all IACS members in 2005. This issue will be further addressed elsewhere within this Review.

Owners' demands of recent years for more robust bulk carriers saw significantly improved activity in this sector for ABS during 2003. The number of bulk carriers on order to ABS class jumped by more than 75 percent over the previous year to 79 vessels aggregating 3.2 m gross tons at year end. Owners of larger bulk carriers, particularly, turned to ABS and the ABS SafeHull system to evaluate their new designs. As a consequence, 25 percent of all capesizes on order as of year-end were to ABS criteria. An 18 percent share of the total year-end bulk carrier orderbook far outstripped the Bureau's share of the existing bulk carrier fleet, providing further evidence of a growing strength in this important sector.

Gas carriers represent one market segment that may be small in comparison to tankers and bulk carriers but is of great importance to ABS and deserves special mention. It was an area of notable success for ABS in 2003 as it re-established its traditional leadership role in evaluating these sophisticated vessels using the most advanced technology yet developed.

The technical staff at ABS developed ABS SafeHull for LNG carriers, creating the ability to review designs for a 40-year North Atlantic fatigue life. And they developed extremely sophisticated sloshing software that allows ABS to review membrane design LNGs for partial loading. These are the two key technical criteria demanded by owners investing in these ships.

This technical leadership paid off with class contracts for 9 LNG carriers being awarded to ABS in 2003 including the first carriers to be contracted from Chinese shipbuilders, and a series of ships for British Gas among others. This expertise also saw the first LPG FPSO begin to take shape in a Japanese yard to ABS class requirements.

The ships for the Guangdong LNG project, ordered from Hudong Shipyard, represent a milestone in the technical evolution of Chinese shipbuilding. They will be classed by ABS and the China Classification Society (CCS) through a Memorandum of Agreement between the two societies.

With Greek owners very active in the newbuilding market, ABS enjoyed a 27 percent share of all orders placed by them providing services to Kristen Navigation, Centrofin Management, Stelmar Shipping, CM Lemos, Athenian Sea Carriers, Minerva and Diamantis Lemos among many others.

But owners selecting ABS class were located in all the principal shipping centers around the world. Vessels were delivered to, or contracts taken from such prominent owners as OOCL, AP Moller, MOL, MISC, Hatsu Marine, Formosa Plastics, Premuda, National Shipping Co. of Saudi Arabia, AMPTC, Sovcomflot, Bocimar, CP Ships, Oak Maritime, Stena, Euroceania, Ravennavi, Anangel and Yang Ming.

Owners domiciled in Turkey, Russia, Scandinavia, Italy, Singapore, Indonesia, Malaysia, Taiwan, Japan, China, Qatar, the UK, the US and from many other nations all called on ABS for classification services during the year, helping to propel the fleet to an unprecedented size.

As the year came to a close, the strong orderbook and healthy market share hold the promise of continuing growth and financial stability.

ANTONIO C. LINO COSTA

Vice President & President, ABS Europe

European owners fueled the global newbuilding orderbook in 2003 with Greek and Italian owners at the forefront. ABS remained a favored class society in both of these markets, across Europe and the Middle East, as owners requested the more robust designs that meet the ABS SafeHull criteria. With engineering offices in Piraeus, Genoa, Hamburg and London, we have been able to offer responsive, personal service to owners embarking on newbuilding programs, helping them to analyze new designs and speeding the plan review process.

OFFSHORE & ENERGY ACTIVITY

Offshore operators continued to look to ABS for technical guidance in 2003 as they faced the challenges of searching for and producing energy resources in record breaking water depths. By continuing to provide new standards for these innovative concepts, ABS maintained its dominant market share in classing and certifying the world's offshore fleet.

At year-end, ABS consolidated its energy-related services by creating the Energy Project Development team to better provide an expanded scope of services to the international offshore and energy sector, particularly in the area of gas handling technology.

The year began with ABS signing a Memorandum of Agreement (MOA) with the Minerals Management Service (MMS), part of the US Department of the Interior. This established a formal framework for scientific and technical collaboration between the two organizations with respect to offshore oil and gas operations. The agreement represented formal recognition by MMS of the technical knowledge of ABS in design review and survey of offshore facilities verifying compliance with applicable regulatory requirements. Under the MOA, ABS and MMS jointly support the development of appropriate technical standards as well as associated research targeted toward improving the safety, pollution prevention and operational efficiency of offshore oil and gas facilities.

Another milestone was reached when Gosgortechnadzor (GGTN), the State Mining Safety Committee of the Azerbaijan Republic, announced technical collaboration between ABS and GGTN with respect to offshore oil and gas operations in the Azerbaijan sector of the Caspian Sea. A Memorandum of Understanding (MOU) was signed recognizing ABS classification and certification services for this region. The agreement includes plan review and survey work by ABS. It also establishes a streamlined process of alternative compliance with internationally recognized standards as permitted under the Azeri Technical Safety Law.

The MOU was signed shortly after a successful pilot program by ABS and GGTN on a major offshore project in Azerbaijan. The technologically advanced semisubmersible rig, DSS-20-CAS-M, built for service in the Caspian Sea to ABS class requirements, has served as the catalyst for further ABS work in the region.

From the conceptual design stage through final fabrication and operation, ABS has earned a reputation for promoting safety through innovative solutions for the most technically

challenging offshore projects. In 2003 continued frontier development drove industry's need to refurbish and significantly modify many of the world's fleet of active, yet in many instances aging jackup units. Some of these projects were aimed at improved efficiency and extending operational life, while others prepared the units for new service applications including deeper drilling projects or service in harsh environments.

Responding to the technical challenges posed by these modifications, and the need for new designs, ABS released a detailed technical commentary to its *Rules for Building and Classing Mobile Offshore Drilling Units* (MODUs). The commentary provided industry with more specific guidance on how to apply ABS Rules to these new projects. At year's end, ABS provided classification and certification services for 75 percent of the world fleet of MODUs, including jackups, drillships, drill barges and drilling semisubmersibles.

Drilling unit owners and builders were offered a more streamlined approach to ABS classification with a 2003 update to the ABS *Guide for Certification of Drilling Systems*. Importantly, the new Guide provides industry with an option for a "safety case" or risk-based analysis approach to certification, to supplement the traditional prescriptive rules reflected in the earlier version of the Guide.

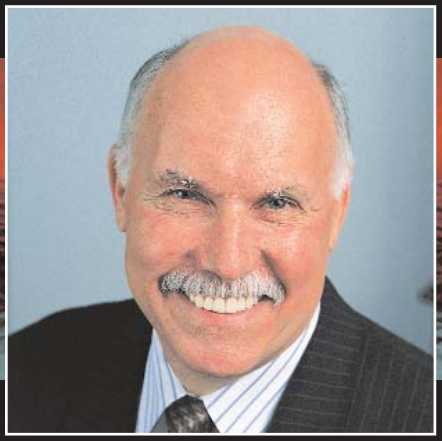
The semisubmersible *Development Driller I*, under construction in the Jurong Shipyard in Singapore, is one of four GlobalSantaFe newbuild rigs that provided a practical test

application for the new Guide which now provides a model for industry-wide usage. The rig is designed to work in water depths up to 7,500 feet with a drilling depth of 37,500 feet.

For deep drilling in shallower waters, Rowan Companies' *Bob Palmer* jackup rig was classed as an ✠A1 Self-Elevating Drilling Unit. The *Bob Palmer* is an enhanced version of the Rowan Super Gorilla-class, designated as a Super Gorilla XL designed to drill in water depths up to 550 feet in tropical storm locations and harsh environments such as the North Sea and Eastern Canada.

Capitalizing on its previous work and experience with spars, ABS was involved in the classification of a third-generation spar, the *Red Hawk*, in 2003 for leading exploration and production independent Kerr-McGee. The cell concept of spar design reduces the complexity of steel fabrication. This increases operator flexibility when selecting where the hull can be built and lowers fabrication costs.

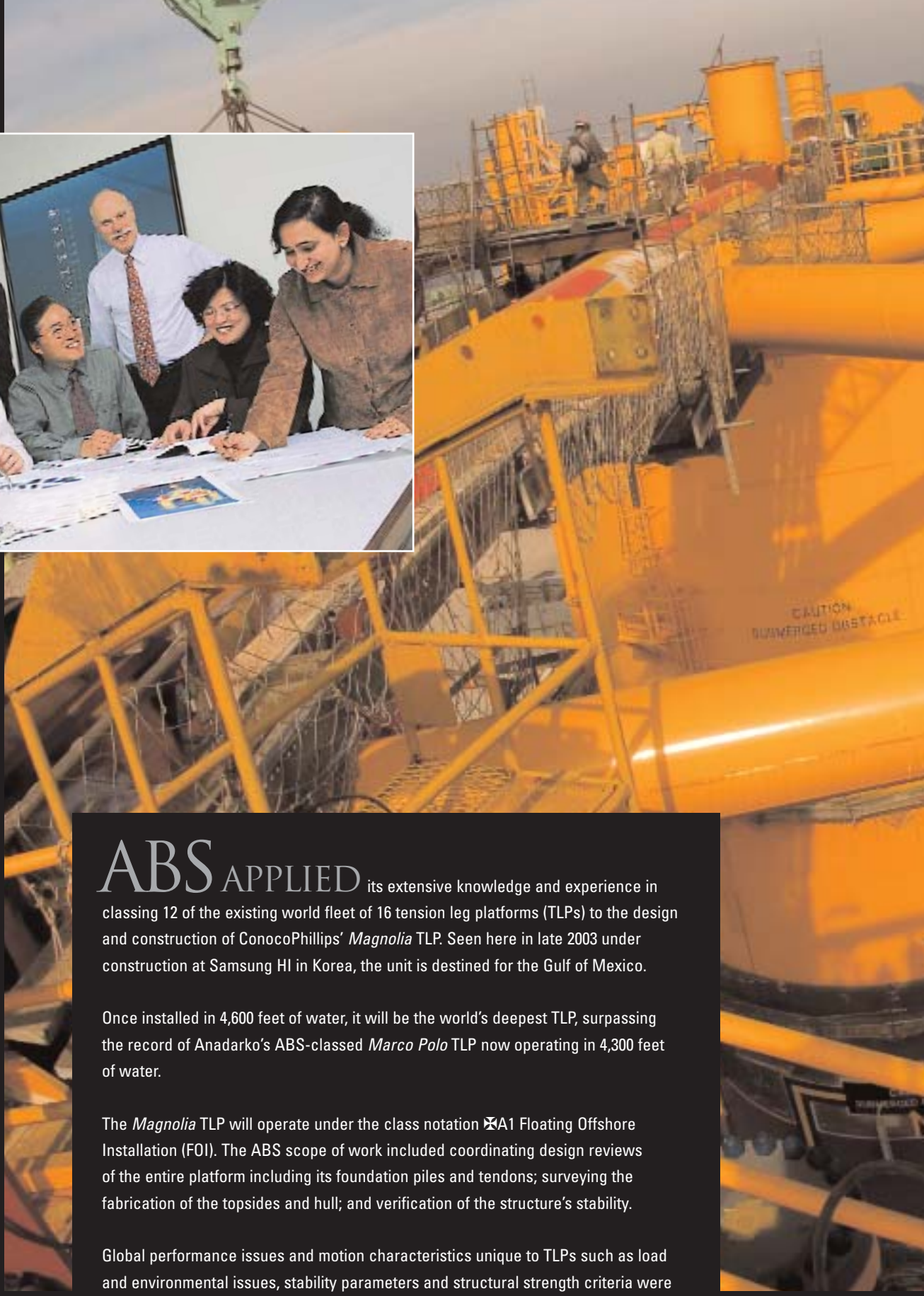
The cell spar's hull features six outer cylinders or cells surrounding an inner cell, all connected by framing decks at regular intervals, rather than a single large caisson unit. Polyester mooring can be used to take advantage of the system buoyancy which is greater than traditional chain-wire. The system was developed in conformance with the ABS *Guidance Notes on the Application of Synthetic Ropes for Offshore Mooring*, issued in 1999. The unit is one of the first Gulf of Mexico installations to utilize synthetic mooring technology.



WILLIAM J. SEMBER

Vice President

Offshore exploration and production moved into deeper waters in 2003, using more and more sophisticated equipment. And growing demand for gas saw industry developing concepts for innovative offshore terminals to handle a new generation of very large LNG carriers. These, and other energy related projects, spurred an enormous amount of innovative technical research within ABS over the last year. We have developed new risk-based guidelines so that we can work with the designers who are testing these new frontiers to properly assess novel designs and other proposals that stretch the limits of existing experience.



ABS APPLIED its extensive knowledge and experience in classing 12 of the existing world fleet of 16 tension leg platforms (TLPs) to the design and construction of ConocoPhillips' *Magnolia* TLP. Seen here in late 2003 under construction at Samsung HI in Korea, the unit is destined for the Gulf of Mexico.

Once installed in 4,600 feet of water, it will be the world's deepest TLP, surpassing the record of Anadarko's ABS-classed *Marco Polo* TLP now operating in 4,300 feet of water.

The *Magnolia* TLP will operate under the class notation ✠A1 Floating Offshore Installation (FOI). The ABS scope of work included coordinating design reviews of the entire platform including its foundation piles and tendons; surveying the fabrication of the topsides and hull; and verification of the structure's stability.

Global performance issues and motion characteristics unique to TLPs such as load and environmental issues, stability parameters and structural strength criteria were addressed in 2003 by ABS in the form of a supplement to the ABS *Guide for Building and Classing Floating Production Installations*.

This additional technical guidance assists operators like ConocoPhillips and Anadarko to apply the latest technological advances that can assist in improving the safety and operation of these specialized deepwater floating production units.


OFFSHORE

The project marked ABS' fifth classification contract from Kerr-McGee for a spar offshore facility. ABS is still the only society to have classed spar design installations. For TotalFinaElf E&P USA, Inc. ABS classed its mono-column tension leg platform (TLP) in the Gulf of Mexico. The *Matterhorn* is an ABS-classed ✠A1 Floating Offshore Installation. It is the fourth Atlantia Offshore Ltd. SeaStar TLP but the first of the Atlantia TLPs designed for dry-tree completions.

In Southeast Asia, ABS supported Unocal's West Seno field development, located in deep waters off East Kalimantan, Borneo, with comprehensive classification services. ABS reviewed the structural and mechanical fitness of the Unocal facility, marking the first TLP for Southeast Asia installation. ABS also classed a floating production unit (FPU) for the project. Both facilities are located in approximately 3,200 feet of water.

With the continuing expansion of exploration and production offshore Australia, ABS has increased its presence in the region. With the installation of the *Four Lakes* FPSO, installed on the Woollybutt field this year, there were a total of four FPSOs and one MOPU to ABS class offshore Australia at end-2003. Vanguard SPC's *Four Lakes* 94,000 dwt FPSO conversion received full classification services from ABS, including topsides and mooring systems review. Additionally, ABS carried out statutory certifications, including Load Line, IOPP, Tonnage and MODU Safety Certification on behalf of the Cayman Island flag Administration.

ABS also conducted validation on behalf of the owner to satisfy Australia's Department of Mineral and Petroleum Resources requirements. Validation is the Australian counterpart to the verification for offshore projects as required, for example, by the UK HSE in the North Sea. It includes structural and topside design reviews, and surveys during fabrication and installation. Validation services were also provided for five Apache wellhead platforms for the Simpson, Victoria, Double Island and Gibson South offshore fields.

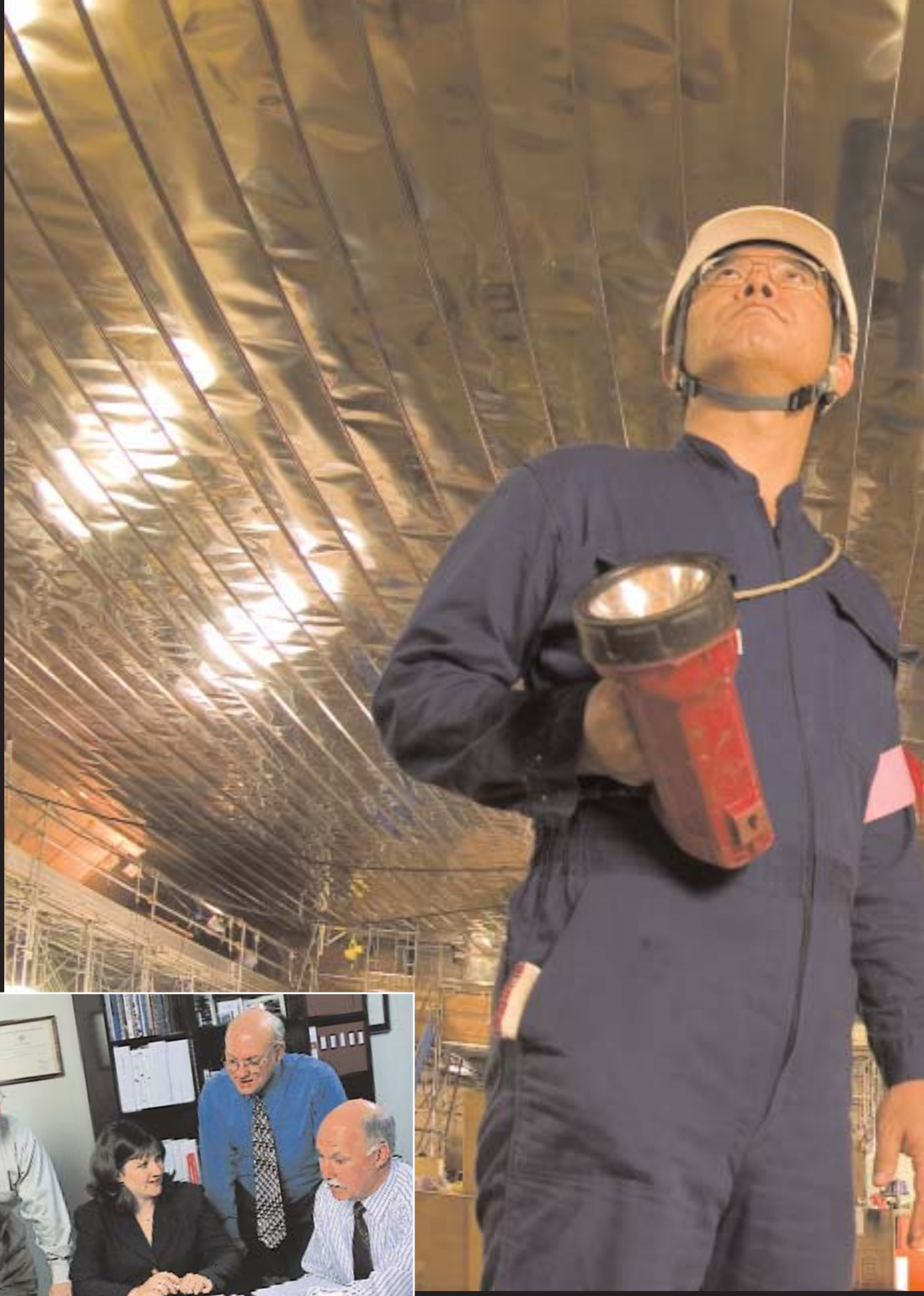
Deepwater developments offshore West Africa proved a significant area of activity for ABS in 2003. The Bureau was involved in a number of discussions with operators looking at large, complex field development projects including the incorporation of liquefied petroleum gas (LPG) and liquefied natural gas (LNG) production and storage facilities in addition to traditional FPSOs and oil related projects.

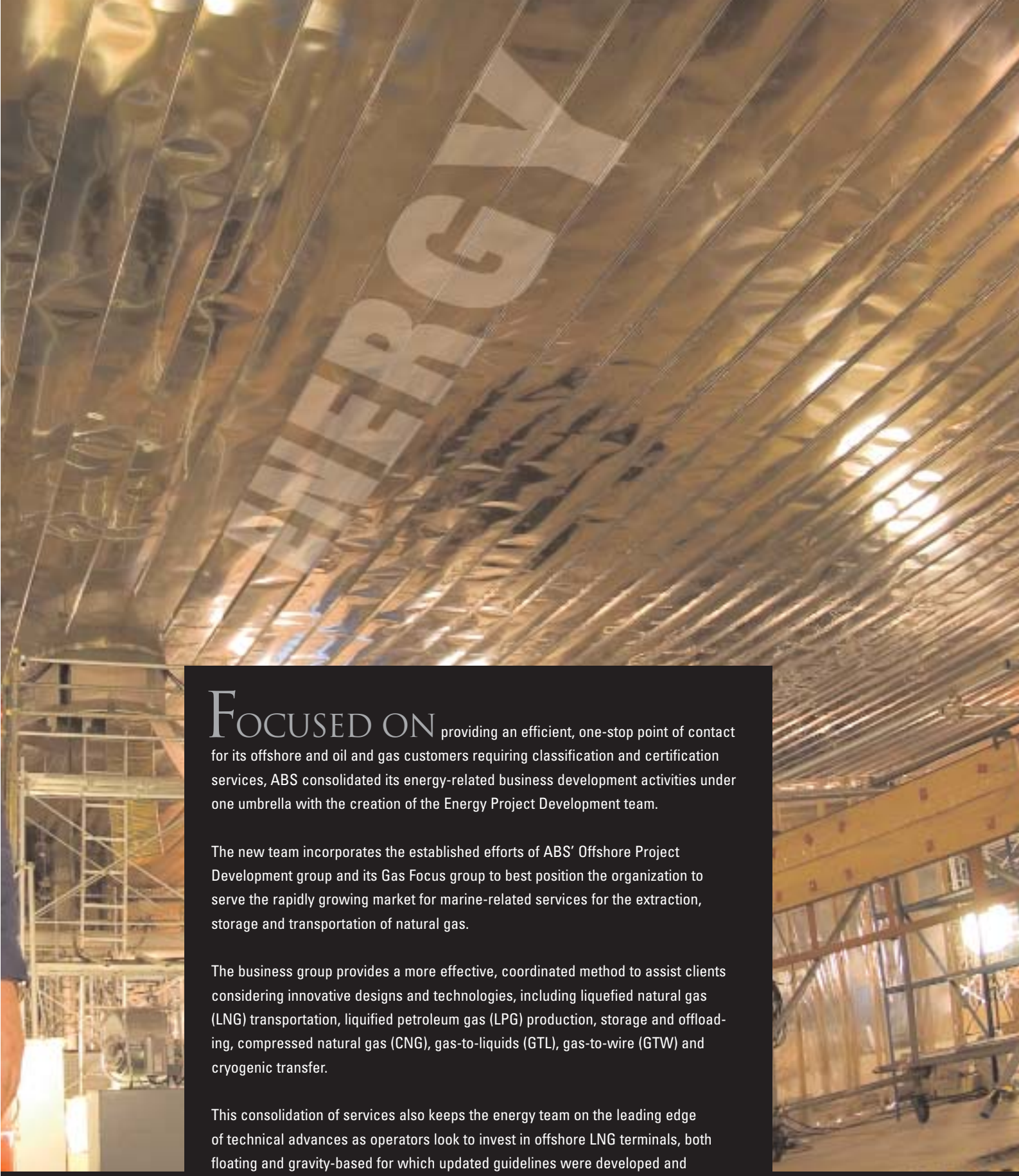
Rapid advancements in gas handling and transportation methods are creating opportunities for larger LNG terminals, many located offshore, significant size increases in LNG carriers, groundbreaking LPG FPSO vessels and the development of novel compressed natural gas (CNG) and gas-to-liquids (GTL) concepts with which ABS is deeply involved.

In 2003, ABS issued or conducted detailed development work on new standards and guidelines for building and classing these new gas transport and storage facilities. Developments in 2003 included the application of ABS SafeHull to membrane-type LNG carriers and the development of the most advanced sloshing analysis programs available to realistically evaluate the ability of a design to handle partial loads.

With the growing interest in offshore terminals, ABS issued the industry's first standards, contained in the ABS *Guide for Building and Classing Offshore LNG Terminals*. Criteria were developed for both floating and gravity-based units.

In 2003, a major milestone was reached when ABS granted "approval in principle" for EnerSea's CNG design called VOTRANS (Volume Optimized Transport & Storage). By the end of the year, other operators such as TransGas were working with ABS to review alternative CNG concepts.





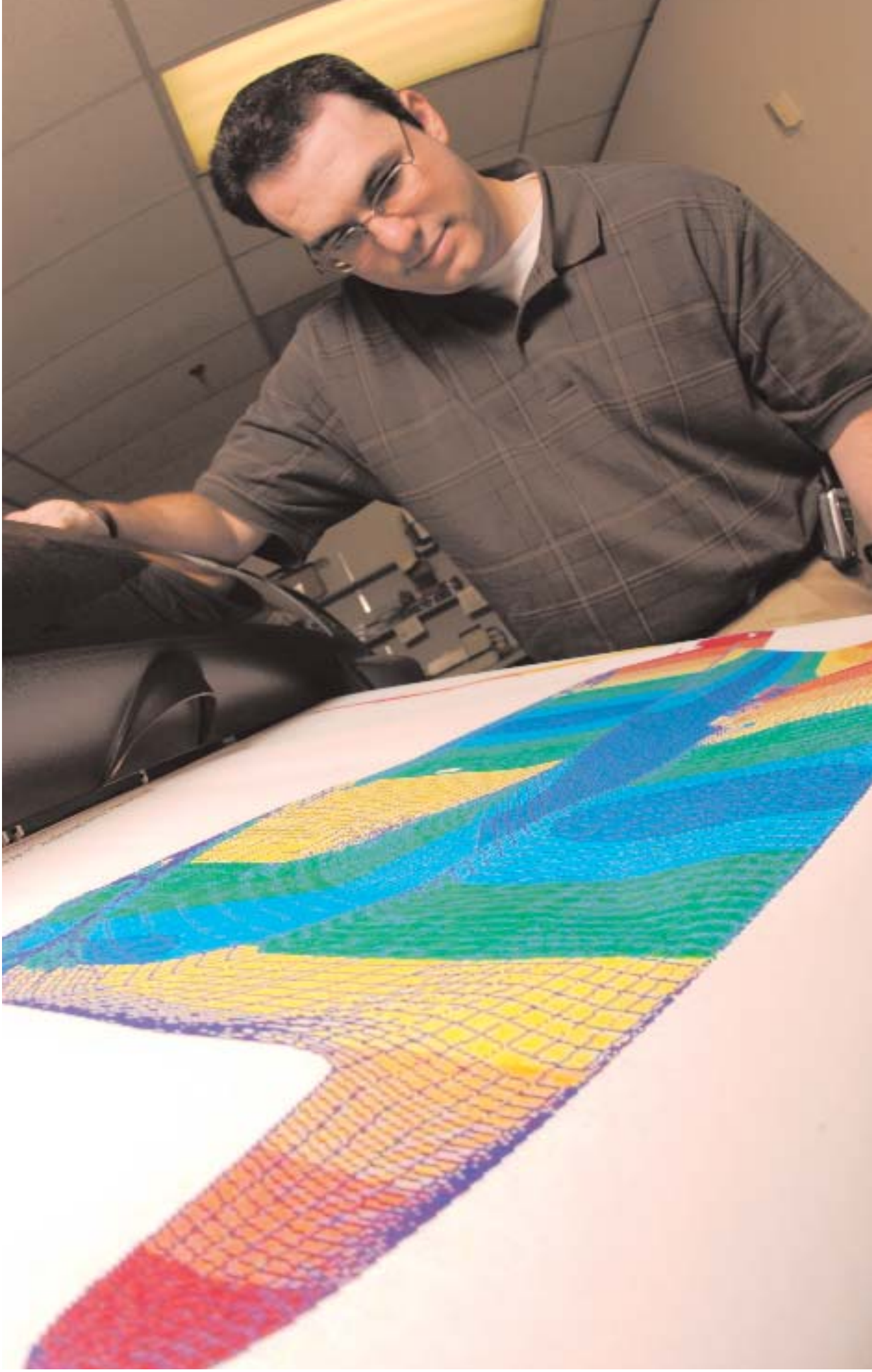
FOCUSED ON providing an efficient, one-stop point of contact for its offshore and oil and gas customers requiring classification and certification services, ABS consolidated its energy-related business development activities under one umbrella with the creation of the Energy Project Development team.

The new team incorporates the established efforts of ABS' Offshore Project Development group and its Gas Focus group to best position the organization to serve the rapidly growing market for marine-related services for the extraction, storage and transportation of natural gas.

The business group provides a more effective, coordinated method to assist clients considering innovative designs and technologies, including liquefied natural gas (LNG) transportation, liquified petroleum gas (LPG) production, storage and offloading, compressed natural gas (CNG), gas-to-liquids (GTL), gas-to-wire (GTW) and cryogenic transfer.

This consolidation of services also keeps the energy team on the leading edge of technical advances as operators look to invest in offshore LNG terminals, both floating and gravity-based for which updated guidelines were developed and released to industry in 2003.

LNG carriers with design capacities increasing from a conventional 135,000 m^3 to a projected 250,000 m^3 are anticipated to accommodate dramatic LNG trade forecasts. The Energy Project Development team provided detailed technical support throughout the year to the innovative operators developing these new designs.



NAVAL ACTIVITY

A major milestone in the longstanding relationship between ABS and the US government occurred in 2003 with the signing of a formal Cooperative Agreement with the Naval Sea Systems Command (NAVSEA). The agreement called for the joint development of ABS *Rules for Building and Classing Naval Vessels* to support the design and acquisition of naval combatant ships and craft.

The landmark agreement signed by Vice Admiral Phillip M. Balisle, US Navy and ABS Americas President Robert E. Kramek lays the groundwork for ABS participation in Naval Combatant Ship Programs. The strategic partnership created by this agreement broadens the working relationship between NAVSEA and ABS by allowing the class society to provide further technical support and guidance for the Navy's shipbuilding programs while allowing the Navy to focus its in-house engineering resources more fully on the higher risk, mission-related aspects of emerging US ship designs.

The agreement addresses technical authority, rule development and approval, rule maintenance and procedures for rules application on individual programs. These Rules will provide the technical basis and authorization for ABS certification of selected ship systems and, where appropriate, will facilitate classification of combatant ships by ABS as supported by public law. ABS has been working with the US Navy for a prolonged period to merge naval requirements with commercial standards to produce stand-alone Rules tailored to the needs of the military.

ABS is also supporting the development of several innovative new vessel types through its *High Speed Naval Craft Guide*. Years of experience in the design, construction, materials and operation of high-speed craft have enabled ABS to work with the Navy in identifying and mitigating operational risks associated with these specialized vessels.

Commercial Rules for high-speed craft are already well established in the marketplace, but needed to be adapted to meet the specific requirements of the military. With its experience of small and high-speed vessels, and years of experience in design, construction, materials and operation of high-speed craft, ABS was the natural choice to assist in the development of requirements for high-speed military vessels.

Combining decades of commercial rule-making with many years of experience gained working closely with organizations such as the Naval Surface Warfare Center (NSWC),

ABS was able to help the US Navy and other navies introduce this new generation of advanced craft into service.

The development and introduction of ABS' *Guide for Building and Classing High Speed Naval Craft* and associated Guidance Notes on dynamic loading approaches for high-speed craft in 2003 provided the US Navy with valuable tools for high-speed naval vessels. The Guide is currently being used to class the *USS Swift* or HSV-2, a wave-piercing catamaran, deployed as a Mine Warfare Support Ship, designed to handle heavy cargo and operate in rugged sea conditions; the X-Craft project led by the Office of Naval Research (ONR); and a Composite High Speed Vessel (CHSV) being built by Northrop Grumman.

The 73 m X-Craft, an experimental high-speed catamaran with an aluminum hull, is being built to provide the US Navy with experience in design, construction and operation of high-speed craft for future service. Experience of designing and building high-speed craft with composite materials will flow from the construction of the CHSV, while a 30.5 m (110 ft) trimaran craft with lifting bodies will provide valuable data about the benefits of such technology. In each case, ABS has been contracted to use its expertise in fast craft technology, designs and construction materials to provide the US Navy with an independent design review service.

More recently, PEO Ships and program managers for the US Navy's next generation destroyer DD(X) and the Littoral Combat Ship (LCS), a high-speed multi-mission platform, have expressed a desire to utilize ABS and its *Naval Vessel Rules* and agreed to support an accelerated completion of the Rules. The US Navy describes LCS as a high-speed ship designed for operations in littoral or coastal areas. With an advanced hull form and a shallow draft, LCS needs to be capable of deploying quickly around the world at speeds between 40-50 knots.

Doing so will require the application of designs and materials new to the military – one industry team is proposing a trimaran hull form based on an aluminum-hulled fast ferry, the second a design that holds the trans-Atlantic speed record and has a proven track record in the commercial market place, and the third a Surface Effect Ship (SES) derived from a Royal Norwegian Navy Fast Attack Craft, so the need for independent, expert assessment is clear.

The contracts by the US Navy for the LCS project require Preliminary Design Evaluation from ABS and, once the construction of the LCS gets underway, the ships will have ABS class. At the same time, the US Army is moving ahead with the acquisition of a new generation of high-speed Theater Support Vessels (TSVs), which will also be classed using the ABS *High Speed Naval Craft Guide*. And, ABS continues to provide support to the US Coast Guard's Deepwater program.

During 2003, ABS continued ongoing projects to class the Military Sealift Command's newest vessels – the T-AKE; the Army's new Logistics Support Vessels (LSV); NOAA's new Fisheries Research Vessels and several new construction vessels for the Army Corps of Engineers. ABS is also involved in certification of the engines for the Navy's LPD-17 vessels and the diesel generator sets for the new LHD-8 amphibious support vessel. In addition, support work was begun in anticipation of ABS class on the new LHA replacement ship.

ROBERT E. KRAMEK

Executive Vice President & President, ABS Americas

A new and vital partnership has been forged between ABS and the US Navy that significantly expands the range of services we provide to the US government. A landmark ABS/NAVSEA Cooperative agreement, signed in 2003, will see future US naval combatant vessels built to the new *Naval Vessel Rules* that are being developed by ABS in cooperation with the Navy. The introduction of classification standards within the naval arena will provide an efficient, technology driven, commercially-based approach to the design and construction of naval vessels and provides an exciting and challenging area of growth for ABS.


Naval Vessel Rules

THE US NAVY'S next generation destroyer DD(X) and the Littoral Combat Ship (LCS), a high-speed multi-mission platform ship, will be designed and constructed to the technical guidelines in the new ABS *Naval Vessel Rules*, being jointly developed by ABS and the Navy and scheduled for completion in 2004.

LCS is a high-speed ship designed for operation in littoral or coastal areas. With an advanced hull form and a shallow draft, LCS needs to be capable of deploying quickly around the world at speeds between 40-50 knots. Doing so will require the application of designs and materials new to the military.

The contracts by the US Navy for LCS require Preliminary Design Evaluation from ABS and, once the construction of the LCS is begun it will be to the class requirements contained in the new ABS Rules.

At the same time, the US Army is moving ahead with the acquisition of a new generation of high speed Theater Support Vessels (TSVs), which will be classed using the ABS *Guide for Building and Classing High Speed Naval Craft*.

The timely development by ABS of these new technical standards has provided the US Navy with invaluable tools for the development of a new generation of combatant and support vessels.


ABS

TECHNOLOGY ACHIEVEMENTS

The classification world is changing with more emphasis on complex structures, life cycle management, unified standards and safety equivalencies. To address these issues, increasing emphasis within the ABS technology strategy is being given to areas that will improve the integration of classification into both the design process and life cycle operations, while addressing safety equivalencies through greater emphasis on risk and reliability methods.

All these themes were in evidence as the ABS Technology group continued its wide ranging scope of research and development projects in 2003. Nearly 100 projects were initiated or ongoing during the year, addressing ship and offshore structural engineering, human factors and the application of risk methodologies to classification standards.

SAFEHULL EXPRESS

First among them was the accelerated development of ABS SafeHull Express, the latest evolution of the SafeHull system. A highly successful introduction of the new system to 35 of the leading shipyards in Japan, Korea and China late in the fourth quarter confirmed expectations that it will improve speed, enhance user friendliness and integrate seamlessly with shipyard design processes.

SafeHull Express has been developed in close cooperation with shipyard designers and with NAPA and MSC, two of the leading providers of related shipyard design software. Once fully implemented, it will help shipyard designers to develop approved designs more quickly and easily.

Particular attention has been paid during the development process to allow for the immediate adoption of the new IACS common rule criteria for tankers and double sided bulk carriers that will enter into force in 2005. The underpinning philosophy for this release is the creation of a tool that does more than simply evaluate a design for compliance with class Rules. It has been developed to dovetail with the shipyard's design process so an approved design can be developed in the shortest reasonable time, assisting shipyards to hone efficiencies.

By using SafeHull Express, design evaluation time, including finite element analysis, has been reduced to less than 14 days. The initial version of this major new release evaluates

designs of double hull tankers of 150 m or more in length. The system will be extended to double side skin bulk carriers of similar length in the first half of 2004. Other ship designs such as containerships, LNG carriers and ship-shaped FPSOs will continue to be evaluated by the existing SafeHull system that has been specifically developed to address critical design issues within these specialized ship types.

During 2003, ABS worked closely with the International Association of Classification Societies (IACS) and the two other member societies of the Joint Tanker Project (JTP) to develop common basic design criteria, including hydrodynamic loads, fatigue assessment and corrosion margins, for double hull tankers.

The JTP team also maintained close liaison with the other IACS members assigned to the Joint Bulk Carrier Project, charged with developing comparable common rules for double side skin bulkers. Rule formulas and software for nominal design loads for local scantlings were completed. Ongoing work continues for finalizing calculations for motions, accelerations and wave pressures. The ABS load combination method has been adapted in the JTP fatigue procedure.

In a related project, considerable progress was made in 2003 towards the creation of an intelligent database of the ABS Rules. The project was initiated to create a simple to use, web-based, electronic system that will store, manage and distribute ABS Classification Rules, Guides, Statutory Regulations and other pertinent reference material.

The information can be retrieved using various search parameters and will facilitate the generation of project-specific check sheets and the retrieval of all Rule and Statutory requirements for a specific project, which will be linked to their specific internal ABS process instructions. Reference links will be provided between the ABS Rules and related IMO documents.

RESEARCH PROJECTS

As the size of containerships being ordered increased dramatically, ABS continued several detailed technical analyses related to the design of ships with a capacity of 10,000 teu and above. Working with a leading builder of very large containerships, ABS conducted a joint project to establish a technique to correctly estimate shaft bearing loads and offsets. Knowledge gained from the project was reflected in development of the ABS *Guidance Notes on Propulsion Shafting Alignment* which served to raise awareness of potential problems associated with shaft alignment and how these problems can be avoided.

A companion project led to the development of ABS SHAFT, a sophisticated computer software program that can be used to analyze propulsion shafting alignment and evaluate tail shaft bearing contact conditions.

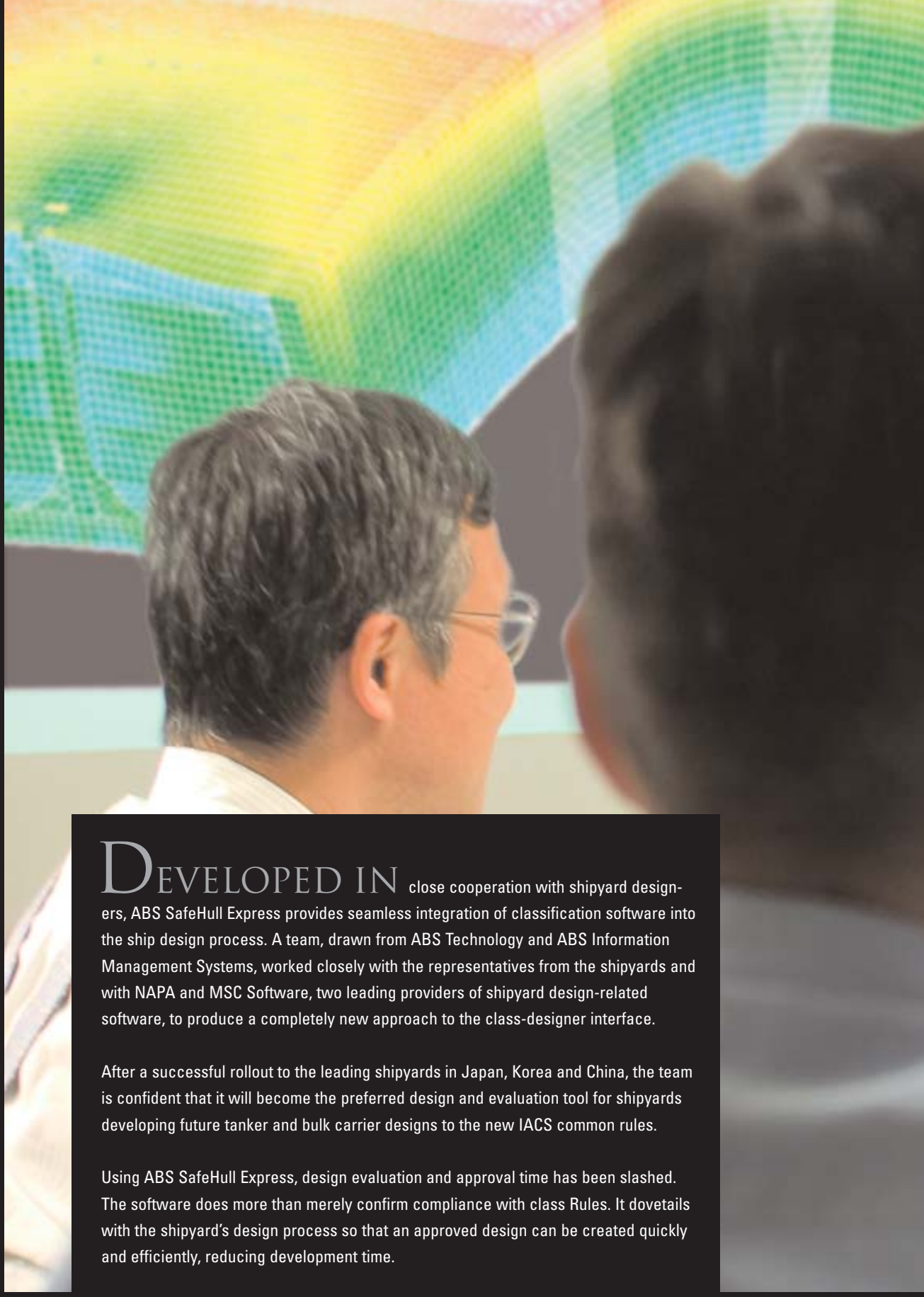
Parametric roll has been observed in some large containerships, particularly when operating in head seas. Several incidents have been noted in which parametric roll led to the loss of deck containers when lashings failed under the extreme loads.

A detailed study of parametric roll was undertaken by ABS to determine the physics of parametric resonance, establish criteria to evaluate susceptibility and severity of parametric rolling in the early design stages and provide recommendations on how to counter its effects. By year-end 2003,

DONALD LIU

Executive Vice President & Chief Technology Officer

SafeHull Express has slashed the time needed for the review and approval of new tanker designs. Shipyards now have a class tool that can be seamlessly integrated with their design process. SafeHull has always encouraged the development of the most robust designs. With SafeHull Express these same criteria have been packaged into the fastest, most user friendly class verification program available. Feedback received from the shipyard design teams has been overwhelmingly positive, particularly with respect to the advanced integrated 3D modeling capability.

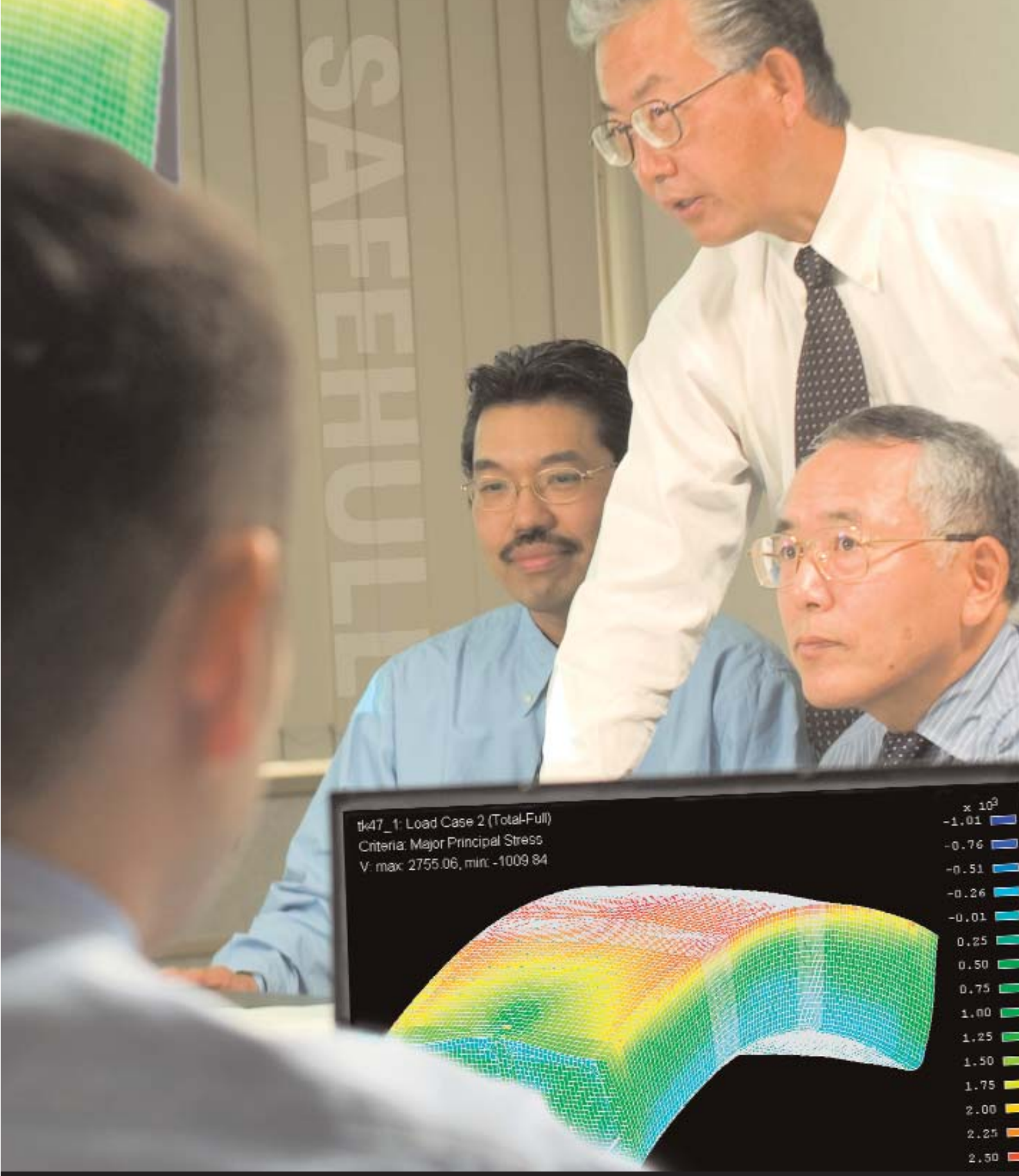


DEVELOPED IN close cooperation with shipyard designers, ABS SafeHull Express provides seamless integration of classification software into the ship design process. A team, drawn from ABS Technology and ABS Information Management Systems, worked closely with the representatives from the shipyards and with NAPA and MSC Software, two leading providers of shipyard design-related software, to produce a completely new approach to the class-designer interface.

After a successful rollout to the leading shipyards in Japan, Korea and China, the team is confident that it will become the preferred design and evaluation tool for shipyards developing future tanker and bulk carrier designs to the new IACS common rules.

Using ABS SafeHull Express, design evaluation and approval time has been slashed. The software does more than merely confirm compliance with class Rules. It dovetails with the shipyard's design process so that an approved design can be created quickly and efficiently, reducing development time.

To meet shipyard requirements for 3-dimensional CAD systems for production design and manufacturing, SafeHull Express brings the benefits of 3D into the earliest stages of the design cycle to help speed-up the design process. The system also provides easy to use templates to generate geometry and scantlings of the main hull structures, building a 3-dimensional hull structure automatically, and smoothly integrating user friendly 2D views with 3D modeling.


SAFEHULL
tk47_1: Load Case 2 (Total-Full)
Criteria: Major Principal Stress
V: max: 2755.06, min: -1009.84
x 10³
-1.01
-0.76
-0.51
-0.26
-0.01
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
2.25
2.50

a Guide was developed as a result of these investigations. It was subject to final internal and industry review as the year drew to a close.

A key analytical tool in the parametric study was LAMP (Large Amplitude Motion Program) that has been developed by ABS. Parametric roll susceptibility and severity criteria were developed and verified using LAMP simulations. The program was also used to study the non-linear ship motion and wave load of a ship in a damaged condition. As part of this task, an internal tank model was implemented within LAMP for computing the static and dynamic effects of a flooded space on the ship motions and loads.

Bulk carrier strength was an ongoing subject of study throughout 2003. While IMO, IACS and the SafeHull Express team focused on the pending new generation of double side skin bulk carriers, engineers within the Technology group worked to simplify the application of new IACS Unified Requirements (UR) applicable to certain existing single sided bulk carriers.

The SafeHull system for bulk carriers was extended to assist owners in meeting the UR S25 requirements for design loading conditions and the S31 requirements that define criteria for steel renewal, or alternative measures that may need to be taken for side shell frames and brackets in certain existing single side skin bulk carriers.

Within the Technology group, the Marine Engineering Systems Department developed, tested and released the first set of web-based machinery calculation routines. These routines offered shipyards, designers and manufacturers a tool to efficiently perform correct and consistent calculations for meeting the design requirements of ABS Rules,

again ultimately shortening the shipyard plan submission and approval process.

ENERGY DEVELOPMENTS

Technology support for offshore operators faced with the ever increasing demands of deepwater development and the movement of hydrocarbons, either in a liquid or compressed state, came from ABS in the form of new technical guidance. Technological advances in the design of tension leg platforms (TLPs) and spars led to the development of the ABS *Guide for Building and Classing Floating Production Installations*.

An industry need to refurbish and upgrade many existing jackup units saw the release of a detailed technical Commentary to the ABS *Rules for Building and Classing Mobile Offshore Drilling Units*.

Demand for liquefied natural gas (LNG) climbed steadily in 2003. Technology initiatives in this area ranged from ABS *Guidance Notes for Building and Classing Offshore LNG Terminals* to the adaption of the ABS SafeHull design evaluation system to address LNG carriers using the membrane cargo containment system.

SafeHull allows ABS to quickly analyze the full range of dynamic loads that a gas carrier will encounter in order to establish strength criteria specifically tailored to meet those needs, up to and including approval for a 40-year fatigue life in Winter North Atlantic service conditions.

JAMES C. CARD

Senior Vice President

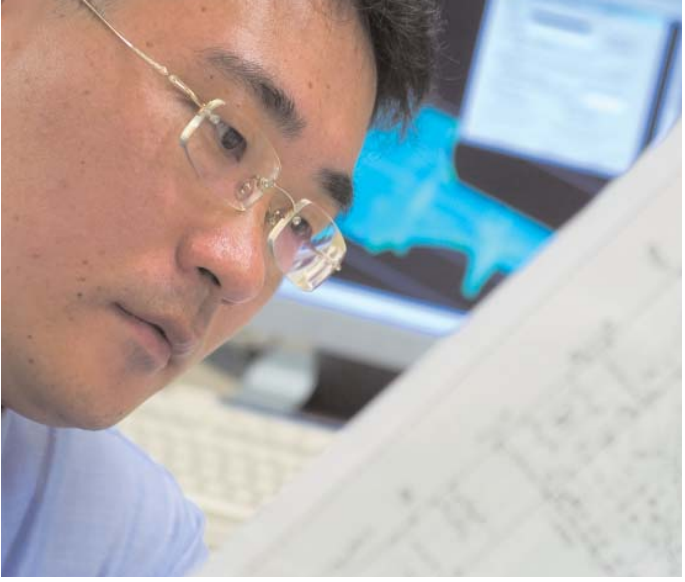
Common rules for tankers represent the first step in what will become the most fundamental change in the practice of classification since its inception. The last year saw an extraordinary amount of complex engineering effort being put into this fast track project by the ABS Technology group, in conjunction with our two partners. The pay off will be the next generation of tankers that will eliminate shipyard pressure to minimize steel leading to more robust, safer vessels with a longer projected fatigue life and heavier scantlings than those built to the different class society rules that apply today.

STATISTICS SHOW that the vast majority of shipping accidents involving collisions and groundings stem from activities on the navigation bridge. When bridge activities rely on interfaces that are awkward for the mariner, human errors relating to judgment and vessel control can occur.

Taking a holistic approach towards human interactions at the design stage, the Safety Assessment & Human Factors Department within the ABS Technology group released *Guidance Notes on Ergonomic Design of Navigation Bridges* in 2003. This notable new addition adds to a unique suite of practical guidance publications addressing the role of human factors within the marine industry, including guidance on the application of ergonomics to marine systems and a Guide addressing issues affecting crew habitability on ships.

The recent Guidance Notes provide criteria for the effective ergonomic design and layout of interfaces located within the navigation bridge area. The criteria are aimed at providing designers and engineers with practical guidance and work processes to use from the concept stage for effective integration of ergonomics and engineering.

This is aimed at developing bridge layouts that integrate personnel with the various bridge systems and their interfaces. For instance, human-system interfaces include: controls, displays, alarms, video-display units, computer workstations, labels and the overall workspace arrangement.



Partial loading of membrane-type LNG carriers continued to be a focus of research by the hydrodynamicists within ABS Technology, as designers began developing a new generation of very large vessels of up to 250,000m^3 capacity. A study was undertaken for a major energy operator to compare model test results for different LNG tank designs. ABS' 2D and 3D sloshing analysis capabilities and proprietary software have made it the leader in this area.

RISK-BASED CLASSIFICATION

ABS enhanced the development and implementation of its classification Rules through the use of risk-based approaches with the publication in 2003 of three pioneering risk-based documents. The *Guide for Risk Evaluations for the Classification of Marine-Related Facilities*, the *Guidance Notes on Review and Approval of Novel Concepts* and the *Guide for Surveys Using Risk-Based Inspection for the Offshore Industry* offer alternatives to traditional prescriptive rules.

And operators looking for a method to develop effective maintenance policies and practices based on rational risk assessment approaches, rather than relying on historic maintenance operations data, were provided with a new tool to systematically evaluate and improve upon machinery reliability. The *Guide for Survey Based on Reliability-Centered Maintenance (RCM)* offers an approach to preventative maintenance that focuses ultimately on improving machinery reliability, thus reducing operator downtime. In addition, the risk-based methods assist in the effective planning and spending of maintenance budgets.

The RCM Guide is the culmination of an extensive three-year collaboration between ABS and a 15-member committee comprised of leading shipowners and operators, including drilling rig operators, to develop the guidance using actual industry applications. The result is not only the guidance material but also the most advanced RCM-specific software available from a class society. Clients can access databases with failure modes for various equipment parts and follow specific condition monitoring techniques.

Applying RCM methods set forth in the Guide may be credited as satisfying the requirements of special continuous survey of machinery. Upon completion of a satisfactory

survey, a certificate of approval for reliability-centered maintenance and a notation, if appropriate, can be issued by the attending surveyor.

HUMAN FACTORS ENGINEERING

Beyond the confines of traditional, engineering-based, classification rule making, ABS has established a position as the leader in adapting human factors engineering (HFE) to the marine working environment. In 2003 a notable addition to the suite of practical ABS Guides addressing the role of human factors within marine safety was the release of *Guidance Notes on Ergonomic Design of Navigation Bridges*. This document extends the pioneering concepts set by the *Guidance Notes on the Application of Ergonomics to Marine Systems*, originally published in 1998.

This latest addition provides practical criteria for the effective ergonomic design and layout of interfaces located within the navigational bridge area. The criteria include general ergonomic design guidance for navigational bridges, specific bridge design guidance and a process to identify individual vessel bridge requirements to guide the application of ergonomic design principles.

The internationally recognized work of the ABS HFE team was further enhanced in 2003 with the release of the technical report *"Review and Assessment of Incident, Accident, and Near Miss Databases 1990-2002."* This report provided a comprehensive analysis of the leading causes of marine casualties from a variety of databases from the US, UK, Canada and Australia, with particular focus on causes attributed to the human element. The ongoing work in human factors illustrates the continued commitment by ABS to explore and advance the mission of maritime safety.

CLASSIFICATION rules have always implicitly addressed risk. Increasingly, the adoption of sophisticated risk assessment techniques within the rule-making process allows for the explicit consideration of risk.

2003 saw the widespread application of these techniques to ABS standards, from those used to assess the conceptual design of novel projects to the development of targeted risk-based inspections of vessels in service.

Industry guidance on the application of risk was contained in three new documents issued by ABS during 2003 addressing risk evaluations for the classification of marine related facilities, the application of risk methodologies to the review and approval of novel concepts, and for surveys using risk-based inspection within the offshore sector.

An Integrated Risk Management Project within ABS Technology spawned these new guidelines, in addition to completing a quantitative risk assessment model for an oil tanker and an FPSO, including selected machinery components. The models were developed to give a comprehensive representation of the major hazards associated with the design, operation and maintenance of these vessels.

Also completed in 2003 was a Risk Management Module within the ABS SafeShip through-life vessel integrity management program. This new tool can be used by both ship operators and ABS personnel for assessing marine industry risks using qualitative methods such as FMEA, Checklists, What-If and HAZOP.

OPERATIONS

Governmental concern regarding single hull tankers, new European Union regulations and more stringent requirements from IACS for the design and maintenance of bulk carriers, placed increased demands on the ABS survey staff in 2003.

SURVEY ACTIVITIES

The number of new regulations meant particular emphasis was placed on training for the worldwide staff of more than 700 surveyors to keep them abreast of the changes and to promote consistency in interpretation.

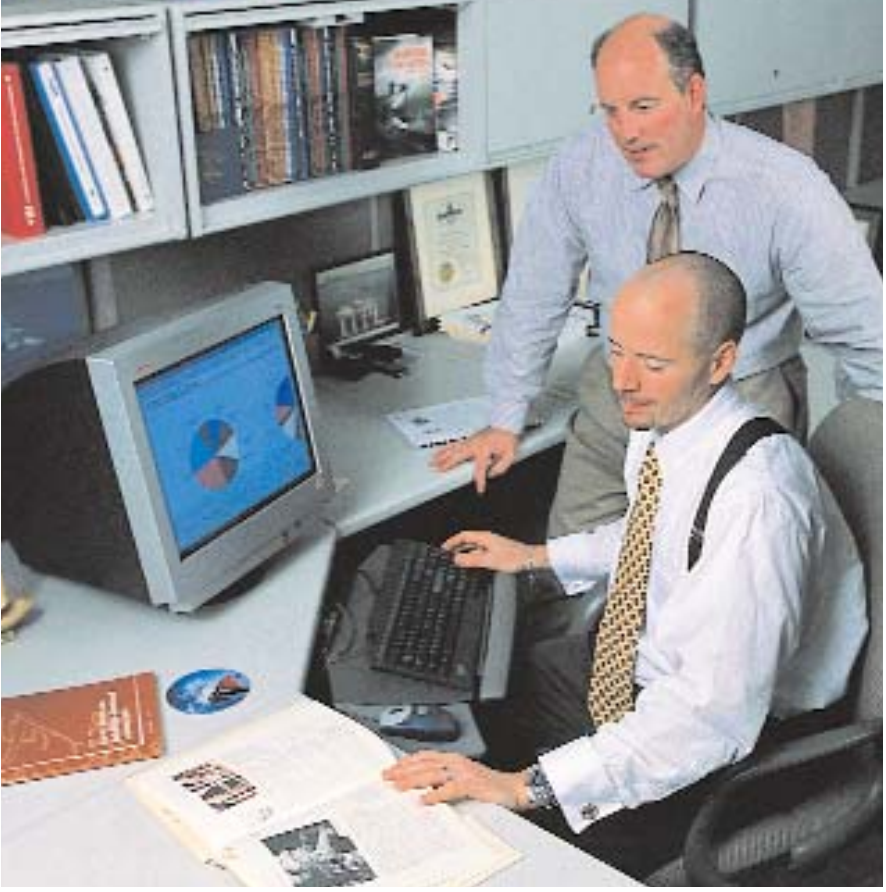
These training initiatives included the development of an Experienced Surveyor Validation Program. This required refresher course for all surveyors and country managers provides a comprehensive review of all recent ABS Rule changes, IACS Unified Requirements (URs) and regulatory procedures and gives these important field staff a clearer understanding of industry trends that affect the environment in which they perform their duties.

New divisional lead surveyors were appointed to provide additional oversight for survey monitoring, to promote local mentoring programs and to administer on-the-job field training for surveyors when required by new initiatives such as the UR S31 requirements for single sided bulk carriers.

In addition to the new divisional lead surveyors, 35 surveyors were added to the ranks in 2003. ABS surveyors were equipped with portable PC-based applications to assist them to more effectively initiate client work orders, to prepare for vessel surveys and to report survey items that although verified remained outstanding.

This enhanced technology support for survey activity is part of an ongoing multi-year, multi-million dollar commitment towards increasing administrative efficiencies and support for field survey staff. Every ABS surveyor is equipped with a portable PC-based "virtual office" loaded with applications that provide vessel and rig data, survey requirements, class and statutory criteria, and tools for recording and transmitting the survey results, in some cases before leaving the ship or rig.

This gives an immediate indication to client users of the ABS SafeNet system that the survey is complete, pending report review. The review, conducted by a second, qualified



surveyor is also done online so that the survey status can change from completed to credited within a very brief time.

Data gathered during the course of the survey is entered directly by the surveyor as the survey progresses. With few exceptions, nothing follows on paper to be interpreted, re-processed or re-keyed by people who were not in direct attendance of the vessel.

The result has been a dramatic shortening in the time between the surveyor attending the vessel or rig and complete information being available via the ABS SafeNet network to the owner or operator. What used to take many days has been reduced to an average of less than 24 hours, and in some cases, down to real-time with cellular modems or internet access onboard.

Port State Control and casualty and damage incidence statistics remain key industry indicators of a class society's survey performance. These are also areas that receive a great deal of public and regulatory scrutiny.

In 2003, ABS remained as a top performer in terms of detention ratios for class-related deficiencies in each of the three main Port State Control jurisdictions (US Coast Guard, the Paris MOU and the Tokyo MOU). Pursuit of zero worldwide Port State detentions worldwide continues to be the goal. The ABS record continues to improve although the zero-detention goal was only attained within US ports subject to oversight by the US Coast Guard.

Helping to maintain this focus on superior survey services was the Safety Analysis group. This small team provided analysis of trends in structural and machinery performance, monitored significant incidents, and reviewed survey and criteria standards to provide the Rule Development Department and the field survey staff with valuable, practical feedback and guidance.

ENGINEERING ACTIVITIES

By maintaining technical offices in 11 major shipping centers around the world, ABS has clearly differentiated its engineering services. These client-centered offices provide an immediate personal response to both shipyards and owners.

This superior, client-focused service meant that all of these offices remained busy throughout 2003, responding to continuing high demand for ABS classification. Projects ranged from the analysis of complex, novel designs for offshore installations to detailed calculations needed by owners of single sided bulk carriers wanting to gain compliance with the new IACS strength requirements.

Workloads remained particularly heavy in the technical offices in the principal shipbuilding nations of Korea, Japan and China in response to the continued strong pace of new ordering.

In a continuing effort to further improve the timeliness and quality of the ABS engineering design review services, major strides were taken towards the development of a new, technically advanced, electronically based application that will simplify and speed the entire plan review process.

A team of experienced engineers from all divisions was brought together at the corporate headquarters in Houston to develop a practical, yet completely new process. The resulting application is scheduled for global implementation in mid-2004.

VINCENT F. ROTH

Senior Vice President & Chief of Staff

To remain successful, ABS must offer unmatched service to our clients. And we must do so while striving to be the lowest cost provider of professional classification services. ABS is committed to these twin goals. 2003 saw tremendous progress being made in developing tools that will improve the timeliness and quality of our design review services, and refine the administrative functions that support our field survey staff. Clients are demanding more information more quickly and ABS will offer real-time survey status and interactive engineering services in 2004.

A HARD HAT, a flashlight and sound, professional judgment will always form the bedrock of effective classification surveys. But technology is changing the manner in which surveys are undertaken and the speed with which the resulting information is databased and distributed.

Each year brings another refinement to the ABS SafeNet program through which owners and operators can track the survey status of their vessels. In 2003, ABS closed in on its target of real-time reporting by slashing the time between the surveyor's last attendance and full information being made available electronically to the owner to less than 24 hours in most circumstances.

The more than 700 ABS surveyors, located in 60 countries around the world, are now equipped with a virtual office to record and transmit survey results, in some cases before descending the gangway. The laptop computer, mobile transmitters and other hardware facilitate the process. But the strength of the ABS SafeNet network lies in the unique software applications created to manage the entire survey process.

These applications were developed in-house by a team of experienced field survey staff working in close cooperation with ABS Information Management Systems. The team's focus is clear – to improve operating efficiencies within ABS and to pass those improvements on to clients through enhanced service delivery.

It will enhance the interaction between ABS engineers and clients by providing a secure, web-based interface through which clients will be able to electronically submit complete project details, including all drawings, retrieve approved drawings, view the status of review activities and access and respond to approval comments.

The new system will also encourage a more streamlined internal approach within the organizational structure of the ABS technical departments. Cross-functional project teams are being created, breaking down the traditional skill-based structure so that a more holistic, and speedier approach can be adopted when reviewing a vessel's plans.

INFORMATION TECHNOLOGY

The key common component in both of these far reaching projects to improve the responsiveness and efficiency in the delivery of engineering and survey services is the development of a sophisticated, functional, integrated information technology platform. 2003 saw significant progress in migrating ABS' information technology infrastructure from a group of separately linked systems to a single integrated architecture. This integrated repository, the Business Product Model (BPM), is based on Oracle technology that was first introduced in 2000 with the implementation of a new enterprise management system.

The architecture supports the integration of ABS Rules with the survey and engineering process, including ship geometry, and forms the required platform for the ABS SafeShip life cycle information management system that is being made available to clients in addition to ABS' own internal use.

Designed off the BPM, systems were developed in 2003 that improved the service-based applications provided for clients and field surveyors. These applications are instrumental in improving internal operating efficiencies that are already returning multi-million dollar savings.

Maintaining close control over expenditures is an ongoing focus that is considered as equally important as winning new business. The new IT systems encourage constant review of how survey and engineering offices around the world are manned and maintained so that resources can be allocated in the most efficient manner.

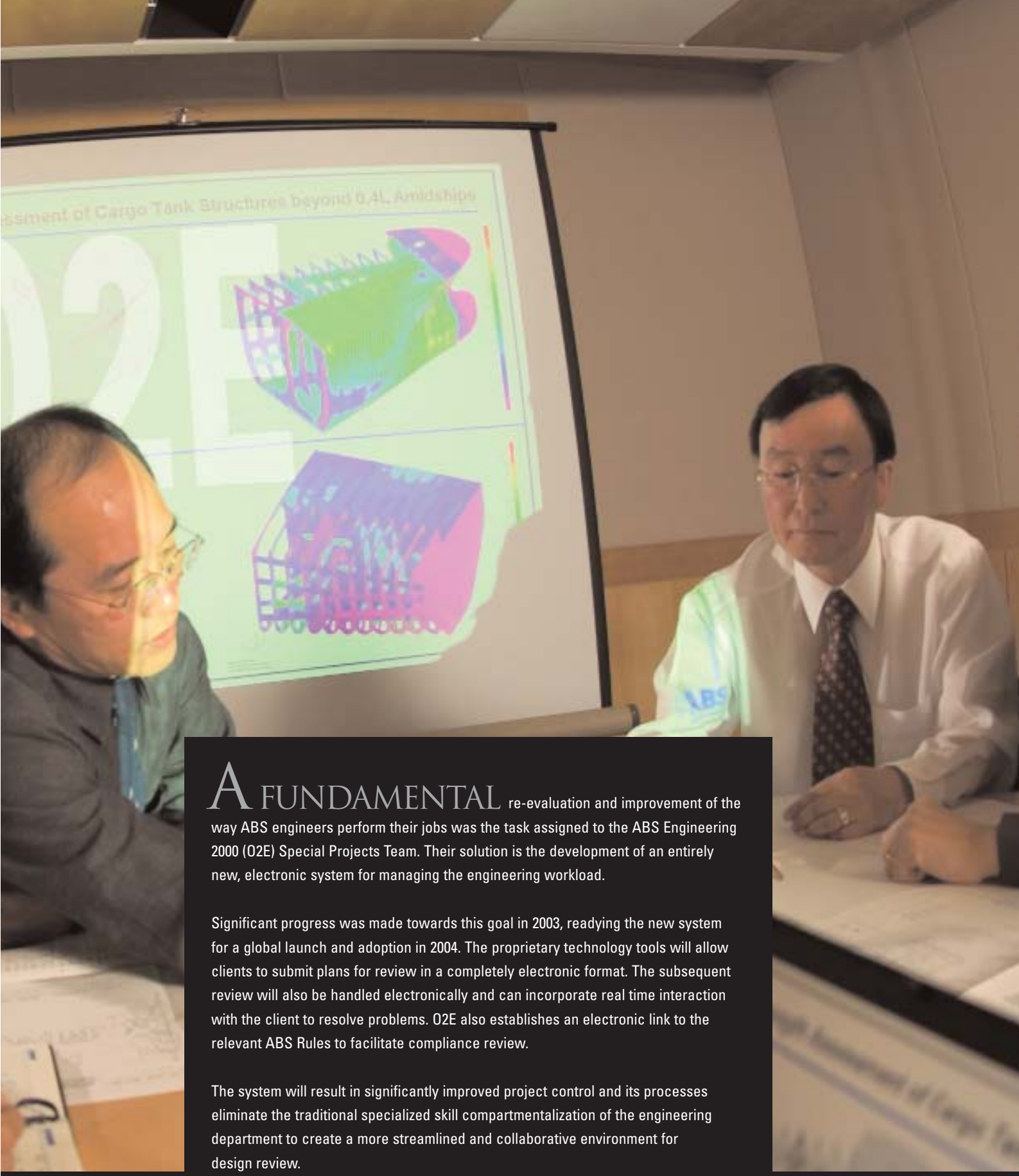
These, and several other IT and administrative programs that address operational efficiency, are all fast tracked for completion by the end of 2004. They are being undertaken to position ABS as the most advanced and most cost-effective provider of classification services.

As important as the savings are, the real benefits are already accruing from the improved timeliness and quality these applications provide to ABS service providers and clients.

GARY A. LATIN

Senior Vice President & Chief Information Officer

The continuing development of our Business Product Model has brought together all the ABS systems into a single integrated IT architecture that has significantly improved our operating efficiency and is already returning multi-million dollar annual savings. As further enhancements are made, we can expect increased savings in 2004 and beyond. As important as these savings are, the real benefits come from the improved timeliness and quality of the administrative and field services these applications allow us to provide to our clients.



A FUNDAMENTAL re-evaluation and improvement of the way ABS engineers perform their jobs was the task assigned to the ABS Engineering 2000 (O2E) Special Projects Team. Their solution is the development of an entirely new, electronic system for managing the engineering workload.

Significant progress was made towards this goal in 2003, readying the new system for a global launch and adoption in 2004. The proprietary technology tools will allow clients to submit plans for review in a completely electronic format. The subsequent review will also be handled electronically and can incorporate real time interaction with the client to resolve problems. O2E also establishes an electronic link to the relevant ABS Rules to facilitate compliance review.

The system will result in significantly improved project control and its processes eliminate the traditional specialized skill compartmentalization of the engineering department to create a more streamlined and collaborative environment for design review.

The system, once fully implemented, will incorporate electronic design review, electronic filing, scheduling, control and overall project management capabilities. It has already been applied to a complex, major offshore project in which all client drawings and ABS documents are being handled electronically, eliminating paper and speeding plan turnround time.

TYPE APPROVAL

A milestone in the ABS Type Approval program was recorded at the end of 2003 when client enrollment reached a new all time high of 1,750. This client group represents approximately 3,700 type approved products worldwide with more than 5,500 products, ranging from pumps to lifeboat davits.

Much of the success of the program can be attributed to the aggressive development and implementation of customer-driven web-based programs that improve communication, expand product visibility and ease certification. The ABS Type Approval web site was recording more than 2,000 visits per day as 2003 came to a close. The availability of an extensive, easily searchable online database, and online certificate printing have been particularly appreciated by clients.

ORGANIZATIONAL CHANGES

With a worldwide workforce of more than 1,700 employees, ABS is constantly adjusting the allocation of these valuable human resources to best serve client needs.

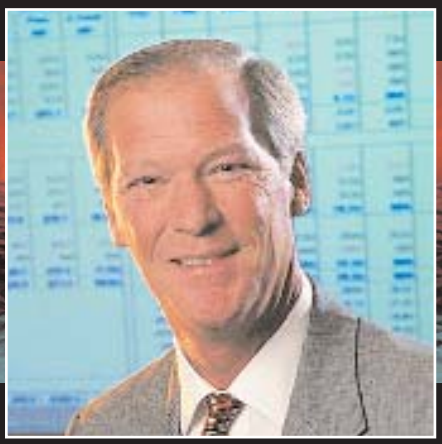
2003 saw the continuing emergence of China as the third largest, and fastest growing shipbuilding nation in the world. China also rapidly expanded its ship repair capacity that saw more ABS-classed vessels entering Chinese yards for intermediate and special surveys. As a consequence, additional engineering and survey staff were added in Shanghai and at the principal shipyards to meet this increased demand for services.

It is expected that the pace of development within China will increase in 2004 and beyond and considerable planning has been given to meeting this need in an efficient, yet cost-effective manner.

Key executive changes also occurred during the year starting with the relinquishing of the Chief Executive Officer duties by ABS Chairman Frank Iarossi in late-April 2003. These duties were assumed by ABS President, Robert Somerville as part of a carefully planned leadership transition that will culminate with Iarossi's retirement from the Bureau in April 2004. At that time Somerville is scheduled to take on the Chairman's duties while passing those of President and Chief Operating Officer to Robert Kramek, who has been serving as President, ABS Americas.

2003 also saw the retirement of Walter Czerny as President, ABS Pacific, bringing to a close a distinguished career with ABS, including 12 years of uninterrupted growth in the organization's activities in the Asian theater under his stewardship. James Liebertz, moved from his position as Vice President, Northern Region in Yokohama to assume the position of President in the Divisional headquarters in Singapore.

Another key change took effect at year's end with the retirement of ABS Chief Surveyor Gus Bourneuf after 34 years of service with the organization. His position was filled by Lenny Pendexter, Regional Vice President, North America, ABS Americas.



ROBERT J. BAUERLE

Senior Vice President & Chief Financial Officer

Over the past two years, the finance and project accounting functions were successfully implemented into GEMS – ABS' Global Enterprise Management System. With the overarching goal to support future growth without increasing the cost base, substantial savings have already been achieved as efficiencies and controls were driven into business practices. Through standardized processes and improved data integrity, ABS is able to manage practices with global visibility and consistency. The goal is to further improve service levels, enhance self-services and create scalability as technology advances.


FIRE CONTROL
SAFETY
Ship Security

INDUSTRY ISSUES

Security, single hull tankers and single sided bulk carriers topped an ever increasing number of industry issues that had direct impact on class and ABS activities in 2003. The adoption by the IMO of the International Ship and Port Security (ISPS) Code, with a fast track implementation schedule of July 2004, had flag States, owners and class societies scurrying to develop the necessary procedures to handle the expected 40,000 vessels that would need certification within that extremely short period.

SHIP SECURITY

ABS was the first classification society to bring together the new IMO regulations and the relevant US Coast Guard requirements in a comprehensive *Guide to Ship Security*, issued at the beginning of the year and subsequently updated to reflect interpretive clarifications made throughout the year. Thousands of copies of the Guide were distributed to industry through the ABS web site and at a series of specially convened ABS informational seminars in the major shipping centers around the world.

ABS also immediately sought authorization to act as a Recognized Security Organization (RSO) from all the principal flag States so that the task of reviewing the thousands of ship security plans and issuing the required International Ship Security Certificates could be started as quickly as possible. By year's end, 31 governments had accorded RSO status to ABS with many more authorizations pending.

Internally, ABS quickly determined that these new security responsibilities formed a natural extension of its existing Safety and Environmental Systems Certification group that was already conducting ISM, safety and environmental audits to both IMO and ABS class notation standards. An optional new Security notation (SEC) was developed to establish an internationally recognized standard of compliance that met or exceeded every international and national standard.

ABS also quickly instituted a comprehensive training scheme, organized through the ABS Institute, to prepare its existing worldwide team of safety and environmental auditors to assume the added security audit responsibilities. A total 150 staff members, drawn from all three divisions, were identified and trained within a very short time and by the third quarter, the team was busy in the field assisting owners to meet the new standards and to achieve certification.

However, as the year drew to a close, there was growing concern that only the very top tier of shipowners and managers had responded to the new security requirements. With the period until the Code's implementation date rapidly narrowing, there was growing concern about ABS, and the industry's capacity to process the very large number of ships for which owners had not yet begun the certification process.

SINGLE HULL TANKERS

Reverberations from the *Prestige* incident shook the industry and ABS throughout 2003. Following the pattern of past history the casualty, which led to widespread pollution of the coasts of northern Spain and, to a lesser extent, southern France, resulted in an almost immediate outflow of new governmental regulations, led by the European Union.

Regulatory concern focused on a vessel's single hull design, its age and its cargo of heavy fuel oil and its impact on the environment. Also receiving a great deal of governmental attention was the issue of places of refuge as the industry argued forcefully that the widespread pollution need not and would not have occurred if the vessel had been granted refuge when it first sustained damage.

All of these issues were considered either by the EU in Brussels, or by the IMO, with new European requirements for the carriage of heavy fuel oil being implemented, the places of refuge issue being advanced in both venues in a positive manner, a reassessment of the Condition Assessment Scheme for tankers being undertaken, and the IMO accelerating the phase out of single hull tankers by 2010, rather than the previously agreed 2015 deadline.

The implication of this latter decision was immediate as it fueled an already strong flow of orders for new tankers, principally at shipyards in Korea, Japan and China. When coupled with a booming charter market and a world shortage of steel, the close of the

year saw the very rare occurrence of a fevered new construction market, with newbuilding slots and yet to be delivered ships changing hands at sharply escalating prices, a soaring sale and purchase market for tankers of all configurations, and a scrap market that set new price records to feed an insatiable Asian, particularly Chinese demand for steel.

Contrasting with this strongly positive market activity, ABS was forced to deal with a more specific consequence of the *Prestige* casualty. ABS became the scapegoat for the Spanish and regional governments facing massive clean up costs and economic hardships related to the pollution.

Lawsuits seeking financial redress from ABS were filed in the US by the Spanish government and various Basque Regional administrative entities. ABS responded by putting together a multi-national team of renowned maritime lawyers to defend the society's reputation against what it considered to be baseless allegations.

ABS has denied all charges made against it and has argued strongly that the cause of the extensive pollution, and subsequent environmental and financial damage, was the decision by certain individuals within the Spanish government to deny a place of refuge to the vessel. At the time, the tanker was not leaking oil and, although damaged, was still structurally sound, if overstressed. In denying the place of refuge, Spain forced the vessel into the open ocean in high winds and heavy seas.

STEWART H. WADE

Vice President

It has been said that the true measure of an organization is how it responds to crisis. The period since the loss of the *Prestige* has repeatedly tested ABS' resolve in the face of intense media scrutiny and strong, if unwarranted, politically inspired criticism. In its response, ABS has established new standards for transparent and open cooperation with governments, industry partners and the media. We have created a template that will shape future responses by all responsible parties involved in or affected by a casualty.

THE AUTOMATED ABS SafeNet survey process was expanded in 2003 to incorporate the new IACS UR S31 unified requirements for single side skin bulk carriers. These establish renewal criteria for sideshell frames and brackets for bulk carriers constructed with a single deck, topside tanks and hopper tanks that do not conform to the post-1998 UR S12 strength requirements.

For each of the ABS-classed bulkers affected by the new requirement, ABS has created a data model for the sideshell available to owners and surveyors via the ABS SafeNet network. As-built scantling data is entered. This information is also used by the ABS engineers in each of the three operating divisions who are performing the necessary calculations to determine compliance criteria.

This as-built data serves as a pre-gauging summary report for field surveyors and gauging companies. Actual gaugings are then entered so the surveyor can compare as-built to as-measured thicknesses and make recommendations for repairs or steel renewals if needed.

Good communication between the engineering and survey staff is critical if the surveyors are to carry out their verification activities onboard the bulkers in an efficient and thorough manner. Centralized databasing of this essential information, accessible electronically by surveyors in any location, simplifies and speeds the process of determining compliance for owners seeking to minimize the time their vessels are off-hire.

ABS was gratified to receive support for its position from all sectors of the industry and from many key members of the European Commission and European Parliament. However, ABS recognizes that, now started, the legal process may take some considerable time before the claims can be dismissed and ABS is fully exonerated by the courts.

BULK CARRIER SAFETY

A raft of new regulations and requirements affecting single side skin bulk carriers either entered into force during 2003 or required extensive preparation prior to an early 2004 implementation date. Although it was widely recognized that the various measures, such as the Enhanced Survey Program (ESP) adopted by the IACS member societies over the previous ten years had resulted in a noticeable improvement in the casualty record of these vessels. Isolated incidents served to maintain government interest in further improving bulk carrier strength.

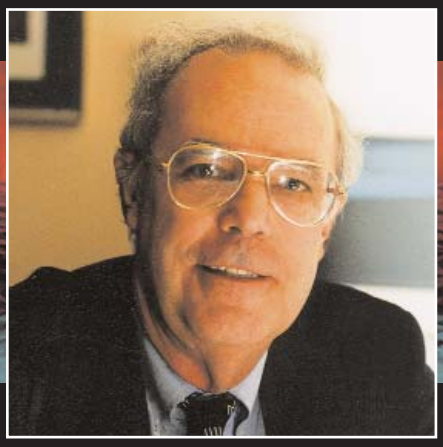
To this end, the IMO considered and finally adopted a requirement for the mandatory adoption of double sides for the next generation of bulk carriers. Certain industry groups strongly opposed this measure as being unnecessary and immediately launched a campaign to have the IMO reconsider the issue.

ABS has always been of the opinion that a well maintained, responsibly operated, single side skin bulk carrier, built to ABS SafeHull criteria, should be fit for purpose. However, with a large number of bulk carriers with double sides having already been built to ABS criteria, the society continued to advise owners to consider the many advantages of this configuration when placing orders for new tonnage.

In a related, if separate action, the IACS member societies adopted a number of Unified Requirements applicable to single side skin bulk carriers, intended to further improve safety margins. Three of the most important of these were UR S25 which harmonized class notations, and corresponding design loading conditions for bulk carriers; UR S28 which introduced a requirement that all bulk carriers, ore carriers and combination carriers contracted for construction after 1 January 2004 be fitted with an enclosed forecastle; and UR S31 that established renewal criteria for side shell frames and brackets on existing bulk carriers that had not been built to, nor brought into conformance with the strength requirements of the 1998 issued UR S12.

UR S25 took effect 1 July 2003 and the ABS Technology group worked diligently to integrate the criteria within the ABS SafeShip life cycle management system to speed and simplify the necessary analysis.

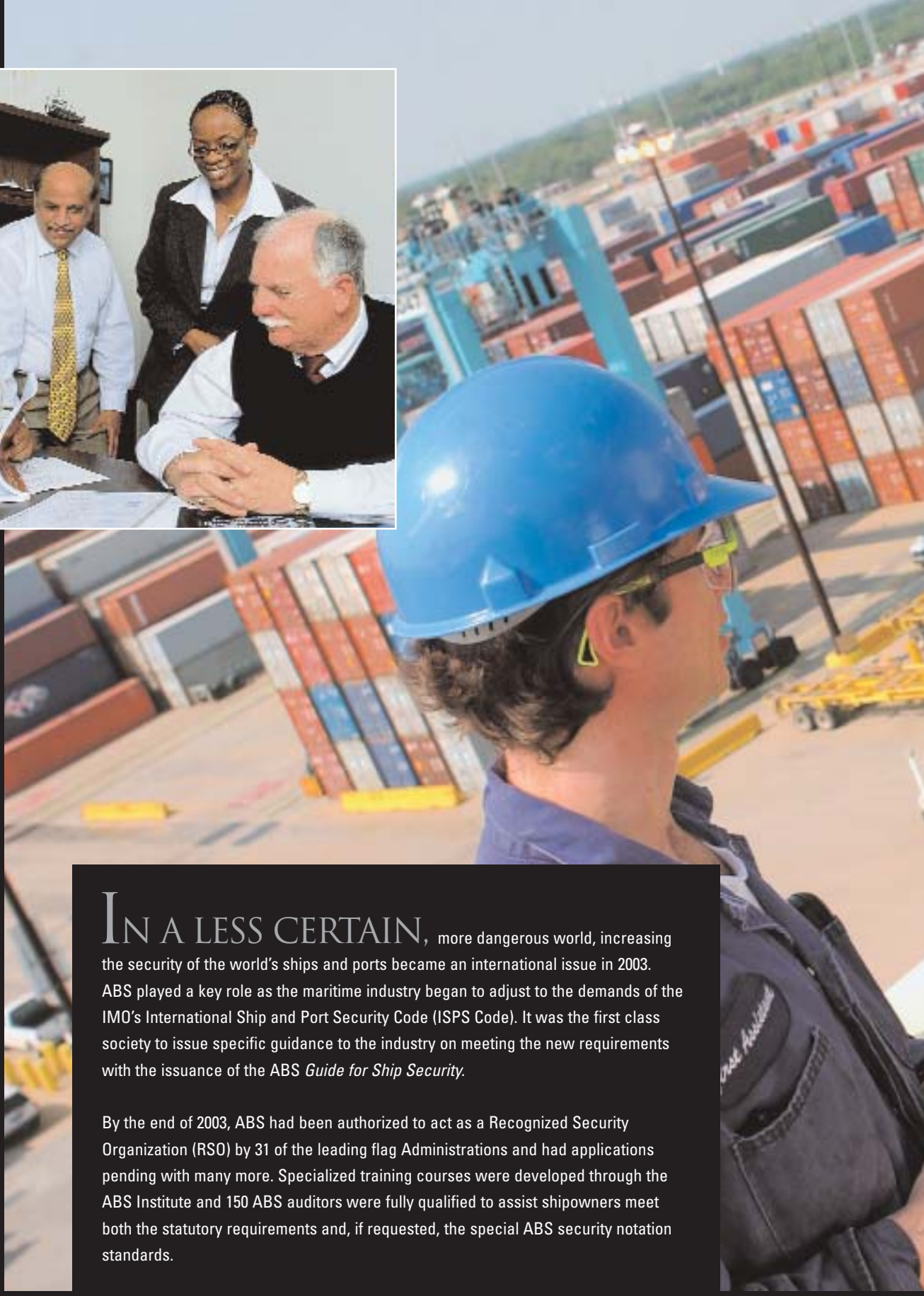
With UR S31 scheduled to take effect on 1 January 2004, the ABS engineering and survey departments began preparing for the extensive analysis and review that would be required to assess conformance with the new requirements. Once again, ABS SafeHull, part of the ABS SafeShip life cycle information management system, was employed for the engineering assessment. As-built and as-gauged scantling data was integrated in the ABS Business Product Model, and made available to owners and surveyors over the ABS SafeNet network.



GUS BOURNEUF JR.

Chief Surveyor

A classification society is only as good as its survey staff. Both our clients and ABS rely on our field surveyors to exercise sound judgment, often under trying circumstances. Yet the growing threat of criminal penalties for a perceived error in judgment has placed an unnecessary and unfair burden on the modern class surveyor. We have responded with increased training, more mentoring and added support within the divisions to assist these dedicated professionals in surmounting these new challenges.



IN A LESS CERTAIN, more dangerous world, increasing the security of the world's ships and ports became an international issue in 2003. ABS played a key role as the maritime industry began to adjust to the demands of the IMO's International Ship and Port Security Code (ISPS Code). It was the first class society to issue specific guidance to the industry on meeting the new requirements with the issuance of the ABS *Guide for Ship Security.*

By the end of 2003, ABS had been authorized to act as a Recognized Security Organization (RSO) by 31 of the leading flag Administrations and had applications pending with many more. Specialized training courses were developed through the ABS Institute and 150 ABS auditors were fully qualified to assist shipowners meet both the statutory requirements and, if requested, the special ABS security notation standards.

As the year progressed ABS saw a surge of activity on the part of responsible shipowners seeking certification to the Code, well in advance of the July 2004 implementation date. The ISPS Code also generated renewed attention on ISM management systems in general as ship managers sought the help of ABS to coordinate their safety and security management systems to better control costs and minimize disruptions to their fleet operations.


SECURITY
ABS

OTHER ISSUES

Other policy and regulatory issues addressed by ABS covered a wide gamut from the practical and technical implications of the new IMO sponsored ballast water management criteria to the question vexing EU regulators of the composition of the governing board of a classification society.

These and other issues kept the ABS Regulatory Affairs and Legal Departments busy throughout the year with frequent attendance at both IMO headquarters in London and at the EU Directorate General for Energy and Transportation (DGTREN) offices in Brussels.

Of particular concern to ABS was the continuing isolation of class as the only element within the maritime safety regime that is exposed to unlimited liability. Shipowners, underwriters, charterers, flag and port States are all accorded rights that limit their liability. Yet there has been an increasing trend to place classification societies outside this protection.

The result is that the future existence of a class society could be placed at risk based on how the courts may interpret the manner in which a surveyor applied his professional judgment in the field. Accentuating the unfairness of this exposure is that, the role of the classification society is relatively limited. And the service that is provided and which, depending upon its subsequent interpretation could ruin the organization, is performed for a nominal fee.

Exacerbating the situation is the fact that the traditional, technical focus of class societies has been expanded to include shipboard management system audits (under the ISM Code) and most recently ship security audits (under the ISPS Code) leading to widespread misconceptions as to how class conducts its statutory and classification

functions, particularly with respect to the power that the class society can exercise in carrying out these responsibilities.

ABS President Robert Somerville spoke out on these and many of the growing number of other inconsistencies in the role and responsibilities of class on several occasions during the year. ABS proposed a high level summit, with participants drawn from all sectors of the industry and from relevant government agencies, to address these fundamental issues.

As the self-regulating mechanism for the industry, class must constantly work to maintain the confidence and trust of all the other members of the safety regime. There is growing evidence that such confidence is being eroded as alternative inspection and vetting schemes multiply, government intervention within the regulatory process increases and issues such as unlimited liability and the possibility that class society personnel could be subject to criminal charges for their actions proliferate.

In such an environment, the concept of self-regulation is under threat, despite the incontrovertible evidence that the maritime industry's safety record is both good and continually improving. Those improvements, however, are matched by comparably increased demands by governments, and the public at large, for even higher standards. ABS is committed to providing the necessary leadership that will be required if those increased expectations are to be met.

THOMAS A. MILLER

Vice President & General Counsel and Secretary

Many governments are now requiring that classification societies accept unlimited liability for certain of their activities, a demand which completely disregards the limited role of class and that imposes a burden that is disproportionate to the fees that classification societies charge for their services. It is unfair that, within a business environment in which the ship-owner, the ship operator, the charterer, the insurer and the flag State can all limit their exposure to liability, only the classification society has been singled out for such penal treatment.

CLASS ACTIVITY

A strong positive trend in classification activity continued in 2003 with the ABS-classed fleet surpassing its previous record from 2002 and attaining a new record level of 110.6 million gross tons by year-end, comprised of 9,091 vessels.

ABS remained strong in the core sectors of tankers, bulk carriers and containerships. It also maintained its dominance in the offshore sector with several notable contracts including 'approval in principal' of a novel compressed natural gas (CNG) vessel and deepwater milestone projects in the Gulf of Mexico, offshore West Africa and Brazil.

Aggregate gross tonnage contracted during 2003 remained at a high level, reflective of the very active ordering, particularly for tankers in preparation for the accelerated phaseout of single hull vessels. The year-end orderbook stood at a very healthy 16.8 m gt representing

an increase of slightly more than one percent from 2002. Contracts were pending on a further 2.2 m gt.

Tanker contracts continued to dominate the new construction orderbook. Both contracts received and the year-end orderbook for new tankers yielded totals that were consistent with those of the prior year. At the close of 2003, ABS retained its market-leading 29 percent of all tankers on order at shipyards around the world.

Throughout 2003, a number of deepwater oil and gas exploration and production units were classed by ABS helping the society to maintain its preeminent position within the offshore industry. At year-end, ABS classed or certified 73 percent of the worldwide fleet of mobile offshore drilling units (MODUs).

ABS Share of Newbuilding Contracts by Country of Build

China	25%
Japan	19%
Korea, Republic of	20%
Singapore	76%
Taiwan	38%
USA	80%

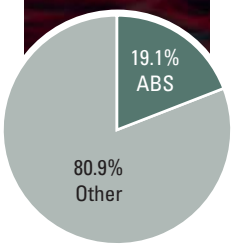
At the shipyards, the continuing strong ordering activity kept ABS in a leading position within the major Asian shipbuilding countries, particularly Korea, Japan and China. In terms of gross tons, the 2003 year-end results showed ABS earned a 20 percent share of orders contracted with Korean shipbuilders. In China, ABS held a dominant 25 percent of the orderboook, well ahead of the other leading societies. In Japan, ABS ranked second behind the country's national class society with a 19 percent share which once again put it well ahead of the other international societies.

The continued success of ABS within the newbuilding market is evidence of shipowners' confidence in the technical and survey services provided by ABS, and in particular of their confidence in the more robust vessels designed to meet ABS SafeHull criteria.

VESSELS CLASSED

During 2003, ABS classed 573 new, existing and reinstated ships and offshore structures totaling 10.2 m gt. This included 439 newly-built vessels aggregating 8.9 m gt. Also accepted into ABS class were 134 existing or reinstated vessels that were previously unclassed or classed with other societies which represented 1.3 m gt.

The new vessels registered a slight increase in gross tons over the prior year and a slight increase in the number accepted into class. Major components of the new vessels classed were the trio of mainstays – tankers, bulk carriers and containerships aggregating 146 in number of 8.0 m gt, up 17 percent in number and 21.2 percent in tonnage compared to the previous year.



ABS Share of
Worldwide Orderbook
(percentages based on gt)

Bulk Carrier	18%
Containership	7%
Supply & Tug Supply	43%
Tanker (Liquefied Cargo)	29%

VESSELS REMOVED

Removed from the ABS fleet of classed vessels during the year were 628 propelled and non-propelled vessels. Of these, 340 were withdrawn at

owners' requests for various reasons; 76 vessels were scrapped and 212 were dropped for non-compliance with ABS Rules. Among those removed were 480 oceangoing commercial ships.

CLASSED FLEET

Taking into account both vessels classed and removed during the year, the ABS-classed fleet at the close of 2003 stood at 9,091 vessels and offshore structures of 110.6 m gt. In comparison to year-end 2002, this marked a slight gain in gross tonnage from 110.1 m gt and represented a new, all-time record high for ABS.

The fleet statistics clearly showed the dominance of tankers, bulk carriers and containerships within the ABS fleet with these categories accounting for 84.5 m gt of the total. This comprised a total 2,033 vessels.

NEW CONTRACTS RECEIVED

Contracts for the classification of new vessels were received at a steady rate throughout 2003. By year-end the final tally amounted to 396 vessels of 9.94 m gt, ensuring a continued high level of shipyard activity for ABS in the immediate future.

During 2003, ABS received contracts to class 180 new tankers, bulk carriers and containerships totaling 9.3 m gt. The contract figures for all types of new vessels remained well ahead of historic ordering patterns of the previous decade.

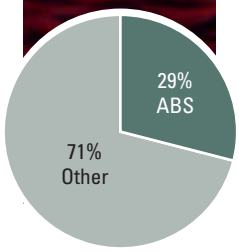
ORDERBOOK

By year's end, the orderbook of ships and offshore structures contracted to be built or building to ABS classification was at 795 vessels of 16.8 m gt in shipyards of 40 countries. This represented a strong 10.3 percent increase in gross tonnage over the previous year and an increase in the number of vessels of 74.

Within these totals, the trio of mainstays of tankers, bulk carriers and containerships numbered 186 (10.2 m gt), 79 (3.2 m gt) and 31 (1.4 m gt), respectively. In aggregate terms, these figures remained stable over 2002 performance. However, that aggregate figure disguises some significant trends. Strong demand for tankers pushed these orders up by more than 15 percent in number, and bulk carriers, up by more than 75 percent. The decline occurred within the containership sector, due largely to fiscal policies in Germany that tended to skew the market for classification of these vessels.

TANKERS

Orders for new tankers received by ABS during 2003 reflected the replacement needs created by the well-publicized regulatory phaseout introduced by IMO. In this period, ABS received contracts to class 126 new tankers, representing 7.0 m gt. Among the new tankers contracted were 10 VLCCs, 13 suezmaxes, 30 aframaxes, 6 panamaxes and 2 product tankers. These new contracts contributed to a year-end orderbook of 186 tankers of 10.2 m gt for a growth of 15 percent in number and 4 percent in gross tonnage over 2002.



ABS Share of Tanker Newbuilding
(percentages based on gt)

VLCC	32%
Suezmax	43%
Aframax	22%
Panamax	29%
Product	24%
Chemical	17%

During 2003, ABS classed 116 new, existing and reinstated tankers of 6.2 m gt. By the close of the year, the ABS fleet of classed tankers stood at 939 aggregating 47.5 m gt.

BULK CARRIERS

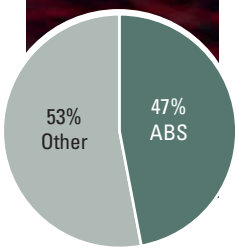
ABS classed 30 new bulk carriers during 2003 aggregating 1.3 m gt, representing a slight decline from the 2002 figure, although orders for new bulkers trended strongly upwards. Among the new bulk carriers classed were 9 capesizes, 3 panamaxes, 6 handymaxes and 12 handysizes.

At the close of the year, the fleet of ABS-classed bulk carriers stood at 689 vessels aggregating 22.2 m gt.

CONTAINERSHIPS

In 2003, ABS classed 22 new containerships of 1.1 m gt. Although there was continued vigorous ordering of new containerships throughout the year, the growth of the German KG financing option, fueled by national tax policies, created a notable distortion in the traditional selection of class for these vessels. As a consequence, the number of orders received by ABS declined from 58 vessels aggregating 2.5 m gt in 2002 to 31 vessels aggregating 1.4 m gt.

Nonetheless, deliveries were sufficient for ABS to maintain its overall 18 percent share of this market sector. At the end of 2003, the ABS-classed fleet of containerships numbered 405 of 14.8 m gt.



ABS Market Share for Offshore Floating Production Units

Spar	100%
TLP	79%
FPSO	40%
Semisubmersible	36%

OFFSHORE

During 2003 ABS classed 11 MODUs, including 3 self-elevating units, 3 fixed production installations, 2 FSOs and 1 FPSO.

ABS was also heavily involved in the reconditioning and rebuilding of a number of existing classed units designated for new employment in response to continuing demand for increased production, throughput and operational capability in deeper waters.

	Vessels in Class as of 31 Dec 2003		Vessels on Order as of 31 Dec 2003		New Vessels Classed During 2003	
VESSEL TYPE	**NO.**	**GROSS TONS**	**NO.**	**GROSS TONS**	**NO.**	**GROSS TONS**
Barge	2,427	6,588,612	116	344,162	107	291,327
Bulk Carrier	689	22,179,908	79	3,243,141	30	1,345,044
Combination (Dry/Liquid)	8	175,941	0	0	0	0
Containership	405	14,785,523	31	1,446,116	22	1,139,597
Dredge	23	90,165	0	0	0	0
Drillship	22	575,039	0	0	0	0
Dry Cargo	390	3,596,340	3	30,254	1	1,232
Ferry/Passenger Cargo	101	887,131	14	15,434	4	90,915
Fishing Vessel	22	38,506	2	644	0	0
Launch/Crewboat	236	41,349	30	4,226	25	7,197
Liquefied Gas Carrier	66	3,146,379	8	792,644	1	46,393
Mobile Offshore Unit	469	3,835,572	1	17,386	6	14,684
Passenger (Cruise) Vessel	59	496,095	41	265,433	2	8,639
Pipeline	8	0	0	0	3	0
Platform (Fixed)	139	53,197	2	8,946	3	0
Research/Survey Vessel	57	141,081	1	2,180	1	321
Single Point Moorings	37	0	0	0	0	0
Supply & Tug/Supply	712	647,555	57	120,063	48	99,645
Tanker (Liquid Cargo)	939	47,483,905	186	10,156,751	94	5,544,183
Tug	1,371	643,526	71	36,719	29	15,932
Underwater Vehicle	45	361	3	4,229	0	0
Vehicle/Barge Carrier	120	4,361,135	4	19,466	3	199,993
Yacht	377	99,130	90	24,187	35	10,044
Other	369	762,733	56	294,524	25	53,006
TOTALS	**9,091**	**110,629,183**	**795**	**16,826,505**	**439**	**8,868,152**

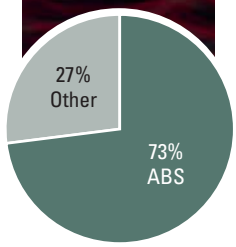
Throughout 2003 the steady pace at which the offshore industry looked to ABS for services continued to underscore its market leadership. Contracts were received to class 6 major structures comprising 2 MODUs, 2 single point moorings, 1 mobile offshore unit and 1 FPSO.

At the completion of the year, the orderbook showed a total of 99 MODUs and offshore supply vessels building or contracted to be built to ABS classification.

Year-end statistics illustrate that ABS remained well ahead of all other class societies in the share of classed MODUs with an overall 73 percent share of drilling units worldwide. These included a 53 percent share of the semi-submersible units, a 65 percent share of the drillships and drill barges and an 85 percent share of jackups.

ABS also maintained a strong presence in the floating production sector with an overall 47 percent share. This included a 100 percent share of all spars in service, a 79 percent share of all TLPs, a 40 percent share of the FPSO market and a 36 percent share of all production semisubmersibles.

At the year's end, there were 469 mobile offshore drilling units, including 339 jackups and 90 drilling semisubmersibles in ABS class. Offshore floating production installations classed and/or certified by ABS totaled 82 at year end, including 43 FPSOs, 13 tension leg platforms, 13 spar-based systems, 13 semisubmersibles in addition to 139 fixed installations, as well as over 1,200 offshore supply vessels of various types (including crew boats).



ABS Market Share for Offshore Exploration Units

Jackup	85%
Tender	79%
Drillship & Drill Barge	65%
Semisubmersible	53%

ABS CORPORATE OFFICERS

Frank J. Iarossi
Chairman

Robert D. Somerville
President & Chief Executive Officer

Dr. Donald Liu
Executive Vice President
Chief Technology Officer

Robert E. Kramek
Executive Vice President
President, ABS Americas

Vincent F. Roth
Senior Vice President
Chief of Staff

Robert J. Bauerle
Senior Vice President
Treasurer & Chief Financial Officer

James C. Card
Senior Vice President

Gary A. Latin
Senior Vice President
Chief Information Officer

Gus Bourneuf Jr.
Vice President
Chief Surveyor

James Liebertz
Vice President
President, ABS Pacific

Antonio C. Lino Costa
Vice President
President, ABS Europe

Thomas A. Miller
Vice President
General Counsel & Secretary

William J. Sember
Vice President

Stewart H. Wade
Vice President

ABS BOARD OF DIRECTORS

Lars Carlsson
Concordia Maritime AB

Michael L. Carthew
ChevronTexaco Shipping Co. LLC

Peter George Goulandris
Capeside Steamship Co. Ltd.

John R. Huff
Oceaneering International, Inc.

Frank J. Iarossi
ABS

Paul J. Ioannidis
Alexander S. Onassis Foundation

Gerhard E. Kurz
Seabulk International Inc.

Joseph Kwok
American Eagle Tankers Inc. Ltd.

Dott. Alcide Ezio Rosina
Premuda Spa di Navigazione

Robert D. Somerville
ABS

Dean E. Taylor
Tidewater, Inc.

Douglas C. Wolcott
Wolcott Associates

ABS COUNCIL

Ibrahim M. Al-Ghanim
Kuwait Oil Tanker Co. S.A.K.

Kurt Andersen*

Robert J. Bauerle
ABS

William T. Bennett Jr.
Bennett & Associates, LLC

Francis Blanchelande
Single Buoy Moorings (SBM)
Production Contractors

Gus Bourneuf Jr.
ABS

James C. Card
ABS

Lars Carlsson
Concordia Maritime AB

John M. Carras*
Carras (Hellas) Ltd.

Michael L. Carthew
ChevronTexaco Shipping Co. LLC

T. H. Chen
Yang Ming Marine Transport Corp.

Choo Chiau Beng
Keppel Offshore & Marine Ltd.

Adm. Thomas H. Collins
US Coast Guard

Thomas B. Crowley Jr.
Crowley Maritime Corp.

Dott. Cesare D'Amico
D'Amico Societa di Navigazione S.p.A.

James C. Day
Noble Drilling Corp.

Richard D. DeSimone
St. Paul Companies

Dimitrios J. Fafalios
Fafalios Ltd.

John D. Fafalios*
Fafalios Ltd.

Peter R. Goodfellow
Stelmar Tankers (Management) Ltd.

Peter George Goulandris
Capeside Steamship Co. Ltd.

Peter John Goulandris
Orion & Global Chartering Co., Inc./Brokerage Co., Inc.

William O. Gray
Gray Maritime Co.

Dott. Aldo Grimaldi
Grimaldi Group

John A. Hickey

Michael S. Hudner
B & H Management, Ltd.

John R. Huff
Oceaneering International, Inc.

Yung Won Hyun*
Hyundai Merchant Marine Co., Ltd.

Frank J. Iarossi
ABS

Paul J. Ioannidis
Alexander S. Onassis Foundation

Mustafa Al Jalali
Vela International Marine Ltd.

Capt. Robert E. Johnston
OSG Ship Management, Inc.

Capt. Spyros N. Karnessis
European Navigation Inc.

K. H. Koo
Tai Chong Cheang Steamship Co. (HK) Ltd.

Robert E. Kramek
ABS

Capt. B. S. Kumar
Essar Investments Ltd.

Charles Kurz II
Keystone Shipping Co.

Gerhard E. Kurz
Seabulk International Inc.

Joseph Kwok
American Eagle Tankers Inc. Ltd.

John P. Laborde*

Gary A. Latin
ABS

Michael C. Lemos
C. M. Lemos & Co. Ltd.

James Liebertz
ABS

Antonio C. Lino Costa
ABS

Dr. Donald Liu
ABS

Peter G. Livanos
Ceres Hellenic Shipping Enterprises Ltd.

Dr. Frank F. H. Lu
Yang Ming Marine Transport Corp.

Thomas A. Miller
ABS

Thomas R. Moore

C. Bradley Mulholland
Matson Navigation Co.

William C. O'Malley
Tidewater, Inc.

C. R. Palmer
Rowan Companies, Inc.

Stephen Y. K. Pan
World-Wide Shipping Agency Ltd.

Pericles S. Panagopoulos
Superfast Ferries S.A.

Basil Phrixos Papachristidis
Hellespont Steamship Corp.

Ambassador M. Pio Correa*
Infrapart Consultants

Spyros M. Polemis
Seacrest Shipping Co. Ltd.

S. Paul Revere
SeaRiver Maritime, Inc.

Robert E. Rose
GlobalSantaFe Corp.

Dott. Alcide Ezio Rosina
Premuda Spa di Navigazione

Vincent F. Roth
ABS

Basil C. Scarvelis
Trident Maritime Agency Inc.

Capt. William G. Schubert
US Maritime Administration

William J. Sember
ABS

Philip J. Shapiro
Liberty Maritime Corp.

Robert D. Somerville
ABS

Capt. Cesare Sorio
S. J. Marine Inc.

Prabhat Kumar Srivastava
The Shipping Corp. of India Ltd.

Craig H. Stevenson Jr.
OMI Corp.

Dean E. Taylor
Tidewater, Inc.

Capt. Panagiotis N. Tsakos
Tsakos Shipping & Trading S.A.

Frank W. K. Tsao*
IMC Development & Management Ltd.

C. C. Tung
Orient Overseas (International) Ltd.

Capt. Antonio J. Valdes
ConocoPhillips, Inc.

Richard H. Vortmann
National Steel & Shipbuilding Co.

Rod Vulovic
US Ship Management, Inc.

Stewart H. Wade
ABS

Capt. Wei Jiafu
China Ocean Shipping Group Co.

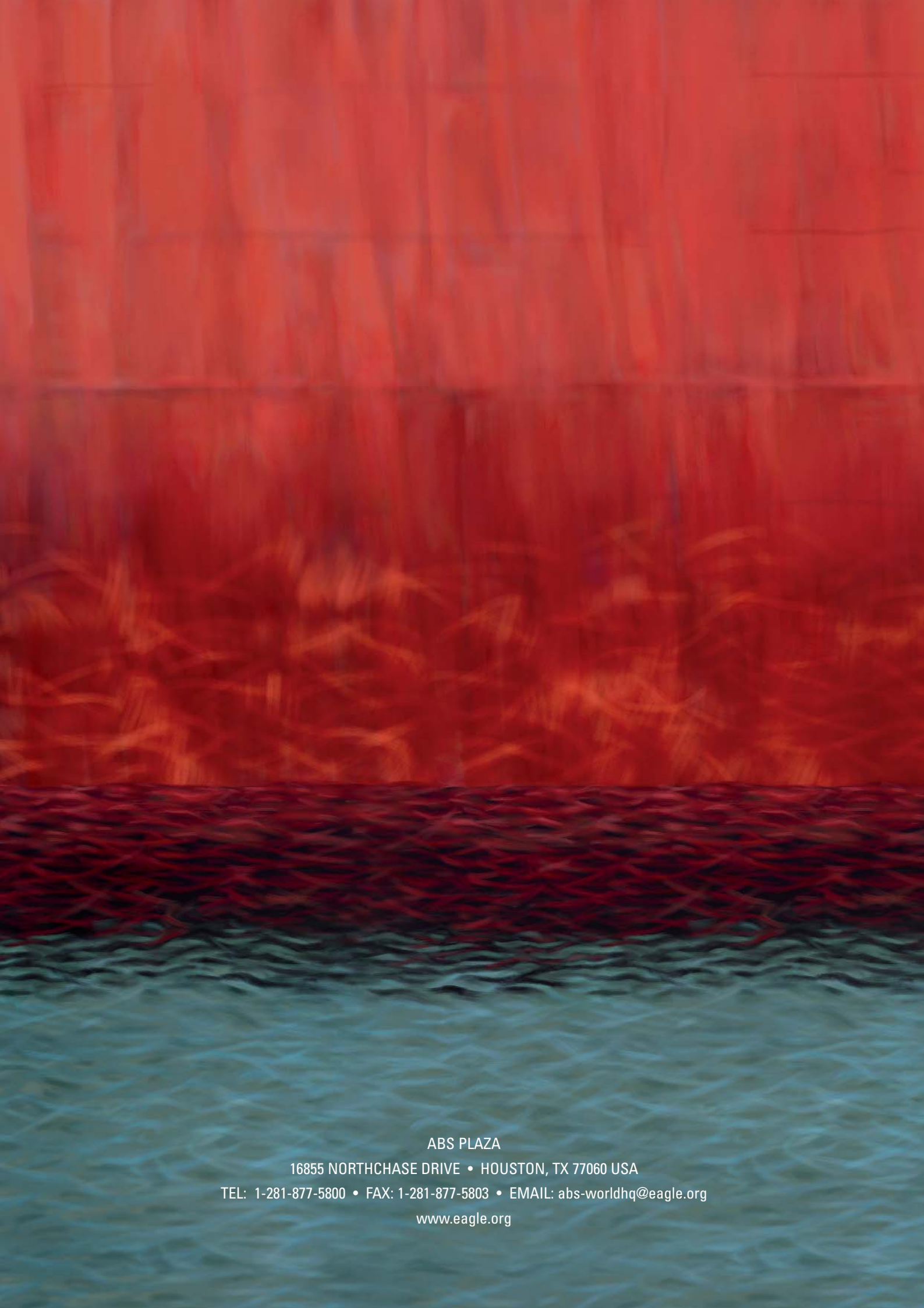
Douglas C. Wolcott
Wolcott Associates

** Emeritus Council Member*

Produced by:
ABS Marketing Development & Communications
Houston, TX USA

THIS ANNUAL REVIEW IS PRINTED ON RECYCLED PAPER
CONTAINING RECOVERED, POST-CONSUMER WASTE PAPER

TX 03/04 4035 10000



ABS PLAZA
16855 NORTHCHASE DRIVE • HOUSTON, TX 77060 USA
TEL: 1-281-877-5800 • FAX: 1-281-877-5803 • EMAIL: abs-worldhq@eagle.org
www.eagle.org