

MAY 1999

## 1996 - 1998



A combined reprinting of...

- 1. 1995 Review - Marine Safety Initiatives**  
March 1996
- 2. Port State Control**  
July 1996
- 3. ISM Code Certification**  
November 1996
- 4. IACS and IMO - The Essential Relationship**  
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*and...*

**The Development of Classification**  
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**MARINE SAFETY INITIATIVES:** “Formally implemented on 1 January 1996, the IACS programme of seven key Marine Safety Initiatives is deliberately focused to restrict the operation of shipping that fails to comply with standards set by IACS' Members...”

**PORT STATE CONTROL:** “Fully supported by IACS, Port State Control (PSC) plays an increasingly important role in improving safety compliance of the world fleet and protecting the marine environment - key objectives shared by IACS...”

**ISM CODE CERTIFICATION:** “IACS believes that the greatest contribution to improved maritime safety can only come from higher conformance by the world fleet to recognised IMO Conventions and international safety standards. The new ISM Code is therefore a vital instrument to bring the improvements expected by the international community...”

**THE ESSENTIAL RELATIONSHIP:** “The IMO sets the operational safety standards for the world fleet, through safety Conventions. But certain statutory certification under many of these Conventions is *conditional* on the ship's structural and mechanical “fitness for purpose” under the rules of the classification society...”

**BULK CARRIER SAFETY:** “Safer existing ships and stronger new ships remain the chief technical challenges in bulk carrier operations...higher strength and survivability standards will bring to fruition joint efforts of IMO and IACS to determine and implement realistic measures for casualty reduction and long term safety gains for the bulk carrier fleet...”

**TIGHTENING THE NET:** “The IACS Societies wish to help increase available knowledge of vessels not meeting acceptable standards. Expansion of Port State Control supplements the opportunity to eliminate sub-standard shipping...”

**ACHIEVEMENTS:** “Classification (is) at the heart of self regulation in an industry where public and political interest and accountability have sharply increased in recent years...IACS has made class more open, better understood and more widely respected for its role, integrity and contribution towards safer ships and cleaner seas...”

**RESPONSIBILITY & REGULATION:** “Class Rules are widely recognised as central in ...determination to deny sub-standard ships the ‘freedom’ to threaten lives, seas and coasts - or to commercially disadvantage the great majority of ‘quality’ operators...”

### 1

#### INTRODUCTION

**1995** marked important progress by IACS in the further development of its unique contribution to the safety of an increasingly elderly world fleet.

The major new series of Marine Safety Initiatives agreed by its mid-year Council; further enhancement of existing programmes and new research initiatives all reflected IACS' increasingly tough stance on safety compliance – and its clear leadership in technical areas of maritime safety and pollution prevention.

With the marine industry being held increasingly accountable to the international community, and due to its unique fleet knowledge, IACS has a vital obligation to its

partner maritime interests and organisations that share responsibility for standards compliance and improvement.

In contributing to a safer industry for the future, IACS wants to see increasing deterrence of sub-standard shipping – through exposure and penalties to restrict trading – but without disadvantage to the vast majority of shipowners and operators who fully conform to the highest standards of operation and safety.

This Review summarises developments by IACS in a year of important milestones.

These also included the strengthening and expansion of its Quality System Certification Scheme (QSCS); adoption of Procedural Requirements for ISM Code Certification and the launch of a major classification study into bulk carrier safety.

### 2

#### MARINE SAFETY INITIATIVES

##### *In summary.....*

Formally implemented on 1 January 1996, the IACS programme of seven key Marine Safety Initiatives is deliberately focused to restrict the operation of shipping that fails to comply with standards set by IACS' Members.

The programme includes further tightening of the Transfer of Class Agreement (TOCA); greater transparency of Class and Statutory information and automatic Suspension of Class under specified circumstances.

It also covers the employment, control, qualification/certification and training of surveyors – surveyor activity and performance monitoring and relations with Port State Control Authorities.

Two of the Initiatives – on Information Transparency and Automatic Suspension of Class – signal the strength of IACS' commitment to its responsibility as the leading technical influence in the partnership of organisations dedicated to enhanced shipping safety.

On Information Transparency, the IACS societies have agreed to expand and simplify access by Flag State, Port State and the Insurance Industry to Class and Statutory information – with a widened range of ship status data becoming more easily available on legitimate request by responsible authorities.

The new IACS Procedure for Suspension of Class is designed to deter and penalise any failure of vessels to comply with Survey deadlines, society Recommendations or Conditions of Class by assigned dates.

Members' conformance with the detailed requirements of the Programme will be audited as an extension of the IACS Quality System Certification Scheme (QSCS).

*In detail.....*

### **1. TRANSFER OF CLASS AGREEMENT (TOCA):**

**IACS' Transfer of Class Agreement (TOCA) has been further strengthened to eliminate the possibility of required repairs being avoided by changing classification society.**

Revisions to Procedure are designed to ensure that the gaining society accepts the vessel for its classification only after all overdue Surveys, Recommendations or Conditions of Class previously issued against the vessel have been completed as specified by the losing society.

The revised Agreement sets strict time limits for the exchange of transfer information between the Owner and Societies involved.

It came into force on 1 July 1995.

### **2. TRANSPARENCY OF CLASSIFICATION AND STATUTORY INFORMATION:**

**With effect from 1 January 1996, the IACS Societies have extended the range of Classification and Statutory information readily available, on proper request, to organisations with a legitimate interest in the maintenance of safe shipping standards and their application.**

Beyond shipowners, these include Flag and Port States and insurance companies – all of whom already have the right of access to considerable classification and statutory certification information for ships in service.

The initiative seeks to increase information transparency, building on the value to shipping safety represented by IACS' weekly release of Transfer of Class data. This is already available to Port State Control Regimes, Port States and Underwriters. Its main objective is to simplify access to information, by sharing this "on request" rather than via the more complex route of ship visits or access to a Classification Society's Register.

From 1 January 1996, a much wider range of Ships in Operation Class Services data has become

immediately accessible to Port State Control authorities, Hull Underwriters and P&I Associations. Similarly, on request, IACS Members will also provide Owners, Flag States, Port States and Insurance Companies with the result of audits of the particular Society's Quality Assurance System.

A definitive matrix of what information is available and the specific conditions of release is available on request.

### **3. PROCEDURE FOR SUSPENSION OF CLASS:**

**Revised IACS Procedures provide for Suspension of Class in the event of Special (5 year) Surveys, Annual Surveys or Recommendations / Conditions of Class falling overdue.**

Classification will be automatically suspended in the event of the Special Survey not being completed or in hand as at the Certificate expiry date. In exceptional circumstances, the Society may grant a three-month extension.

Classification will also be suspended if the vessel's Annual Survey is not completed within three months of the due date. A vessel's class will also be subject to the Suspension Procedure if any outstanding Recommendation and/or Condition of Class is not fulfilled, unless postponed by society agreement, by an assigned date.

The Procedures came into force on 1 January 1996.

### **4. PROCEDURE FOR EMPLOYMENT AND CONTROL OF NON-EXCLUSIVE SURVEYORS:**

**IACS Societies have agreed that the employment of non-exclusive surveyors should be limited to locations not easily served by exclusive surveyors. Additionally, on a case-by-case basis, non-exclusive surveyors may be required to assist with high workloads at exclusive offices.**

Prior to engagement – which must be on a formal basis – the suitability and qualifications of a non-exclusive surveyor must be vetted by the retaining society, and approval given by a senior staff member authorised to do so.

Effective controls will be maintained through examination of Survey Reports and verification of the surveyor's field activities at least every two years.

The Procedure came into force on 1 July 1995.

### **5. PROCEDURE FOR SURVEYOR ACTIVITY MONITORING:**

**Surveyor monitoring involves the re-inspection of a vessel during either its Periodical Survey or within three months of the survey, to determine if the surveyor has carried out the survey satisfactorily.**

The IACS requirement is to verify the standards being applied in practice – i.e. consistent application of Rules and Process Instructions. The purpose is to detect, document and if necessary to take corrective actions. Documented monitoring will be undertaken on the work of each exclusive and non-exclusive surveyor at least once every two years.

The Procedure came into force on 1 July 1995.

### **6. PROCEDURE FOR QUALIFICATION AND TRAINING OF SURVEYORS:**

**As a minimum, surveyors are required to hold a degree or equivalent from a recognised institution in a relevant field of engineering or physical science, or a qualification from a suitable marine/nautical institution, plus relevant seagoing experience as a certified ship's officer.**

The surveyor will have to accumulate a minimum number of supervised surveys or days of supervised survey experience for each survey type or category. Access to the guidance of a senior surveyor and maintained documentary evidence of competency in the various work categories is mandatory, together with detailed personal records.

Local classification society management is responsible for ensuring the necessary training, experience and competence of individual surveyors before their tasking to unaccompanied assignments.

The Procedure came into force on 1 July 1995.

### **7. PROCEDURE FOR RESPONDING TO PORT STATE CONTROL:**

**This Procedure defines the co-operation and assistance to be given by surveyors during Port State Control inspections, including prompt and positive response to a Port State request for a surveyor to attend on board.**

It includes liaison with Port State Control Authorities and Inspectors to ensure that class surveyors are called in as appropriate for any deficiencies found in Class or Statutory matters; to ensure uniformity of interpretation in Classification / Statutory matters and the provision to Inspectors of appropriate background information.

Surveyors are also responsible for liaison with both a vessel's Flag State and Owner's representative to ensure that both parties are aware of any safety-related actions taken in either a Class or Statutory context.

The procedure also covers the compilation of detailed comments on any Class/statutory-related deficiency and provision to the Flag State of an updated summary of any deficiencies and the actions taken.

The classification society will maintain a database to record and track deficiencies by type and ship, with IACS monitoring the relative performance of each Member Society.

The Procedure came into force on 1 July 1995.

### **3 QUALITY SYSTEM CERTIFICATION SCHEME (QSCS)**

IACS Members are now required to meet even tighter standards of quality system compliance. These are set through the latest provisions of the Association's QSCS, which defines strict internal quality system requirements for classification and delegated statutory work.

The latest provisions bring greater alignment with ISO 9001 – on which the QSCS is based, and have been tailored by IACS to address the special context of classification societies' work. In certain respects, IACS' new requirements go even beyond the latest, September 1994 version of ISO 9001.

To meet the demands of compliance verification and monitoring, QSCS audit sample sizes are being increased and the London-based audit team expanded.

IACS' QSCS was launched in 1991, with random vertical contract auditing added in 1993.

Now, the service delivery element – including surveyor visits to vessels, shipyards and manufacturing facilities – has become a formal requirement alongside verification of internal systems practice.

Compliance with QSCS is a mandatory condition of IACS Membership and Associate membership.

## 4 ISM CODE IMPLEMENTATION

Designed to improve compliance with international rules and regulations and to support safe practices in shipping, the ISM Code is regarded as the most important single development in maritime safety for many years. The Code offers a unique opportunity to develop a new safety culture across the industry.

IACS and its Member societies have key roles in helping the industry to prepare for the Code's phased introduction, starting in 1998. Consistent and uniform application of the Code will be essential to delivering its benefits. The unique familiarity of IACS and its Members with the world fleet and its regulations is therefore an important key to compliance auditing on a huge scale.

During 1995, the IACS societies formally adopted Procedural Requirements for Certification of the Code; which entered into force on 1 January 1996.

IACS' Procedural Requirements for Certification will be vital instruments in verifying vessels' Safety Management Certificates (SMCs) and the Documents of

Compliance (DOCs) for owners'/operators' shore-based operations respectively.

With 25,000 IACS Member-classed vessels and their 7,000 owners and operators alone requiring auditing and certification, compliance monitoring is a major challenge. IACS' determination to establish and implement common procedures underlines its commitment to ensuring that the industry can fully benefit from the initiative.

## 5 BULK CARRIER SAFETY STUDY

Leading the industry's response to losses associated with structural failures in an elderly bulk fleet, IACS took a series of important bulk carrier safety initiatives in 1992-94. In 1995, these were followed by the launch of a major, wide ranging study into bulk carrier design and in-service experience.

IACS wants to see improved survivability in the conditions that have often been associated with bulk carrier losses: hold flooding while carrying heavy, high density cargo.

From its interim findings, IACS is proposing higher design strength in new ships and greater attention to preserving watertight integrity in the existing fleet. Special vigilance and good maintenance of outer hulls and hatch covers are seen as the crucial primary defence as vessels get older.

Bulk carrier losses fell sharply in 1995, with no casualties due to structural failure - suggesting that IACS' Enhanced Surveys, together with improved vessel maintenance and greater vigilance, have progressively taken a welcome effect.

Recommendations from further stages of IACS' continuing bulk carrier studies are expected during 1996.

# IACS

**INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES LTD.**

### 1

#### SUMMARY

**Port State Control empowers a state to verify the condition and acceptability of a foreign vessel using its ports. Inspection can identify sub-standard ships and detain them until any safety or marine environment-related defects - whether operational or structural - are rectified.**

**Fully supported by IACS, Port State Control (PSC) plays an increasingly important role in improving safety compliance of the world fleet and protecting the marine environment - key objectives shared by IACS.**

**PSC inspections provide a check on the condition of the ship and its equipment additional to its annually held Statutory and Classification Surveys.**

**With delegated authority to undertake Statutory Surveys for well over 100 Flag Administrations signatory to IMO Conventions, the IACS Societies have a key role in supporting the contribution by PSC to progressive elimination of sub-standard shipping.**

#### FULL CO-OPERATION

IACS Members are committed to full co-operation with PSC authorities, as reflected in two Marine Safety Initiatives, and respective resolutions were formally adopted by all IACS Members and Associates. Co-operation and assistance to be given by the IACS Societies in a PSC inspection is fully defined by an IACS Procedural Requirement (*See 3 below*).

In attending a vessel as a consequence of a PSC intervention, an IACS Society will co-operate fully in the process of correcting any Class-related safety deficiencies. The Society can only represent the vessel's

Flag Administration on safety deficiencies related to those Statutory Services the Society has been authorised to deal with by the Flag State. The Society may require corrective action(s), but authorisation to instruct repair expenditure - and, ultimately, for any deficiencies - is entirely that of the owner.

#### CRITERIA ...

In detaining ships, PSC authorities usually establish the society with which the ship is classed and include this information in published lists and reports, regardless of the cause of detention.

IACS believes that Members should not be identified or penalised when not responsible for issues causing PSC detentions - and will maintain this principle. However, each Member maintains a database to record and track deficiencies by type and ship. IACS Members seek to gather as much information as possible to verify Class involvement in detention causes, so that detention data may be reliably used as a basis to identify where corrective actions may be necessary, or improvements made, in the delivery of their services.

The criteria supported by IACS for assessing classification responsibility is that of the United States Coast Guard (USCG) (*See 4 below*).

Beyond an increasingly active dialogue with PSC authorities, IACS can provide training support, including clarification of the vital relationships between international safety and pollution prevention Conventions and class society Rules.

### 2

#### BACKGROUND

PSC authorities tasked inter alia to identify and, if necessary, detain safety and marine environmentally-deficient ships have become important partners to IACS Members in the drive to improve safety within shipping.

With strong support from the IMO, PSC inspections

and regimes now cover North European waters; the North and South Atlantic; the Pacific and the Caribbean. Extension to the Mediterranean and Middle East is being developed.

### **IACS PROACTIVITY ...**

Using its unique world fleet data bank, IACS has been able to practically assist PSC initiatives from the beginning. For example, to aid PSC efficiency and targeting, IACS has been proactive since 1994 in sharing with Port States key data on vessels changing class between IACS Members.

Updated and accessible regularly by Port States, IACS maintains an international database as part of its Members' strict Transfer of Class Agreement (TOGA). This has been progressively developed to prevent a vessel from delaying or avoiding repairs by switching class between IACS Members.

In January 1996, as one of its new series of Marine Safety Initiatives, IACS enhanced access to a widened range of Class and Statutory information on ships in service by making this more readily available "on request" to legitimate ship safety interests, including PSC authorities.

### **RAPID DATA ACCESS ...**

Rapid access to a wide range of ship information is a key example of the strong contribution made by IACS to PSC. Another strong contribution is the frequent role of IACS Members in assisting PSC authorities through delegated responsibility to act on behalf of a Flag Administration in Statutory safety and marine environment matters, as required by the IMO Conventions.

Classification society Rules are concerned primarily with hull structures and engineering systems. Some IMO Convention certificates are also concerned with these matters and their issue and ongoing validity are therefore dependent on compliance with the appropriate classification society Rules.

Should a PSC inspection reveal hull structural or engineering system deficiencies, both Class and Statutory certification will be affected and the

involvement of the vessel's class society will be crucial.

However, in other statutory and marine environment matters, the Convention requirements are explicit and independent of classification society Rules. Nevertheless, it is important that PSC authorities understand the close relationship of classification society Rules and IMO Convention requirements when considering responsibility for deficiencies revealed by PSC inspections.

It should also be understood that deficiencies may have developed or been caused since the last Statutory or Classification survey, and this could be attributable to poor maintenance.

To clearly define the scope of involvement and action responsibility of a Member society called in to a PSC Inspection, IACS has formalised a Procedural Requirement.

## **3**

### **IACS REQUIREMENTS**

Co-operation, assistance, strict reporting and data logging are all key to IACS' Procedure for responding to PSC. The Procedural Requirement is mandatory in the response of IACS Members and Associates.

The provisions can be summarised as follows:

#### **(1) CO-OPERATION AND ASSISTANCE:**

A Port State request to attend on board a ship to assist with rectification of reported deficiencies or other discrepancies will be dealt with promptly and positively. Prior to attendance on board, the surveyor will inform the owner or owner's representative of the surveyor's function. IACS Members will co-operate during PSC inspections by:

- Ensuring that class surveyors attend the ship when deficiencies related to Class and Statutory matters are found, and liaising to ensure uniform interpretations of Class and Statutory requirements.
- Providing PSC inspectors with relevant information and details of outstanding conditions of Class and Statutory items.

- Liaising with the Flag State, in accordance with prior agreement, and the owner's representative, to ensure that both are fully aware of actions being taken that affect Class-related or Statutory-related matters.

### (2) DEFICIENCIES:

- PSC inspectors will be urged to list deficiencies in relation to the specific Convention certificates concerned, giving details of the relevant certificate - including the issuer's name and last survey date.
- Listings should indicate: (1). All relevant deficiencies in the PSC inspection report; (2). All deficiencies dealt with, and details of actions taken for each - including deficiencies related to Class items and Statutory deficiencies relating to Statutory certificates issued; (3). Any deficiencies which, with the agreement of the surveyors and Port State inspectors, remain outstanding on the ship's departure and which are subject to special re-examination and attention as necessary by a specified date.

### (3) DETENTION REPORTS AND STATISTICS:

- Reported deficiencies are promptly analysed, and the following actions taken:
  - (1). Surveyors concerned will provide detailed comments on any deficiency of either a Class or Statutory nature within the purview of the classification society or authority delegated to it;
  - (2). The Flag State is to be provided with an updated summary of any deficiencies and the actions taken.
- A database of relevant reported deficiencies will be maintained.
- Database information will be able to show that recurring violations, by deficiency type and ship, are readily identifiable - and include data on agreed actions taken.

### (4) PERFORMANCE:

- The relative performance of each IACS Member and Associate in its PSC response and data

logging activity is monitored centrally by the IACS Permanent Secretariat.

## 4

### RESPONSIBILITY CRITERIA

For the assessment of classification responsibility, IACS uses and supports the criteria of the United States Coast Guard. In summary, these USCG principles are that:

- (1). Interventions are conducted only when a vessel is unfit to proceed to sea or a threat to the marine environment.
- (2). Voyage damage will not be Class-associated, unless other Class-related deficiencies are noted during a damage survey.
- (3). Equipment non-conformities will only be Class-associated where equipment is covered by a Class survey, or where Class has issued certification on behalf of a Flag Administration.
- (4). Where multiple deficiencies are noted, only those serious enough to justify intervention will be evaluated to determine Class non-conformities.
- (5). When the cause of an intervention, outdated equipment will not be associated with a Class non-conformity unless outdated at the time of the last survey conducted by Class on behalf of the Flag Administration.
- (6). When the cause of an intervention, the absence of highly pilferable equipment will generally not be listed as a Class non-conformity - unless a large quantity is missing, and inspection is taking place within 90 days of the last survey on behalf of the Flag Administration.
- (7). Expired certificates will not be associated with a Class non-conformity unless the certificates were not endorsed or properly issued by the Class Society when conducting the last survey on behalf of the Flag Administration.
- (8). Interventions based on manning issues, whether conducted in accordance with SOLAS or STCW, will not be listed as Class non-conformities.

- (9). A time limit of 90 days will generally be placed on non-conformities associated with equipment failures, unless apparent that the deficiency is long-standing.
- (10). Failure of human factor-related testing will be associated with a Class non-conformity only when the Class society issued the relevant certificate, and then only for a specific period of 30 days.
- (11). Serious wastage or other structural deficiencies not caused by voyage damage will be listed as a Class non-conformity.
- (12). In all cases of Class non-conformities, the Classification Society will be notified in writing. All cases should be subject to appeal to the relevant PSC authority, and all appeals should receive a written response.

governing ship structural design and primary engineering systems. The Rules of the leading classification societies provide a common reference point and IACS and its Members are ready to assist in meeting the training needs of PSC organisations.

By invitation, IACS has already provided training support to the Paris and Tokyo Memorandums of Understanding on PSC, and has entered a productive dialogue with their Caribbean and Mediterranean counterparts.

To improve international maritime safety, IACS is committed to full co-operation and information exchange with Port State Control.



### **FUTURE DEVELOPMENT**

IACS will continue to strongly support the concept and expansion of Port State Control.

Growth of PSC organisations calls for detailed training in the crucial relationship between the IMO Conventions on safety and the technical rules and requirements

# **IACS**

**INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES LTD.**

### 1

#### SUMMARY

**IACS believes that the greatest contribution to improved maritime safety can only come from higher conformance by the world fleet to recognised IMO Conventions and international safety standards. The new ISM Code is therefore a vital instrument to bring the improvements expected by the international community.**

**Improved and consistent compliance through stronger enforcement of international rules and regulations are central objectives of the ISM Code. Widely held as the most important single development in maritime safety for many years, the Code offers a unique opportunity to develop and implement a new safety culture for the industry.**

**To comply with the ISM Code, shipowners are required to develop, implement and maintain a Safety Management System (SMS), with conformance of shore-based management**

**operations to standards validated by a Document of Compliance (DOC). The SMS also requires audited compliance of vessels to retain mandatory Safety Management Certificates (SMCs). Being introduced in two stages, the ISM Code will encompass 90% of the world's fleet, with approximately 8,000 shipowning and operating companies. Phase One requires the auditing of some 18,700 ships before 1 July 1998. Phase Two will require another 20,700 ships to be audited before 1 July 2002.**

**This Briefing reviews the main aspects of IACS Members' practical involvement with Code certification.**

**IACS' position on key issues is summarised - including comments on the crucial relationship between classification/statutory and ISM Code certification. Also considered are the sourcing of ISM Code certification; involvement, qualifications and necessary experience of other organisations - and actions to develop and ensure consistency in Code implementation.**

Highlights of IACS' stance towards ISM Code implementation include:

- In the voluntary, pre-convention period, IACS is supporting the early implementation of the Code by shipping companies and the process for converting pre-convention certificates to full certification once the Code becomes mandatory.
- IACS Members are seeking Authorisation by many Flag Administrations to act on their behalf when the Code becomes mandatory.
- IACS is encouraging Flag Administrations to enforce the key IMO Resolutions which, together, will enforce consistent application of this major step forward in maritime safety. These are Resolution A.739(18) (*"Guidelines for the Authorisation of Recognised Organisations Acting on behalf of the Administrations"*) and Resolution A.788 (19) (*"Guidelines on Implementation of the ISM Code by Administrations"*).
- Consistent application of the ISM Code by all

### 2

#### ROLE OF IACS MEMBERS

Through delegation by Flag Administrations, much of the audit workload for Code compliance will be undertaken by the IACS societies, which have a unique technical understanding of the world merchant fleet and the Conventions on which the Code is based.

IACS' specially-developed Procedural Requirements PR9 on ISM Code Certification were formally implemented on 1 January 1996. Guidelines for IACS auditors undertaking certification and a mandatory series of model training courses for auditors have also been launched.

IACS is also introducing (early 1997) an electronic database to record statistics on the progress of ISM Code certifications issued by IACS Members. This is likely to be the most comprehensive single source of statistical data on the majority of vessel and owner/operator compliances with the Code.

organisations involved in certification is regarded as essential, to facilitate compliance and maximise process efficiency - especially in certification of companies operating multi-flag fleets.

- Confident that the IACS procedures and requirements have laid a solid foundation for achieving consistency in auditing, IACS Members have agreed, in the voluntary period, that if two or more Members are involved in ISM Code certification for the same company - for example, in multi-flag fleets - then the DOC issued by one Member will be accepted as evidence of compliance by another. It is hoped that such a provision will be adopted also by the Flag Administrations, when the ISM Code becomes mandatory.

### 3

#### SEPARATION OF ACTIVITIES

IACS has a strong position on the separation of survey and audit activities. Conflict of interest should be avoided, for example, in the relationships between ISM Code certifications of safety management and the traditional classification/statutory certification of the ship and its equipment.

- In the context of consultancy vs. certification, and under a mandatory IACS Procedural Requirement, an IACS Member verifying ISM Code compliance must ensure that independence exists between personnel providing consultancy and those providing certification.  
Compliance is checked through the periodic audit of Member Societies under the Association's Quality System Certification Scheme (QSCS).
- There have been suggestions of a conflict of interest between traditional classification/statutory certification of the ship and its equipment vs. the ISM Code auditing of the safety management system and its certification. Both types of certification are complementary and unique, in providing for safe and environmentally responsible operation.
- There is no conflict of interest: while the ISM Code requires that a safety management system be effectively functioning to ensure compliance with mandatory rules and regulations on safe *operation*

of ships and protection of the environment, these requirements in turn *depend* on the ship and its equipment being *structurally and mechanically fit for purpose* - a function of classification/statutory certification.

The relationships between the respective certifications are further considered in section (5) below.

### 4

#### DELIVERY OF CERTIFICATION

Organisations recognised by Flag Administrations for issuing DOCs and SMCs are required to comply with Resolution A.739(18).

- To ensure control of ISM Code certification delivery, an IACS Procedural Requirement dictates that ISM Code certification services are under the responsibility and authority of the IACS Member Society - and not of any of its subsidiary bodies or sub-contractors.
- IACS Member branch companies formally established in-country by a Member Society - and sometimes referred to as "subsidiaries" - *are* permitted to be involved in ISM Code certification.
- When qualified to perform ISM Code certification, a non-exclusive or non-full time employee of another IACS Member Society can be involved in an ISM Code audit - provided this is executed under the full control of the Member's quality system and he is fully trained and qualified to perform ISM Code audits.

### 5

#### RELATIONSHIP TO OTHER CERTIFICATION ACTIVITIES

Classification/statutory survey and safety management systems both focus on the safety of life at sea and protection of the marine environment. Their respective purposes, objectives and audit criteria are different.

The link between ISM Code audits and traditional class/statutory surveys occurs because the ISM Code contains a requirement that the safety management system should ensure compliance with mandatory rules and regulations.

The relationship can be summarised as follows:

- ISM Code audits concentrate on safety management systems; determine the effective

functioning afloat and ashore of the SMS; verify compliance with mandatory ISM Code requirements - and the effectiveness in meeting specified safety management objectives.

- The SMS focuses on the *safe and environmentally responsible operation and maintenance* of the ship and its hardware by ship's personnel to mandatory rules and regulations. The scope of ISM Code audits is therefore to verify that the company is operating under a system that effectively implements all measures needed to ensure compliance with mandatory rules and regulations
- Traditional class or statutory surveys concentrate on the *fitness for purpose of the ship and its hardware* (e.g. hull, machinery and equipment) and verify their compliance with specific requirements of safety and pollution prevention as specified in mandatory rules, regulations or other applicable codes, guidelines and standards.
- ISM Code certification requires profound maritime experience. The certifying organisation must possess sufficient knowledge and expertise in mandatory *classification and statutory requirements* as well as in the *processes and procedures* to ensure complete and accurate application of mandatory rules and regulations. Qualifications for auditors therefore include the need for thorough knowledge of the mandatory rules and regulations governing ships' safety and pollution prevention.
- ISM Code audits neither duplicate or substitute traditional class or statutory surveys - and do not relieve a company of its responsibilities regarding the between-survey maintenance of a ship and its equipment.

Given the above relationship, an organisation cannot realistically perform an effective ISM Code certification audit if it does not have the competence with respect to implementing mandatory rules and regulations, or if its auditor(s) lack experience in ship operation or relevant classification/statutory surveys.



### ISM CODE CERTIFICATION BY CLASSING SOCIETY

IACS Members foresee the possibility that different

organisations may be involved in ISM Code and other class or statutory certification for the same company.

IACS Members believe that owners should be free to select the provision of ISM Code certification services from recognised, qualified organisations. However, there are clear benefits from "single sourcing" - and owners need to consider the additional administration/costs incurred when two different organisations are involved in the statutory certification of the ship.

IACS equally believes that these organisations must have the same levels of competency in all areas covered by mandatory rules and regulations. IACS therefore perceives the benefits of one organisation providing class and certification to include:

- Given the complementary nature of ISM Code and other statutory certifications, a single organisation will have inherently higher knowledge of the extent to which a ship meets mandatory requirements and manages any deficiencies.
- The consistency of a single organisation's qualifications relating to the mandatory rules and regulations.
- Continuity provided by a single organisation having responsibility for all aspects of statutory certification of a particular ship.



### CONCURRENT AUDITS

Under Resolution A.788(19), verification of a ship's compliance for ISM Code certification is not permitted to duplicate or substitute surveys required for a particular statutory certificate. When providing both ISM Code certification and other statutory certification services or classification, IACS Members ensure this separation by provision that a person qualified to survey the ship's hardware and conduct an SMS can do so consecutively, but not concurrently.



### RECOGNITION OF ISM CODE CERTIFICATES

In effect, the ISM Code requires a Company to be certified by Flag Administration(s) associated with its fleet and to maintain a DOC on board its ship(s) - even though the *company* may not be *uniquely* registered to a particular Flag. Because the DOC becomes a trading certificate it will

require recognition for compliance by organisations acting on behalf of Flag Administrations. To avoid unnecessary auditing of companies by multiple Flag Administrations for the issuance of DOCs, and where authorised to do so by relevant Flag Administrations, IACS Members will recognise DOCs issued by one another, unless there are clear grounds not to do so.

### 9 QUALIFICATIONS OF RECOGNISED ORGANISATIONS

IACS Members fully support the requirements for recognised organisations codified in IMO Assembly Resolutions A.739(18) and A.788(19) and urge Flag Administrations to require rigorous compliance with both resolutions when authorising recognised organisations to act on their behalf, as required by SOLAS. IACS' key considerations in this context are:

- There is a close link between compliance with traditional statutory requirements and with the ISM Code - the Code requiring that the Safety Management System ensures compliance with mandatory rules and regulations. Organisations managing Code compliance verification should therefore have competence in relation to these rules and regulations.
- Additional to knowledge of technical and operational aspects of *maritime safety management*, Resolution A.739 (18) requires a systematic training and qualification regime to ensure proficiency in the applicable *quality and safety management* criteria for professional personnel engaged in safety management system audits.
- ISM Code audits may only be performed by qualified auditors who have experience in ship operations or in relevant statutory and classification requirements.

### 10 AUDIT GUIDANCE & CONSISTENCY

IACS is committed to audit consistency:

- The publication "Guidance for IACS Auditors to the ISM Code" is designed to aid Code certification practices, but it provides examples to assist with compliance verification - and is not intended to prescribe (or exclude) solutions.
- "Guidance" will be reviewed and updated on the basis of accumulated ISM Code certification experience.

### 11 FUTURE IMPROVEMENTS

To achieve further consistency, IACS is focused on a number of actions to improve Code implementation. These include:

- Determination of the format and basic content of audit reports and the exchange of certification case study experience; agreement on Code audit duration and the collection and assessment of feedback from audit experience.

Regarding recognition by Flag Administrations, IACS wishes to see:

- Collective or individual recognition by Flag Administrations willing to delegate Code certification to IACS Members - and the effective implementation of Resolutions A.739 (18) and A.789(19) by Flag Administrations as the principal foundation to achieve consistency among recognised organisations and mutual recognition of ISM Code certificates.
- Maintenance of unified requirements and procedures for training and qualifying auditors.
- Acceptance of Resolution A.739(18) by Flag Administrations as the basis for recognising class or statutory certificates issued by other organisations.

## IACS AND IMO THE ESSENTIAL RELATIONSHIP

### 1

#### SUMMARY

**In the design, construction and safe operation of the world merchant fleet, the necessary regulatory work crucially depends on a series of safety partnerships. The most essential is that between the International Maritime Organisation (IMO) and the leading classification societies, through IACS.**

**The IMO sets the operational safety standards for the world fleet, through safety Conventions. But certain statutory certification under many of these Conventions is *conditional* on the ship's**

**structural and mechanical "fitness for purpose" under the rules of the classification society.**

**Class rules are the technical heart of ship safety legislation. IACS, recognised as the authority on ship structures and engineering systems, has held consultative status with the IMO since 1969 and is the only non-governmental organisation with Observer status able to develop Rules for these fundamentally important safety items.**

**This Briefing considers classification society Rules; International Convention Requirements and the crucial relationship between them in providing for safer ships and cleaner seas.**

### 2

#### BACKGROUND

Members of the International Association of Classification Societies (IACS) are classification societies having comprehensive classification Rules based on sound research and development; a worldwide network of well qualified surveyors; efficient and effective feedback of significant technical data via surveyors' reports and an internationally recognised quality management system. (*Throughout this "Briefing", the phrase "classification society" means a Member Society of IACS.*)

Classification society Rules have continually developed over - in some cases - 200 years, and have traditionally addressed hull structures and essential shipboard engineering systems. Even before 1900, when various National Administrations first contemplated statutory legislation concerning safety of life at sea, classification Rules for these fundamental items of ship safety were well established.

Administrations were therefore able to concentrate on other safety aspects, such as the computation of load lines and conditions of assignment, stability, fire safety, life saving appliances, navigation lights and equipment, and radio communication.

This complementary regime has continued, in an ever

closer partnership between the classification societies and governmental maritime regulators.

#### THE IMO:

At a UN conference in 1948, a Convention established the Inter-Governmental Maritime Consultative Organisation (IMCO). This later became the International Maritime Organisation (IMO) - the United Nations agency for maritime matters concerning ship safety and marine pollution prevention.

The IMO enables the 154 Member States to meet collectively to produce and ratify International Conventions, instead of producing their own safety and pollution prevention requirements individually and in isolation.

These International Conventions reflect the practice of the majority of individual Administrations prior to 1948, in that they address safety aspects *other than* hull structures and essential shipboard engineering systems. The classification societies' experience and expertise in these fields is thus implicitly recognised.

#### THE ESSENTIAL RELATIONSHIP:

It can thus reasonably be claimed that an internationally recognised standard for ship safety and marine pollution prevention is attained by compliance with the Rules of a classification society AND with the requirements of the relevant International Conventions.

### **3 CLASSIFICATION SOCIETY RULES**

Classification Rules are developed on the basis of the considerable research and development efforts of the classification societies; advancing technology and feedback from the results of hull and machinery surveys.

These Rules contain detailed requirements for:

- Materials
- Ship structures
- Main and auxiliary machinery
- Control engineering systems
- Electrical installations

Rules for ship structures are based on sound technical principles, thoroughly tested against service performance. Complying with the Rules will ensure provision of adequate overall or global strength, together with adequate local strength of individual components.

For overall strength, a ship's hull structure must be capable of withstanding design values of still water and wave induced loads within specified stress criteria. Local strength - to resist modes of buckling, fatigue, yielding or brittle fracture - is obtained by compliance with the Rules' material requirements and scantling arrangements.

Alternatively, the Rules provide for the determination of scantlings by application of direct calculation procedures and defined permissible stress criteria. Some societies have developed sophisticated computer programmes capable of assessing structural response to complex dynamic loads and the fatigue performance of structural connections.

#### **RANGE OF DETAIL:**

The Rules for main and auxiliary machinery, control engineering systems, electrical installations and refrigerated cargo installations cover a broad range of detail. The Rules also prescribe methods of deriving primary scantlings of shafting, pressure vessels, propellers and other shipboard engineering system components, whilst allowing designers certain freedom to utilise more complex methods of analysis.

The Rules also prescribe requirements for provision of safety devices, control alarms, shut-down arrangements

and for layout, arrangement and duty of pumping, piping and electrical installations. Details not specifically prescribed in the Rules are assessed for suitability by appropriate methods.

The Rules also define requirements for survey during construction and for periodic surveys in service to ensure that prescribed standards are satisfied. Just as IMO does not make rules for these "classification" items, the classification societies do not duplicate International Conventions by making rules separate from those developed at IMO.

The need for common standards in class Rules is well recognised. Informal steps by classification societies towards unification of technical standards began in the mid-1950s and, since its formation in 1969, IACS has agreed a wide range of Unified Requirements for Classification Rules and Unified Interpretations of International Conventions and Codes.

### **4 INTERNATIONAL CONVENTION REQUIREMENTS**

Requirements for design, construction arrangements and equipment contained in the various International Conventions, and the related Codes and Resolutions, are produced under the auspices of the IMO, formulated after detailed debate by delegations representing the Member States.

The Conventions and related Codes and Resolutions contain detailed requirements for safety and marine environment protection items other than those pertaining to ship structural design and essential shipboard engineering systems.

Some of the Member States - or Administrations - apply the statutory requirements themselves, but more than 100 have authorised the classification societies to implement some or all of these functions on their behalf.

In carrying out statutory functions on behalf of so many Administrations, the societies have unrivalled collective experience in this field. This is fully shared within IACS with a view to agreeing the interpretation as necessary of Convention requirements and by Member States to IMO, who require that the class societies co-operate with the development and formulation of

interpretations. Such agreement and co-operation is essential since problems could otherwise be caused by different interpretations being applied by each classification society on behalf of the same Administration.

### **5 CLASS RULES & INTERNATIONAL CONVENTION REQUIREMENTS**

The international community sets safety standards through International Conventions. These do not seek to duplicate classification society Rules and do not include any detailed requirements for ship structures and essential shipboard engineering systems. The crucial relationship with classification is that the issue of various Certificates required by the Convention is dependent on compliance with classification society Rules for design, construction and maintenance standards.

#### **LOAD LINE AND SOLAS CONVENTIONS:**

For example, the 1966 Load Line Convention requires that, before a Load Line Certificate can be issued to a ship, the ship must be of adequate strength. The Convention states that ships built and maintained in conformity with the requirements of a classification society recognised by the Flag Administration may be considered to possess such strength.

Thus the detailed requirements of the Load Line Convention regarding freeboard computation and conditions of assignment (including intact and damage stability as necessary), *together with* the detailed requirements of a classification society regarding ship structures are to be complied with before a Load Line Certificate can be issued.

#### **SAFETY CERTIFICATES:**

The 1974 Safety of Life at Sea Convention (SOLAS) and its amendments require that every cargo ship of 500 gross tons and over engaged in international trade must have a Cargo Ship Safety Construction Certificate and all passenger ships intended for international voyages must have a Passenger Ship Safety Certificate.

The Convention requires that these Certificates be issued conditional upon the material and scantling of the structure, boilers and other pressure vessels and their

appurtenances, main and auxiliary machinery (including steering gear and associated control systems), electrical installation and other equipment being in all respects satisfactory for the service for which the ship is intended. The only detailed, authoritative and internationally known Rules for these items are those of the classification societies.

Thus, the very general requirements of the SOLAS Convention regarding ship structure and essential engineering systems and its more detailed requirements for other safety items such as subdivision and damage stability and structural fire protection *together with* the detailed requirements of a classification society regarding ship structures and essential engineering systems are to be complied with before a Cargo Ship Safety Construction Certificate (for vessels of 500 gross tons or over) or a Passenger Ship Safety Certificate can be issued.

Where Administrations delegate statutory compliance functions to classification societies, they retain their full responsibilities and obligations under the Conventions. It is clearly vital that statutory surveys are delegated *only* to organisations with full capability to carry them out.

#### **IMO RESOLUTIONS A.739 (18) AND A.789 (19):**

The entry into force on 1/1/96 of a new Chapter XI of SOLAS 74 entitled "*Special measures to enhance maritime safety*" requires that organisations authorised by Administrations to apply the requirements of the IMO Conventions on their behalf, must comply with the "*Guidelines for the Authorisation of Organisations Acting on behalf of Administrations*", as per IMO Resolution A.739(18). A further amendment to this chapter, due to enter into force on 1/7/98, refers to IMO Resolution A.789 (19) "*Specifications on the Survey and Certification Functions of Recognised Organisations Acting on behalf of the Administration*".

Also due to enter into force on 1/7/98 is a new Regulation 3-1 of a new Part A-1 of Chapter II-1 of SOLAS 74, which states as follows: "In addition to the requirements contained elsewhere in the (SOLAS) regulations, ships shall be designed, constructed and maintained in compliance with the structural, mechanical and electrical requirements of a classification society which is recognized by the Administration in accordance with the provisions of

Chapter XI/1, which reflects A.739, or with applicable national standards of the Administration which provide an equivalent level of safety”.

The Guidelines and Specifications contained in these two Resolutions are very stringent and, realistically - when taken in combination with the impending Regulation 3-1, Part A-1 chapter II-1 of SOLAS - it is believed that only the classification societies can comply. Thus the long standing but implicit IMO Convention relationship with classification Rules for hull structural design and essential engineering systems is becoming explicit.

### **6 COMPETITION BETWEEN CLASSIFICATION SOCIETIES**

One argument against the present classification system is that ship safety ought not to be the subject of competition between classification societies. Competition has been criticised on the grounds that the society which costs the least in terms of steel weight, maintenance, repair and/or renewal will be sought.

This criticism is not without substance and societies must never compromise technical standards for commercial gain.

It is fully accepted by IACS Members that competition must be on the basis of service and technical skills and safety must be paramount. In accordance with the IACS Code of Ethics, which must be observed as a requirement of the IACS Quality System Certification Scheme (QSCS), honest and healthy competition in the field of research and development and the quality of service provided to

the shipping industry will ensure continued application of state of the art knowledge and encourage innovation and development.

It has been suggested that, to avoid competition, the Rules of the major classification societies should be unified and applied by a single organisation. This would certainly carry considerable risk of a reduction in the range and depth of the Societies' technical innovation - arguably one of IACS' greatest contributions to the maritime industry.

Keen technical competition would arguably be replaced by extreme caution, and the maritime community would be denied much of the innovation to further improve maritime safety. The service to industry would decline, as a single, monopolistic “classification” society would not be under pressure to meet the expectations of a commercial marketplace.

### **CONCLUSION**

For certification in accordance with the IMO Conventions, ships must comply with the applicable Conventions and the Rules of a classification society. The classification societies apply their own classification Rules and, in the vast majority of cases, also apply the requirements of the Conventions on behalf of the Flag Administration. They are therefore uniquely placed to positively assist builders and owners to comply with every aspect of classification Rules and Convention Regulations, and thus to achieve the “total” internationally recognized standard of ship safety and marine pollution prevention.

### 1

#### SUMMARY

**Safer existing ships and stronger new ships remain the chief technical challenges in bulk carrier operations.**

Later this year, a new Chapter XII in the SOLAS Convention will be introduced, which will include mandatory higher strength and survivability standards for bulk carriers. The development will bring to fruition joint efforts of IMO and IACS to determine and implement realistic measures for casualty reduction and long term safety gains for the bulk carrier fleet.

Although bulk carrier casualties have decreased, IACS - in close partnership with the IMO - has been committed to long term

measures to reduce the known vulnerability of older ships to structural problems resulting in water ingress to cargo holds.

Newly-introduced IACS Conditions of Class are designed to improve safety margins, while the largest research effort in IACS' history has produced standards and requirements to make it less likely that water will enter cargo holds and, in the event that it does, the ship will be strong enough to survive.

This update briefly reviews the background to bulk carrier safety; summarises the major actions and risk reduction initiatives by IACS; new Conditions of Class for a safer fleet and requirements for newbuildings. Cargo handling risks and specialist IACS bulk carrier publications are also covered.

### 2

#### ACTION IMPERATIVE

IACS' determined stance on bulk carrier safety was in response to unacceptable loss of lives, ships and cargoes that sharply accelerated and peaked in the years 1990/91.

The IACS casualty database shows that from 1983 to June 1997 inclusive, 73 bulk carriers were lost (or written off) due to known or possible structural failure. At least 40 more ships suffered serious damage.

Research by IACS shows that over 70% of total loss casualties had three factors in common. The ships were all at least 18 years old, were carrying heavy mineral cargoes, and experienced water ingress to holds during bad weather.

Principal factors contributing to loss were corrosion and cracking of the structure within cargo spaces. Factors that *could* have contributed to hull structural failure were over-stressing due to incorrect loading and physical damage to side structures during cargo discharging.

Given that nearly half the world fleet of 3,900 large bulkers is at least 14 years old, and that structural problems particularly affect older ships, IACS has continued to focus on initiatives to reduce known and researched risks.

### 3

#### IACS' INITIATIVES 1992 - 1994

Given the record and pattern of vulnerability with ship age, IACS has taken a series of major initiatives towards creating a safer bulk carrier fleet.

These have been based on intensive investigations, started in 1991, with a view to understanding why bulk carriers were becoming more vulnerable, to provide solutions to improve their structural performance and to make industry fully aware of the findings.

- In **1992**, IACS produced new Unified Requirements for the corrosion protection of ballast tanks and cargo holds - and revised guidance notes for bulk carrier surveys.
- Minimum side shell frame web thickness requirements followed in **1993**, and IACS

launched its important Enhanced Survey Programme (ESP) in July of that year.

The programme has been widely recognised as IACS' most important single initiative for a safer bulker fleet. Designed to reduce the risks of water ingress through the primary watertight barrier - the side shell and hatch covers - the ESP has been repeatedly further enhanced over the past three years, through more extensive, more focused and more frequent surveys as ships get older - and special vigilance to known vulnerable areas in hold spaces.

- **1994** also marked the publication by IACS of an important manual on bulk carrier survey and repair, and which remains available (See Section 9).

## 4

### THE 1995 STUDY

In partnership with the IMO, IACS' priority has been to determine and implement further realistic gains in the safety margins of the bulk carrier fleet.

Although it coincided with a sharp fall in structural failure-associated casualties, it was recognised that the greater vigilance of ESPs and their corrective actions were not an all-embracing strategy for a safer bulk carrier fleet.

They could not totally eliminate between-survey incidents of, for example, accelerated corrosion, fatigue cracks, hatch cover failure or increased stress/damage through overloading or improper cargo handling.

In late 1994, IACS' Council announced the largest single research effort in IACS' history, with a major investigation into how older bulk carriers could be made even safer, and how higher margins of strength and survivability could be achieved in newbuildings.

The study progressed the investigations of a number of individual working parties and examined a casualty database of nearly 150 ships, supplemented by condition sampling of a type mix exceeding 100 ships.

## 5

### SAFER EXISTING SHIPS

Following the 1995/96 research programme, IACS announced in December 1996 that older ships carrying heavy cargoes - typically iron ore, bauxite and steel -

would have to comply with higher strength standards under new IACS Conditions of Class.

The IACS study showed that the forward hold was the most vulnerable to water ingress and therefore the most effective way to increase the safety and survivability margins in older bulk carriers would be to require higher reserves of strength in the transverse watertight bulkhead between the two foremost holds and in the double bottom in way in order to withstand flooding loads in the No.1 hold.

These greater required strength standards are now incorporated in two new IACS Unified Requirements (URs), which address and provide for the exceptional combination of cargo and floodwater loadings in the forward hold that the transverse watertight bulkhead and double bottom in way may have to withstand.

The emphasis on increased strength in way of the forward hold reflects IACS' findings that at least 40% of bulk carrier casualties and losses have involved water entry into this hold. Additionally, due to relatively high wave and inertial loads, the structure of the forward hold is more susceptible to fatigue cracking and other damages that may threaten watertight integrity and, potentially, the ultimate survival of the ship.

- The new IACS Conditions of Class require compliance with higher technical strength standards by single side skin bulk carriers of 150m. in length and over, carrying cargo with a bulk density of over 1,78 t/cu. m. as follows:
  - i. For ships which will be 20 years of age or more on 1 July 1998, by the first intermediate or special survey to be held after 1 July 1998, whichever comes first;
  - ii. For ships which will be 10 years of age or more but less than 20 years of age on 1 July 1998, by the due date of the third special survey, or above, to be held during the period 1 July 1998 to 1 July 2003, at the latest; or
  - iii. For ships which will be less than 10 years of age on 1 July 1998, by the due date of the third special survey, at the latest.
- IACS has emphasised that structural reinforcement necessary for ships to meet the new strength standards is likely to vary extensively between ships, depending on the bulkhead design and the steelwork diminution through corrosion.

### 6

#### STRONGER NEW SHIPS

Higher margins of safety and survivability for bulk carrier newbuildings contracted on or after 1 July 1998 will be achieved through a series of new or revised IACS Unified Requirements (URs).

The objectives of the higher strength criteria are to ensure that bulk carriers will be able to withstand the flooding of any one hold in all loading and ballast conditions, taking into account dynamic effects resulting from the presence of water in the hold.

- The requirements will apply to new bulk carriers of 150m. in length and above, and intending to carry cargoes with a density of 1,0 t/cu. m. or more.
- Greater longitudinal strength in the hold flooded condition is addressed in the IACS URS 17; the strength of watertight corrugated transverse bulkheads in URS 18 and the strength of double bottom structures in hold flooded condition in URS 20. New Unified Requirements will also cover the improved strength of side shell and side frames and the strength and reliability of hatch covers.

#### CARGO HANDLING

A proportion of bulk carrier casualties have been

attributed to mechanical damage, fatigue damage and cracking in way of hold structures.

IACS - in partnership with the IMO, INTERCARGO, the ICS, BIMCO and the IAPH - is working to bring better awareness of the risks inherent in accidental over-loading and other cargo operations, especially with heavy/high density cargoes.

Incorrect cargo handling may result in over-stressing of the hull girder or other strength limitations imposed by a ship's classification society being exceeded. (The risks were dramatically illustrated in November 1994, when the 22 year-old bulk carrier *Trade Daring* broke in half while taking on cargo at a Brazilian terminal.)

Especially during cargo discharge, cargo handling equipment can damage the ship's structure, through impact loads (e.g. grabs, hydraulic hammers) and also damage the coatings that protect cargo hold spaces.

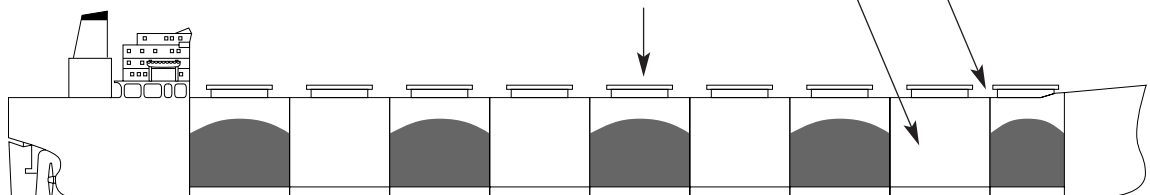
IACS' research has shown that the main cargo handling risks are from:

- Poor ship-to-shore communications
- Ignoring loading plans
- Inadequate pre-planning of cargo operations
- Improper load distribution between holds
- Overloading by high capacity systems
- Physical damage during discharging

### GREATER STRENGTH, SURVIVABILITY & CARE...

#### STRONGER NEW SHIPS...

- Greater longitudinal, bulkhead and double bottom strength in hold-flooded condition
- Improved side shell & side frame strength
- Improved strength/reliability of hatch covers



#### ALL SHIPS...

- Better awareness of risks from over-loading
- ...and from damage during discharge

#### SAFER EXISTING SHIPS...

To withstand flooding loads in No. 1 hold:

- Higher strength reserves in transverse W.T. bulkhead between two foremost holds
- ...and double bottom in way

### 8

#### **FURTHER DEVELOPMENTS**

The higher strength requirements for both existing and future new bulk carriers, based on IACS' relevant new and revised Unified Requirements, will be considered at a November 1997 International Safety of Life at Sea (SOLAS) conference.

Once formally adopted, they will form a new Chapter XII of the SOLAS Convention, dedicated to bulk carriers, and which are expected to become international law from July 1999. That is one year after their entry into force for classification purposes.

IACS will continue to maintain a database of bulk carrier casualties, to ensure continued close monitoring of structural issues and experience - and early warning of any trends that merit vigilance or further investigation.

### 9

#### **PUBLICATIONS**

IACS has produced a series of manuals on aspects of bulk carrier construction, inspection, maintenance, repair and cargo handling designed to assist shipowners, masters, surveyors, shipyards and repairers and terminal operators,

- Focusing on the avoidance of hull over-stressing and damage during cargo operations, the most

recent manual is - ***Guidance and Information on Bulk Cargo Loading and Discharging to Reduce the Likelihood of Over-stressing the Hull Structure***, published in May 1997, priced at £15. The 40-page manual is aimed at shipowners, masters, port authorities and terminal operators.

- Soon to be available is a summary version - ***Bulk Carrier - Handle with care***, with special emphasis on the importance of detailed communication between ship and shore staff during cargo operations.
- Recently reprinted to meet demand, the 1994 manual - ***Bulk Carriers - Guidelines for Surveys, Assessment and Repair of Hull Structure*** provides essential guidance for survey preparation and execution. It covers the main areas of the hull structure, with extensive analysis and illustration of structural failure examples and repairs. This 100-page, A-4 manual, priced at £25 and available from Witherby & Co., provides rapid illustrated reference for masters and crew, flag administrations, Port State Control Inspectors and ship repairers.
- The 1992 leaflet - ***Bulk Carriers - Guidance and Information to Shipowners and Operators*** is also still available.

# IACS

**INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES LTD.**

## **“TIGHTENING THE NET”**

*Remarks by IACS Chairman, Tor-Christian Mathiesen, to the First Joint Ministerial Conference of the Paris and Tokyo Memoranda of Understanding on Port State Control.*

*Vancouver, British Columbia, Canada 24 - 25 March 1998.*

### 1

#### **WHERE IACS STANDS ON PORT STATE CONTROL...**

“The International Association of Classification Societies (IACS) gives its full co-operation in supporting the aims and objectives of Port State Control. This positive co-operation is essential to the operation - and necessary development - of Port State Control, as a growing partner and influence for safe shipping.

As the leading classification societies, IACS' Members have the same core objectives: to bring safer ships and cleaner seas. Full co-operation with Port State Control and prompt response, on request, is an obligation for the IACS societies.

**I have three important signals this afternoon. These are:**

- (1). Sub-standard ships can be eliminated by co-operation of all the safety partners - but we will only meet the challenge by working together...**
- (2). Compliance with statutory safety regulation demands compliance with Class rules. They are inseparable...**
- (3). The ISM Code can deliver a safer world fleet. The Code enshrines the Class rules on structural and engineering “fitness for purpose” recognised as the fundamental basis of international maritime regulation. In measuring compliance with these regulations, Port State Control therefore takes Class rules as the vital point of reference.**

Let's look at these messages in more detail:

## 2

### WHAT THE IACS SOCIETIES DO...

Classification rules have developed over 200 years. They define the “fitness for purpose” design, construction and lifetime maintenance of standards for a ship’s structure and its essential engineering and electrical systems. Our primary client is the shipowner - but our rules and standards are equally an important foundation for all those concerned with safer ships.

Over 90% of merchant tonnage is classed by the 11 Members of IACS - which gives us a unique level of technical knowledge and understanding of the world fleet.

We are also in a unique position regarding statutory regulation of the fleet. This is because compliance with SOLAS 74 safety standards is conditional on conformance with the structural and mechanical rules and standards of a vessel’s classification society. To trade legally, a vessel must comply with both its class and Flag State requirements.

Of the 155 members of IMO, well over 100 have delegated a majority of their statutory surveying and certification to IACS Members. Class therefore works for the shipowner, for individual Flag Administrations and in close partnership with the IMO. Class is clearly a vital partner in the regulation of the industry.

Class is also vital in the detailed mechanisms of Port State Control. Our IACS Societies wish to make positive use of ship detention data - to help increase available knowledge among safety partners of vessels not meeting acceptable standards and to check our own performance in relevant cases.

This transparency is important - but so is the speed of detention reporting to both Class and flag, which is often slow and variable in content or does not arrive at all. We also consider that common, worldwide criteria for assessment of Class responsibility for ship detention would be beneficial to all. In this regard, we also consider that common targeting criteria worldwide is a crucial goal in helping Port State Control to take a full role in the elimination of sub-standard shipping.

The IACS Societies are central to “continuous improvement” - in both the technical standards achieved and maintained in the world fleet, and in its regulation.

But what about our standards? How does class ensure high standards? The answers include IACS’ Quality System, our Transfer of Class Database, the Enhanced Survey Programme and Marine Safety Initiatives Programme. These are all designed to link monitorable standards, common criteria and an interchange of vital data between key partners in maritime safety.

Information standards, data exchange and regulation are also central to long-term effectiveness of the ISM Code which place the responsibility of owners for safety and pollution prevention on a statutory basis. The Code’s entry into force on 1 July this year marks a milestone date: the greatest step forward in maritime safety and compliance for many years. As a major partner in the network of organisations vital to improving maritime safety, this is equally an important date for IACS.

But let us be clear - delivering a safer world fleet in the 21st. century depends principally on the owner - and then a working partnership between the IMO and its members, classification and Port State Control.

## 3

### THE KEY LINKAGES...

The Code will deliver this improvement only if it succeeds in progressively eliminating sub-standard shipping. So let us remember those key linkages: that compliance with the ISM Code requires compliance with existing IMO conventions - which in turn require compliance with the rules and standards of classification.

Eliminating sub-standard ships (and the “profit” incentive for their operators) demands vigorous compliance monitoring - which is a task and heavy responsibility for all of us involved in the industry.

We must also recognise that Port State Control is faced with many complex day-to-day judgements towards achieving the safer fleet that we all want to see.

## 4

### A CHANGED ENVIRONMENT...

The ports of the nations gathered here today service the ships of a world maritime industry that has seen drastic change in the past 30 years. The fleets once seen as national assets - names which used to set such proud

“company” standards, which led by example, have gone.

Today, we have a highly fragmented pattern of vessel operation and ownership. We have an ageing and more vulnerable fleet. And it faces intense market pressures that often seem to favour not the “quality” operator - but the cheap carrier.

The great majority of high quality owners have nothing to fear from a tough new environment of compliance. In conjunction with the Flag States and class and through rigorous monitoring by Port State Control we will make a major step forward in seeking, finding and ultimately eliminating sub-standard ships.

Without question, the small minority of sub-standard ships and their owners are having an impact on the maritime industry and its reputation which is out of all proportion to their numbers.

Despite the commercial pressures, the owner's responsibility must not be forgotten - and cannot be set aside; the owner carries a duty of care every day, around the clock.

It is of course true that the sub-standard owner can run - but through Port State Control he will find it increasingly difficult to hide. We have an arsenal of rules and regulations to intercept the sub-standard operator, and make it increasingly difficult for him to survive and profit at the expense of others.

We should also remember that the greatest need is for compliance with the rules already in place - not for the addition of many new regulations. There is also a need for the correct perspective between technical and human issues; for a culture of co-operation to replace the culture of blame which exists at the present time.

## **5**

### **THE HUMAN ELEMENT...**

Our real challenge is no longer chiefly in technical issues. The number of casualties due to structural failure has declined. By contrast, it has become the “human element” which is now recognised as playing the dominant role in the chain of events leading to casualties.

While the casualty picture includes a small number of major incidents, our concern must also be with the capacity of minor problems to turn critical. So often, it is the chain reaction leading to disaster that follows when

small faults are not discovered and corrected in time.

Together, with the ISM Code and the vigilance of Port State Control, our industry has the first truly global instruments to tackle these “human aspects” challenges. And the expansion of Port State Control supplements the opportunity to eliminate sub-standard shipping.

But as they step onto each gangway, Port State Control Inspectors also have to climb a steep learning curve of essential knowledge - not only technical but also human element related matters.

That is why IACS has helped and stands ready to help Port State Control globally with training, and through data exchange, database development and ongoing co-operation.

IACS also has major resources - indeed a unique level of survey experience and expertise. These are available through its Members' totals of 6,000 surveyors, nearly 4,000 technical staff and 1,200 offices around the world. There is quite simply no other single organisation that can offer Port State Control knowledge and assistance on this scale.

## **6**

### **WHERE WE GO FROM HERE...**

In summary, the challenge to eliminate sub-standard ships will only be met by a full partnership of all key organisations dedicated to safer ships and cleaner seas.

Our purpose is fully shared - and our roles fully complementary. Class has its dual role as the arbiter of technical standards and its delegated authority on behalf of Flag States. Through the expansion of Port State Control we now have an added mechanism that will be crucial in delivering the objectives and ultimate promise of the ISM Code.

Class is committed to playing a full role with you in tightening the net and eliminating sub-standard ships. At the end of this meeting it is perhaps timely to reflect that the international community will accept nothing less from our maritime industry.”

**Tor-Christian Mathiesen**  
**Chairman**

## COMMITTED TO CO-OPERATION

IACS Members are committed to full co-operation with PSC authorities - and co-operation, assistance, strict reporting and data logging are all key to IACS' *formal* Procedure for responding to PSC.

One of seven IACS Marine Safety Initiatives formally implemented on 1 January 1996, this Procedure is *mandatory* in the response of IACS Members and Associates.

In brief summary, its detailed provisions are:

- A Port State request to attend on board a ship to assist with rectifications of reported deficiencies or other discrepancies will be dealt with promptly and positively.
- IACS Members will **CO-OPERATE & ASSIST** during PSC inspections by:
  - Ensuring that Class surveyors attend the ship when deficiencies related to Class and Statutory matters are found...
  - Providing PSC inspectors with relevant information...
  - Liaising with the Flag State, in accordance with prior agreement, and the owner's representative, to ensure that both are fully aware of actions being taken that affect Class-related or Statutory-related matters.
- In the context of **DEFICIENCIES**:
  - PSC inspectors will be urged to list deficiencies in relation to the specific Convention certificates concerned...
  - Listings should indicate: **(1)**. All relevant deficiencies in the PSC inspection report. **(2)**. All deficiencies dealt with and details of actions taken for each, and **(3)**. Any deficiencies which with agreement of the surveyors and PSC inspectors, remain outstanding on the ship's departure and which are subject to special re-examination and attention...by a specified date.
- In the context of **DETENTION REPORTS & STATISTICS**:
  - Reported deficiencies will be promptly analysed and the following actions taken: **(1)**. Surveyors will provide detailed comments on any deficiency of either a Class or Statutory nature within the purview of the classification society or authority delegated to it and **(2)**. The Flag State will be provided with an updated summary of any deficiencies and actions taken.
  - A database of reported deficiencies will be maintained. Database information will be able to show that recurring violations, by deficiency type and ship, are readily identifiable - and include data on agreed actions taken.
- In the context of **PERFORMANCE**, the relative performance of each IACS Member and Associate in its PSC response and data logging activity is monitored as part of IACS' Quality System by the IACS Permanent Secretariat.

An IACS Society will co-operate fully in the process of correcting any Class-related safety deficiencies. The Society may require corrective action(s), but authorisation to instruct repair expenditure - and, ultimately, for any deficiencies - is entirely that of the owner.

IACS believes that Members should not be identified or penalised when not responsible for issues causing PSC detentions - and will maintain this principle. The criteria supported by IACS for assessing classification responsibility is that of the United States Coast Guard (USCG).

“Full co-operation with Port State Control is an obligation for the IACS Societies...”

“To trade legally, a vessel must comply with both its Class and Flag State requirements...”

“IACS Societies wish to...help increase available knowledge... of vessels not meeting acceptable standards...”

“Common, worldwide criteria for assessment of Class responsibility for ship detention would be beneficial to all...”

“The owner’s responsibility cannot be set aside...The owner carries a duty of care...around the clock...”

“The greatest need is for compliance with rules already in place...”

“Expansion of Port State Control supplements the opportunity to eliminate sub-standard shipping...”

“IACS has... a unique level of survey experience and expertise...”

“... Port State Control...will be crucial in delivering the objectives and..promise of the ISM Code...”

## **Classification:**

“...the **technical rules, regulations, standards, guidelines and associated surveys and inspections** covering the **design, construction and through-life compliance** of a ship's **structure** and its **essential engineering and electrical systems**...”

## **The IMO and Class - An essential link:**

Compliance with IMO *operational safety standards* is in effect *conditional* on compliance with class society *technical rules* on a ship's continuing structural and mechanical “fitness for purpose”.

## **PSC - What has IACS done?**

- Provided training assistance - especially in the vital link between IMO Conventions and Class Rules...
- Made data available on class transfers...
- Established databases on PSC detentions...
- Actively co-operated with IMO and newly developing MOUs...
- Maintained dialogue with MOU Secretariats.

## **Summary - Class and PSC:**

- PSC vigilance is vital for a quality fleet, “fit for purpose”, and that fully respects our marine environment...
- Class Rules + IMO Conventions are *the* common standards essential for PSC effectiveness...
- Class will continue to support and contribute to PSC as a front-line partner in the quest for a responsible, accountable maritime industry.

"IACS marks its 30th. anniversary this Summer - but our Association is mainly celebrating five recent years of important achievement in its commitment to safer shipping and cleaner seas.

1 July 1998 also marks a turning point for maritime safety, with introduction of the ISM Code widely seen as the biggest shipping safety development of recent times. For IACS, this date is also significant for the entry into force of Class requirements on stronger new bulk carriers - and marking the beginning of *explicit* linkage between class rules and international safety conventions, the "Recognised Organisations" revisions to SOLAS 74.

This *Briefing* is also timely to reflect the importance of classification at the heart of self regulation in an industry where public and political interest and accountability have sharply increased in recent years.

Since 1993, and in close partnership with IMO, IACS' resources and expertise have notably contributed to bringing a stronger, safer bulk carrier fleet; to ferry safety and to rules and standards for new generations of ship types.

In regulatory initiatives and compliance, IACS' resources, experience and fleet data have also

proved invaluable in practical preparation for launch of the ISM Code and in the expansion of Port State Control.

These are the first truly global instruments to tackle human aspect challenges now recognised as playing *the* dominant role in the chain of events that lead to casualties and their human, material and environmental consequences.

Today's marine industry, its challenges and technology are each dramatically different from 1968, when IACS was formally created. In that 30 years, class too has changed dramatically.

Over the past few years especially, IACS has made Class more open, better understood and more widely respected for its role, integrity and contribution towards safer ships and cleaner seas.

I am sure that IACS will continue to be at the heart of both the new safety culture in the marine industry and the *actions* of continuous improvement that are needed."

*Tor-Christian Mathiesen*

Chairman - IACS Council

June 1998

## 1 BEGINNINGS - 1930 - 1992:

### COLLABORATION...

Although not formally established until 1968, IACS can trace its history back to the LoadLine Convention of 1930.

The Convention recommended collaboration between classification societies to secure: "as much uniformity as possible in the application of the standards of strength upon which freeboard is based..."

In 1939 RINA hosted the first conference of major societies, with the second being held in 1955. This led to creation of Working Parties on specific topics, with the first - on hull structural steel in 1957 - laying the foundations for more than 200 Unified Requirements, numerous Unified Interpretations and Guidelines that IACS has today.

### DRAMATIC CHANGE...

When links between the seven founder members were strengthened and formalised by creation of IACS, in

**1968**, the maritime industry was going through dramatic changes. Containerisation was accelerating rapidly, its sheer scale about to sweep away many of the shipping industry's long-established names, identities - and much of its general cargo technology.

Diesel was ousting steam, the era of the supertanker and giant bulk carrier had arrived and new patterns of ownership marked the beginnings of what was to become a notably fragmented industry.

### RELIANCE ON CLASS...

The maritime industry was to spend much of the next three decades battling excessive capacity and competition, while the steady decline of the traditional "company fleet" placed increasing demands on the technical skills base of the class societies.

The unique level of classification knowledge and experience in IACS was also recognised for the contribution it could make to the industry safety and regulatory regime. In **1969**, less than a year after it was formed, IACS was given consultative status with the IMO. It remains the *only* non-governmental organisation with Observer status which is able to develop and apply structural rules.

Late **1973** saw adoption of the International Convention for the Prevention of Pollution from Ships (MARPOL), which went on to become - as MARPOL 73/78 - a crucial instrument in tanker safety. IMO's Marine Environment Protection Committee (MEPC) was established in the same year, and its various sub-committees and working groups have been regularly advised by IACS from the beginning.

The SOLAS Convention of **1974** (SOLAS 74) remains the industry's primary safety convention, although the vital link between certification of safety compliance and classification society rules was first established by its predecessor, in 1960. SOLAS 74 was also important for its introduction of the "tacit acceptance" procedure in the entry into force of new international maritime regulation.

Important changes in tanker design and operations followed IMO's tanker safety conference in early **1978**, with new measures being incorporated in MARPOL 73/78 and subsequent annexes to it - notably those which entered into force in 1983 and 1986.

In **1988**, amendments to SOLAS saw introduction of harmonised survey and certification procedures, evolved

with considerable input by IACS. 1988 was also notable for the first in a series of steps by IACS to prevent class-hopping (changing class in an attempt to avoid outstanding repairs). The Association introduced its original Transfer of Class Agreement (TOCA), which has been progressively revised and tightened.

### RADICAL CHANGE...

To meet the challenges of a changing industry - and, notably, criticism that class remained excessively secretive - IACS' Council decide in **1990** to make radical changes. These were to address standards - through the IACS Code of Ethics and Quality System Certification Scheme (QSCS), efficiency, discipline and communications.

Before some of these initiatives could be developed, a dramatic surge in bulk carrier casualties triggered alarm in the industry and the beginning of intensive investigations by IACS' Members in **1991**.

The first in a continuing series of IACS initiatives towards a safer bulk carrier fleet, including more stringent surveys, were taken in **1992**. The Permanent Secretariat in London was established in the same year - and quickly responded to a brief to begin "communicating" more effectively with the industry, its critics and the media.

## 2

### THE LAST FIVE YEARS:

During the past five years IACS has been increasingly influential on major safety issues facing the maritime industry.

The Association has also regained the respect and confidence of other influencers and organisations that were clearly not satisfied with the performance and transparency of class in the late 1980s.

### THE MILESTONES HAVE INCLUDED:

**1993:** IACS' Enhanced Survey Programme for older bulk carriers and tankers was introduced and soon acknowledged as a major step forward in the inspection and safe operation of older units. During the following three years, the ESP was repeatedly enhanced further, with more extensive, more focused and more frequent surveys in line with rising vessel age.

Then, in late **1994**, IACS' Council announced the

largest single research effort in the Association's history - a major investigation into how older bulk carriers could be made even safer, and how higher margins of strength and survivability could be achieved in newbuildings.

Detailed examination into the causes of and solutions for the proven vulnerability of older bulk carriers in certain circumstances looked at a design, casualty and in-service experience database of over 250 vessels.

IACS was also active in research following the *Estonia* ro-ro ferry accident.

Also since 1994, IACS has been giving practical assistance to Port State Control (PSC) authorities on vessels that change class; providing databases on PSC detentions and providing training assistance - especially in the vital link between IMO Conventions and Class Rules.

IACS has a clear policy of full co-operation with Port State Control as a front line partner in the quest for a responsible, accountable maritime industry. Its importance has been underlined by an EC Council Directive, in mid-1996, making PSC effort mandatory for Member states.

**1995** marked important progress by IACS in the development of its contribution to the safety of an increasingly elderly fleet. Its mid-year Council agreed on the 1 January 1996 implementation of a programme of seven Marine Safety Initiatives - all focused to restrict the operation of shipping failing to meet IACS' standards.

With conformance audited through QSCS, the programme included further tightening of the Transfer of Class Agreement; greater transparency of and simpler access to increased Class and Statutory information against legitimate request and automatic suspension of Class under given circumstances.

The year also saw the establishment of Procedural Guidelines for Members' coming heavy involvement in certifications for the ISM Code, and the launch of comprehensive, mandatory training initiatives for society Auditors involved.

IACS has always regarded consistent and uniform application of the Code as essential if its benefits are to be delivered. The familiarity of IACS and its Members with the world fleet and its regulations is critical in the large scale compliance auditing needed - and for which IACS is uniquely well-qualified.

Although there was a welcome reduction in bulk carrier casualties in 1995/96, the outcome of the 1995 study - conducted by IACS in close partnership with the IMO - indicated a need for yet higher safety margins.

At the end of **1996**, new Conditions of Class were announced, requiring higher strength reserves in existing ships and stronger new ships from mid-1998 - as a prelude to IMO's new SOLAS Chapter 12, dedicated to introducing higher safety margins for bulk carriers.

**1997** saw the research and publication by IACS of the first ever comprehensive guide to *Shipbuilding and Repair Quality Standards* (SARQS), which enjoyed heavy demand and has recently been reprinted.

Designed to reduce the inherent risks of damage to bulk carriers in cargo handling, *Guidance on Bulk Cargo Loading and Discharge* proved another popular publication in a long line of bulk carrier books, manuals and *Briefings* from the Association.

A version dedicated for convenient use by bulk terminal staff- *Bulk Carriers - Handle with Care* was IACS' first important publication in **1998**.



### TURNING POINTS - 1998:

IACS' 30th. anniversary coincides with the three most significant class-related safety developments for many years.

1 July 1998 is a key date in the maritime industry calendar because it marks:

- **Entry into force of the ISM Code for all "Phase One" vessels.** The Code's objective is to measure compliance of vessels, their operation and shore management with *existing* international regulations.
  - Compliance with the ISM Code requires compliance with IMO Conventions, which in turn require compliance with the rules and standards of classification, recognised as the fundamental basis of international maritime regulation.
  - IACS Members are responsible for a high proportion of auditing for ISM Code compliance, and have been actively training Auditors for the last several years.

## **MILESTONES IN SAFETY REGULATION:**

Through its close working relationship with the IMO, IACS and its Members have contributed, directly and indirectly, to many of the most notable milestones in maritime safety regulation since the late 1960s.

Among the keynote developments have been:

- 1968:** Entry into force of 1966 LoadLine Convention;
- 1969:** IACS granted consultative status with IMO;
- 1972:** Convention on the International Regulations for Preventing Collisions at Sea adopted;
- 1973:** Pollution Prevention Convention (MARPOL '73) adopted; Marine Environment Protection Committee (MEPC) established;
- 1974:** New SOLAS Convention adopted. Vessel compliance conditional upon conformance with structural and mechanical rules of a vessel's classification society.
- 1978:** Adoption of first International Convention on Standards of Training, Certification and Watchkeeping (STCW);
- 1983:** Entry into force of MARPOL 73/78;
- 1984:** First set of amendments to SOLAS 74 enter into force;
- 1988:** New harmonized system of survey and certification adopted by amendments to SOLAS and 1966 International Convention on Load Lines;
- 1991:** Interim measures to improve bulk carrier safety adopted;
- 1992:** Double-hull or IMO-approved alternative measures adopted for new and existing tankers;
- 1993:** IMO Assembly adopts ISM Code;
- 1994:** International Code of Safety for High Speed Craft adopted;
- 1994:** MSC establishes panel on Ro-Ro safety;
- 1995:** Assembly adopts ro-ro and bulk carrier safety resolutions;
- 1997:** SOLAS amended to improve safety of new and existing bulk carriers.

## **A MESSAGE FROM MR. WILLIAM A. O'NEIL**

**Secretary-General, International Maritime Organization**

“This year IMO is celebrating its 50th. anniversary. On 1 July, the International Association of Classification Societies will celebrate its 30th. That gives the impression that IACS and its members are relative newcomers to the shipping industry, but in fact the classification societies can trace their origins back several hundred years and they can claim with justification that for much of that time they were almost alone in developing global standards for the shipping industry.

For their pioneering work in this area it gives me great pleasure to offer IACS the congratulations of IMO and its 156 Member States on reaching this important anniversary. But IACS deserves our thanks and gratitude for much more than that.

During the last three decades, IACS has become increasingly important as a contributor to IMO's work. As a non-governmental organization in consultative status with IMO, IACS is able to attend all IMO meetings as an Observer and to take a full part in the discussions that occur. In recent years, IACS has become increasingly active. Its members are in a unique position to contribute to IMO's work, partly because of their long experience in maritime safety, but also because of the technical resources at their disposal.

By joining together to form IACS, the classification societies have not only furthered their own interests but have advanced those of maritime safety and the work of IMO as well. The most recent example of how IMO and IACS work together was in developing new measures to improve the safety of bulk carriers.

The last 30 years have seen IACS develop and grow into one of the most widely respected organizations in shipping today. I know that this progress will continue in the years to come and that IMO will continue to benefit from our close co-operation.”

***William A. O'Neil***  
**Secretary-General**

- IACS maintains virtually the only single-source database on the majority of vessel and owner/operator compliances with the Code.
- **Entry into force of the latest revision to SOLAS 74 on “Recognised Organisations”.** This makes *explicit* the longstanding IMO Convention relationship with classification Rules for hull structural design and essential engineering systems.
  - It is believed that *only* the IACS Member societies can comply with a regulation which states that:

*“Ships shall be designed, constructed and maintained in compliance with the structural, mechanical and electrical requirements of a classification society which is recognized by the Administration...or with applicable national standards of the Administration which provide an equivalent level of safety”.*
- **IACS requirement for stronger new bulk carriers.** New and revised IACS Unified Requirements enter into force on 1 July 1998, giving higher strength criteria and hence margins of safety and survivability for large bulk carriers contracted on or after this date.

For existing large bulk carriers, IACS has introduced new Conditions of Class. Again effective 1 July 1998, these require compliance with higher technical strength standards beyond 15 years of age or due date of third special survey, whichever falls later.

Together, the 1 July 1998 implementation of the ISM Code and the latest revisions to SOLAS 74 have again emphasised the crucial - and growing - role and influence of Class Rules at the heart of technical and statutory maritime regulation.

Classification societies are responding positively to important new factors in the regulatory regime, because just as ownership and operation of the world fleet has fragmented, so the pressures upon its regulatory structure have also increased.

Important changes recognise the heightened demand by the international community for a regulatory regime that will deliver safer ships and cleaner seas. This objective acknowledges the central role of classification - but equally may involve change in the traditional concept of "freedom of the seas". It calls for a greater, more effective partnership between Flags and Port State Control Authorities.

In practice, public pressure is growing on, and being accepted by Port States, and groups of states, to "police" compliance with

international regulations - and to penalise vessels, owners and Flags seen not to comply with standards required. At the heart of this issue is determination to deny sub-standard ships the "freedom" to threaten lives, seas and coasts - or to commercially disadvantage the great majority of "quality" operators.

Class Rules are widely recognised as central in addressing this increasingly complex challenge, in which sub-standard ships demand inspection resources and have an impact on the industry's reputation out of all proportion to their numbers. Significantly, the key influencers towards a safer world fleet - the IMO, Flags, Port States and owners - all respect classification as the technical basis to deliver the safer ships and cleaner seas demanded by the world community.

So how are IACS and its Member Societies meeting the challenge and demands of a fast-changing regulatory environment? This *Briefing* reviews the authority and accountability of Class - and its responsibilities in context with those of other key partners in the circle of maritime safety.

### 1 ROLES - STATE, CLASS, & OWNER:

#### STATE:

A total of 156 Flag States are signatory to international maritime safety Conventions of the IMO, with these Conventions being heavily dependent on the classification rules of IACS Members. Class, with its focus on hull strength and reliability of machinery, is an integral part and in fact a key element of the statutory international maritime safety regime.

Through delegated authority to act on their behalf, over 100 IMO signatory states have authorised IACS Member Societies to verify continuing regulatory compliance by vessels on their registers.

Control by Flag States has been the traditional mechanism of maritime safety administration. But a gulf has opened between responsible Flag States and those less insistent on compliant fleets. Some Flag States have therefore enabled sub-standard ships and their operators to survive and profit.

To protect their seas and coasts against a minority of sub-standard ships seeking to trade to and from

their ports, many responsible nations have invoked the powers of Port State Control (PSC) - enabling the inspection and detention of sub-standard ships with safety or marine environment protection-related defects.

Based on compliance with international (IMO) Conventions and Class standards, Port State Control has become a vital mechanism in the deterrence and eventual elimination of sub-standard shipping. For example, PSC mechanisms are now mandatory for EU Member States, while a powerful grouping of over 30 Port States is seeking binding minimum standards of performance from IMO Member States.

Port States therefore play an increasingly powerful role in the delivery of safer ships and cleaner seas. By acting in concert, PSC regimes have the capability to penalise the ships of under-performing flags.

These developments towards a safer world fleet, of measurably higher quality, mark a fundamental shift away from regulation through an essentially voluntary consensus of Flag States. In place of the centuries-old "freedom of the seas", today's industry is increasingly subject not to the "sovereignty" of maritime states but to that of the international community, as now largely defined through the power of Port States and their geographical and political groupings.

### **CLASS:**

The key influencers for safer shipping - shipowners, the IMO, Flag States and Port States - each respect Class Rules for structural design and essential engineering systems as the technical foundation for a safer world fleet. For its unique contribution of these Rules, together with research and monitored implementation, IACS has become a respected partner in the circle of organisations committed to safer ships and cleaner seas.

The 1 July 1998 revision to SOLAS 74, on "Recognised Organisations" requires that ships "be designed, constructed and maintained in compliance with the structural, mechanical and electrical requirements of a classification society ..... recognized by the Administration ....

or with applicable national standards of the Administration which provide an equivalent level of safety" as a precondition for meeting other SOLAS safety standards for new ships.

In turn, the IMO Conventions are the basis of compliance with the ISM Code - the yardstick of international shipping safety for both Flag State and Port State Control regimes.

IACS Members' Class certification of structural and engineering fitness and the linkage of recognised class societies to statutory safety regulation compliance are now inseparable. With its unique fund of knowledge and experience, IACS is committed to a full role in the industry's shared responsibility for a safe and responsibly managed world fleet.

IACS will continue to set the principal standards for ship structures and essential engineering systems and to play a full part in support of the industry's regulatory regime.

### **OWNER:**

Whether a Class society acts to check compliance with its structural rules - or conformance with the statutory regulations of the vessel's Flag State as an authorised agent - it requires the fullest co-operation of the owner, who retains the primary and ultimate responsibility - the "duty of care" - for the safe maintenance, operation and manning of his ships.

The great majority of owners are committed to high quality ships and safe operations. Regrettably, responsible operators are disadvantaged by the continuing ability of sub-standard ships and companies to profit from a lower cost of operation - and to thereby hazard people, seas and coasts.

## 2

### **CONSISTENCY & UNIFORMITY:**

The vital interests of consistency, uniformity and commonality are served through the application of more than 200 IACS Unified Requirements and Interpretations systematically developed over the past 30 years.

While each IACS Member develops and applies its own “Rules”, IACS represents a feedback loop and database from the building and through-life experience of thousands of IACS Member-classed merchant ships.

IACS has long maintained that the concept of a single, “standard” set of Class Rules would effectively limit Members’ major Research & Development momentum. It is largely through R&D, and competition on the basis of innovation and service support, that IACS’ Members effectively raise the technical standards for future generations of ships. However, harmonization of basic requirements which are essential to safety is beneficial and harmonization of the application of statutory regulations by IACS Members acting on behalf of flag Administrations is essential.

Consistency is also guarded through mandatory conformance by Members with the provisions of IACS’ Quality System Certification Scheme (QSCS) - including Procedural Requirements in surveyor employment, training, qualification and performance monitoring.

### **3** ACCOUNTABILITY & OVERSIGHT:

IACS’ Members are first and formally accountable to their respective governing bodies, but their behaviour and operations are equally subject to mandatory compliance with both IACS’ Code of Ethics and QSCS. *(See also 6 below.)*

Communication and discussion with the maritime industry and its leading safety partners and organisations is a key IACS principle.

A valuable oversight is provided through the involvement of the IMO with IACS’ QSCS, while the Scheme’s recently-formed Quality Advisory Committee (QAC) gives an important further oversight of IACS Class activity and visible integrity by organizations external to IACS.

In their day-to-day activities, IACS’ Surveyors are accountable through audited monitoring within Members’ mandatory compliance with QSCS.

### **4** CO-OPERATION WITHIN IACS:

Unified Requirements - providing the commonality for many of the key technical issues in IACS Members’ Rules - have played a vital role in IACS-classed fleet safety and in the co-operation between IACS Members.

Development of Unified Requirements and Interpretations continues as an essential basis of technical co-operation between IACS Members - with well over 200 IACS Unified Requirements in place, covering ship hull structural and engineering systems standards.

IACS’ Working Groups bring together experts and specialists from individual Members, creating a unique forum to share and apply the benefits of individual Members’ experience and research effort on particular technical issues.

Their combined studies represent the greatest single investment in ship design, structure and related engineering research and development in commercial shipping. Together, the IACS Members invest over \$70m. annually in ship structural and engineering research and development and design.

More than 100 R&D projects will be in progress at any one time, enabling the continuous updating of classification Rules and related standards and guidelines. IACS’ Working Groups also make an essential contribution to IMO’s assessment of technical safety issues - IACS’ studies into bulk carrier safety being the leading recent example.

IACS Members also co-operate fully and assist in the resourcing of casualty investigation of ships of their Class, where their involvement is requested and required by the Flag State leading the enquiry.

### **5** TRANSPARENCY:

In the challenge to increase the quality of the world fleet and progressively eliminate sub-standard ships, the IACS Societies wish to help increase the knowledge available concerning vessels not meeting acceptable standards.

With greater transparency of information being a key factor in raising quality, IACS has taken a series of steps to increase the scope and speed of access to its expanding database on the IACS-classed fleet.

On proper request, other partners in maritime safety can now acquire data on IACS Class Transfers; ISM Code Certifications by IACS Members and vessels suspended from - or leaving - IACS' Members Class.

## 6 INTEGRITY & STANDARDS:

The reputation and acceptance of Members' work demands that IACS Membership is recognised as an assurance of integrity and high standards.

Mandatory observance of the IACS Code of Ethics is therefore essential to safeguard the reputation of

the Association. The Code enshrines the principle that competition between the IACS societies shall be on the basis of service to the marine industry, without compromises on safety or in technical standards.

Similarly, and to deliver the highest and most consistent standards in classification and delegated statutory services, IACS' Members and Associates must achieve regularly audited and ongoing compliance with IACS' QSCS.

Representing wider interests, the Quality Advisory Committee (QAC) plays an important oversight role in monitoring the IACS QSCS and offering advice for its improvement and verifying the integrity of IACS Class. By its actions, IACS has shown itself willing and determined to act in the event of non-conformances to its required integrity and mandatory standards.

# ORIGINS AND DEVELOPMENT OF CLASSIFICATION:

## THE BEGINNING

Started to verify and “class” the condition and seaworthiness of merchantmen for insurers and charterers, the origins of classification can be traced to London in **1760**.

That year saw the foundation of “the Register’s Society” - predecessor of Lloyd’s Register - although the gathering and exchange of shipping information for merchants began about 70 years earlier in Lloyd’s coffee house, located in modern Great Tower Street. Similarly, the focus on printed shipping news began with the founding of *Lloyd’s List*, in **1734**.

The first shipping “Register” was published in **1764**, detailing vessel ownership, characteristics and condition - but based on unstated (and differing) standards of the earliest surveyors. At this time, “class” was judged purely on vessel age - “first class” being a notation only valid for the first eight years in the life of many ships.

Underwriters secured their information through subscription to the early registers, though after the creation of LR in 1834 it became custom and practice for shipowners to pay for class surveys.

## SOCIETY ORIGINS

Of the modern societies, **BV** was the first, founded in Antwerp in **1829**, but based in Paris from 1832. The intention was: *“to be of use of all maritime professions including shipowners, charterers and mariners - but above all to the insurers...particularly by preserving them from the underwriting risks of bad ships”*.

Two British registers joined forces to create **Lloyd’s Register** in **1834**; Italy’s **RINA** dates from **1861** and **ABS** traces its origins back to **1862**. Adoption of common rules for ship construction by Norwegian insurance societies in the late 1850s led to establishment of **DNV** in **1864**. **GL** was formed in **1867** and **Class NK** in **1899**.

## RULES AND STANDARDS

The safety relationship between freeboard and draught was first written in a Lloyd’s Rule of **1835**. However, it was **1883** before Samuel Plimsoll was instrumental in passing the UK Merchant Shipping Act, in which class rules became the basis of compliance with a Flag State’s power (through the then Board of Trade) to detain overloaded ships as unseaworthy.

Arguably the origin of today’s Port State Control, this marked a turning point in maritime safety, based in essence on rules developed by a classification society.

The intervening 50 years had seen dramatic transition from wood and sail to iron, steam and steel. With the first rules for iron hulls, in **1853**, vessel age first gave way to structural integrity as the basis of classification. The first in-works examination of production steel took place in **1855**, while classification of propulsion machinery began in **1880**. Class rules for steel ships were first drafted in **1888**, and rules for oil-fired ships followed in **1898** - just a year after the first steam turbines went to sea.

Classification has traditionally been based on what is now known as the feedback loop. From the earliest days of the modern societies, the process developed whereby plans were examined and approved; ships were surveyed through construction, class was granted and certificates issued. Ships were surveyed for as long as their life within the Register. Data on ship operation and in-service experience flowed back to each Society’s Head Office. The vast amount of experience gained enabled the lessons learned to be built into new designs and new ships - with continual improvement in strength and safety.

## ORIGINS OF IACS

IACS can trace its history back to the LoadLine Convention of **1930** and its British-based recommendations. The Convention recommended collaboration between classification societies to secure: *“as much uniformity as possible in the application of the standards of strength upon which freeboard is based...”*

Following the Convention, RINA hosted the first conference of major societies in **1939** - also attended by ABS, BV, DNV, GL, LR and Class NK - which agreed on further co-operation between the societies.

Although the first international maritime conference was held in **1889**, technical regulation within international shipping safety did not come to the fore until the establishment in **1948** of IMO’s predecessor, the International Maritime Consultative Organisation (IMCO). Since then, class rules have become increasingly prominent as the recognised technical basis of structural ship safety.

The second major class society conference, held in **1955**, led to creation of Working Parties on specific topics, with the first - on hull structural steel, in **1957** - laying the foundations for more than 200 Unified Requirements, numerous Unified Interpretations and Guidelines that IACS has today.

## UNIQUE KNOWLEDGE

IACS was formed by the seven leading class societies in **1968**. The value of their combined and unique level of classification knowledge and experience in contributing to maritime safety and its regulatory regime was quickly recognised. In **1969**, IACS was accordingly given consultative status with the IMO. It remains the only non-governmental organisation with Observer status which is able to develop and apply structural rules.

Dedicated to safe ships and clean seas,  
IACS makes a unique contribution to maritime safety  
and regulation through technical support, compliance  
verification and research and development.

More than 90% of the world's cargo carrying tonnage  
is covered by the classification design, construction  
and through-life compliance rules and standards set  
by the 10 Member Societies and three Associates of IACS.

# IACS

**INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES LTD.**

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Members

**ABS BV CCS DNV GL KR LR NK RINA RS**

Associates

**CRS IRS PRS**

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