IACS

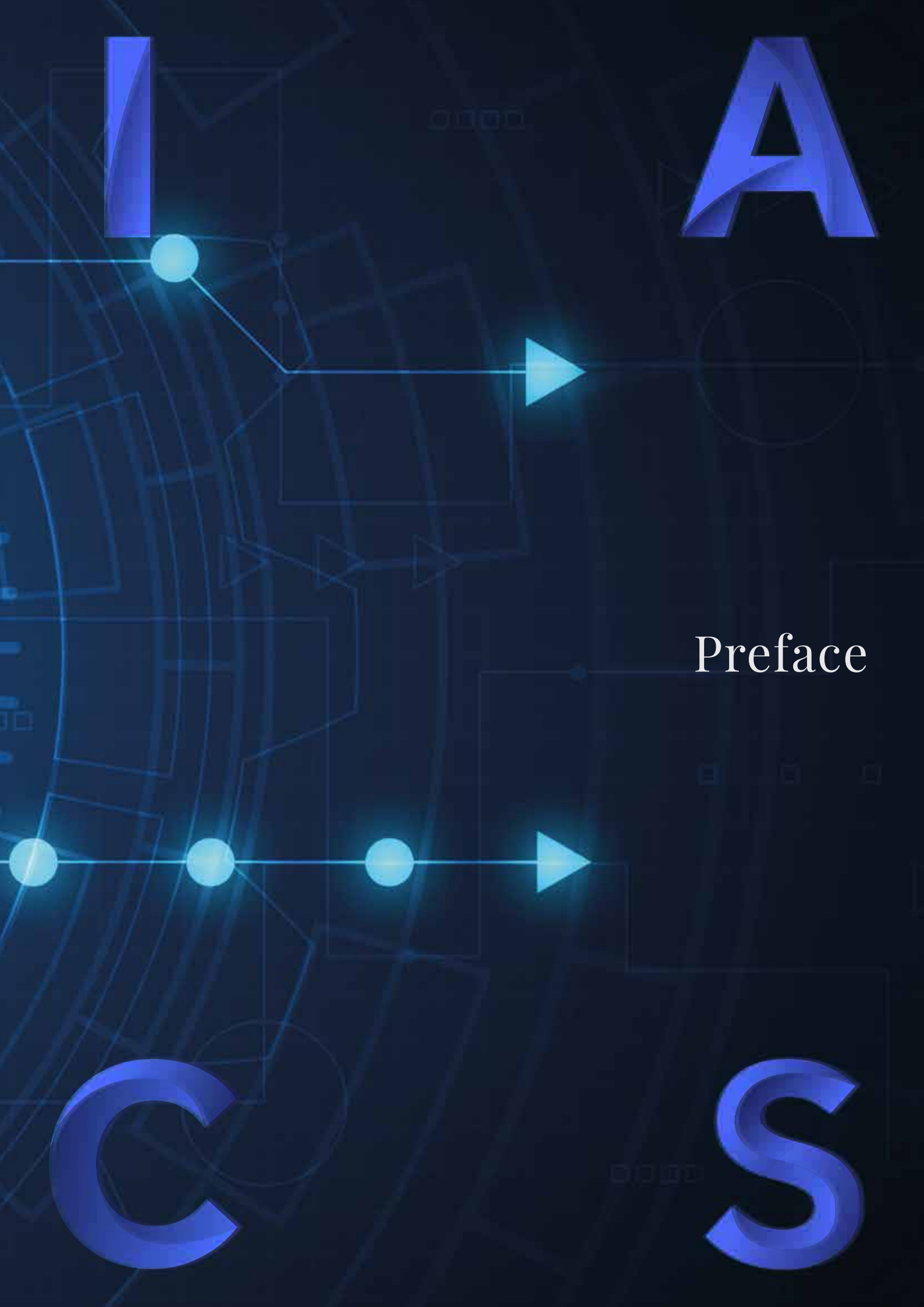
International Association
of Classification Societies

Annual Review 2020

Design and production:
carmarmedia.co.uk

Printed by:
colt-press.co.uk

Contents



Preface

Unwavering as well as resilient in a time of change

Koichi Fujiwara, IACS Council Chair and Chairman of the Board of Directors of ClassNK, reflects on a turbulent year filled with unrelenting efforts to maintain the technical leadership of IACS and its further reinforcement.

By Koichi Fujiwara, IACS Council Chair.

Koichi Fujiwara

2020 will be remembered historically as a year of difficulties. Going through such a tough year, I am so grateful for the successful delivery of the 2020 IACS Annual Review.

The unpredicted challenges posed by Covid-19 further impacted the global maritime industry, which was already struggling with the rapid and dramatic changes caused by various factors, including the irresistible trend towards digitalisation and the growing pressure for a greener future through decarbonisation. Amidst such uncertainties, the importance of shipping has been highlighted more than ever. With the sense of responsibility to support this essential industry which underpins people's daily lives, IACS has committed over the last year to steadily providing high quality services and adapting to aid the new generation, and this effort will continue for many years to come.

Maintaining competence in difficult times

Even during the recent disruptions, IACS showed its resilience and flexibility by continuing to provide its wide range of services. A Covid-19 Task Force was established swiftly to consider the best practice for the safety of crews/surveyors and to ensure business continuity, with flexible arrangements such as the extension of validity of certificates, subject to permission from flag State Administrations. Fully aware of the industry's growing interest in remote surveys, IACS has worked on the development of requirements for remote surveys by carrying out technical considerations within its Panel and Project Team as well as with supporting regulatory bodies. Meanwhile, individual Members have developed their own approaches to ensure safety to the satisfaction of the relevant flag State Administrations. Further, IACS has strived to guarantee the continued quality certification of its Members and to further improve their performance through remote audits and the fully-fledged development of the International Quality Assessment Review Body, an impartial advisory body, following its trial meeting in 2019.

All of these efforts have contributed to maintaining the competence and credibility of IACS and its Members even in the face of the toughest adversity.

Adjusting to change for a better future

While continuing to be the steadfast partner which the industry can always count on in times of turbulence, IACS is also prepared to evolve itself in a swift and flexible manner to steer the waves of change to a better future.

Setting digitalisation as one of its focus areas, IACS has proactively worked on the issue of cyber safety in 2020, which resulted in a consolidated IACS Recommendation based on the previous 12 Recommendations and continuing the work to translate this into a Unified Requirement. The successful establishment of IACS Data Driven Policy will also contribute to better data utilisation for

IACS is determined to keep moving towards a better and brighter future

IACS' work, an important step given that the importance of data is only going to increase. Moreover, IACS has agreed to reform its governance structure – which had remained almost unchanged since its foundation in 1969 – to be more responsive and efficient in decision-making, ensuring robustness with minimised bureaucracy.

Cherishing these values, IACS is determined not to fear change and to keep moving towards a better and brighter future.

It is true that 2020 was a year ravaged by the pandemic and other challenges. The values of cooperation among the industry stood out all the more because of the hardships. IACS will continue to be a close partner for the industry through dialogues, whether physically or virtually, to achieve the shared goal of safer and cleaner shipping through our collective efforts.

Last but not least, my sincerest appreciation goes to all Members of IACS, especially IACS Secretariat, for their tireless engagement and assistance. With their dedication, I am fully confident that IACS will successfully navigate the mounting challenges ahead of us, as it did in 2020. ■

"All of these efforts have contributed to maintaining the competence and credibility of IACS and its Members even in the face of the toughest adversity."

Working hard to provide stability to a vital industry

IACS' work in support of the industry in 2020 focused on ensuring smooth operations in the face of the global pandemic while continuing to take forward key initiatives in the areas of quality and governance.

By Robert Ashdown, IACS Secretary General.


Robert Ashdown

Although it is difficult to look back at 2020 other than through the lens of the ongoing global pandemic, the contents of this Annual Review make it clear that even in this most challenging of years, IACS' support of the maritime industry has been undiminished. New initiatives continued to be driven forward, ongoing workstreams were delivered and our engagement with industry stakeholders was maintained, albeit on a virtual basis. As a result, 2020 was not only another busy and productive year for IACS but also one which saw the Association conclude the most significant restructuring of its governance model since its formation over 50 years ago.

Responding appropriately to the challenges posed by Covid-19 was nevertheless the key objective of IACS. It was essential that the primary objective of keeping shipping operating smoothly was achieved whilst ensuring that ships remained subject to the mandatory statutory and classification regime of surveys and certification as far as possible and that IACS' Members continued to meet the demands of IACS Quality Management System. More detail on how IACS has approached both these aspects can be found later in this review on page 14 and page 44 respectively.

IACS' ongoing commitment to quality was also seen in the further development of the International Quality Assessment Review Body (IQARB), the advisory body that has been established to review the certification process of the quality management systems of IACS classification societies. IQARB held a highly successful second meeting in 2020, where it was demonstrated that IQARB was able to review the adequacy of IACS Quality System Certification Scheme (QSCS) in meeting the objectives of the Recognized Organization Code, taking into account the performance of Accredited Certification Bodies who have audited the class societies against the criteria of QSCS, and to issue factual statements to that effect. In addition, a number of significant steps were taken to further develop IQARB and more detail on this is provided on page 47.

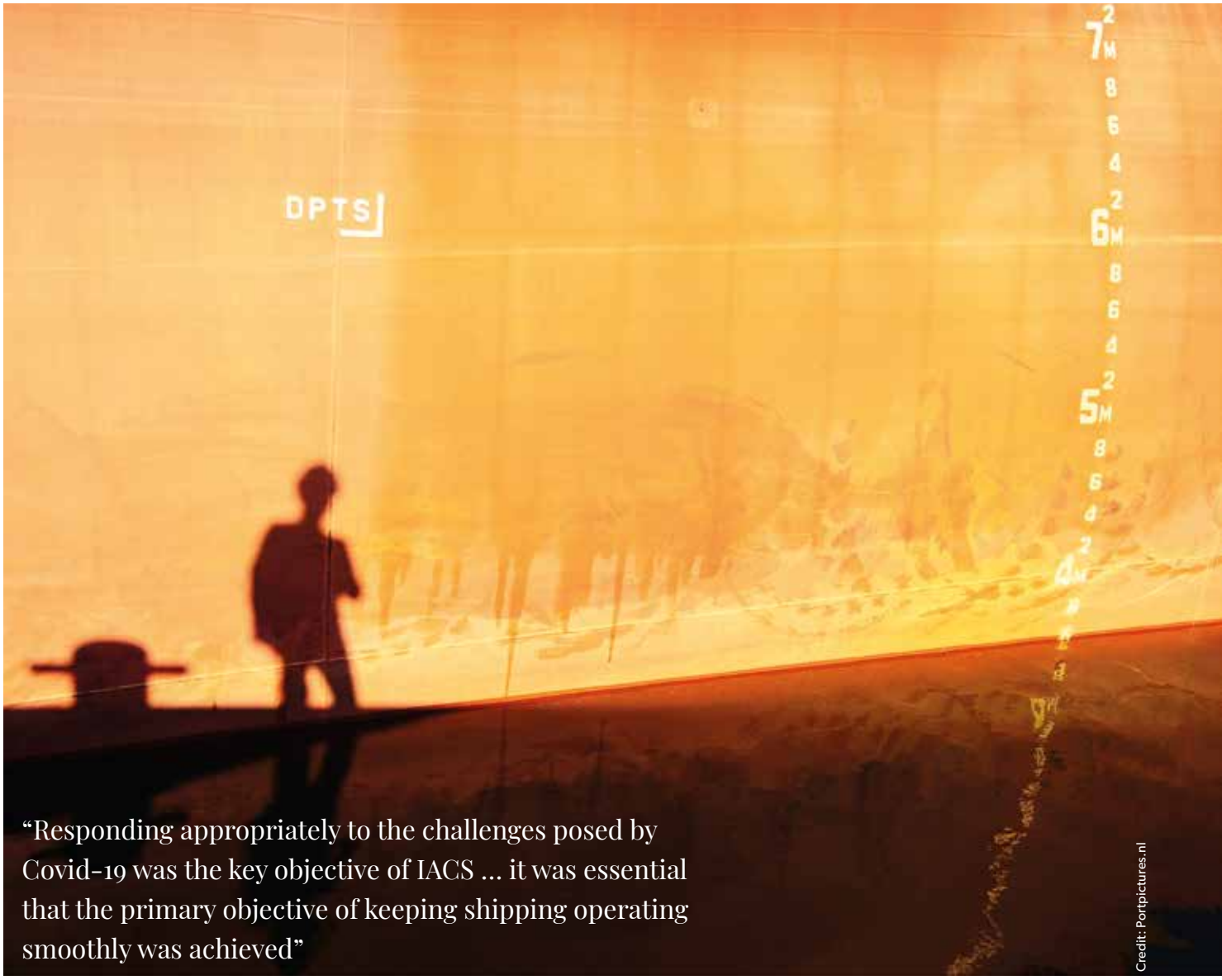
2020 also saw IACS conclude a long-term strategic initiative by way of a fundamental overhaul of the Association's governance structure (see page 18). These changes, delivered in response to the challenges posed by rapid technological development, constant regulatory evolution and changing market dynamics, will see the introduction of a package of measures in 2021 that will provide better, more consistent and continuous support for IACS stakeholders. An elected Chair in post for two years, the relocation of the IACS General Policy Group Chair and team to London and streamlined decision-making will all serve to bring IACS closer to its stakeholders at a time when the key challenges facing the maritime industry require a sustained and joint effort by all concerned.

In addition to these very significant initiatives, IACS' work in supporting the industry on the key issues it faces continued unabated in 2020. On the overarching issues of digitalisation and decarbonisation, IACS continued to play a significant role: in the former through its work on cyber safety and its adoption of a data-driven policy as well as ongoing work on marine autonomous surface ships and remote surveys;

and in the latter by way of wide-ranging technical inputs to the ongoing work at the International Maritime Organization (IMO) and in other fora where IACS' focus continues to be on making sure that practical implementation issues are considered and that the safety implications of any new technical or regulatory proposals are properly evaluated.

Elsewhere in this Annual Review are updates on IACS' activities in support of the IMO and on the efforts that have been made to continue to progress a variety of work items in conjunction with our industry partners, despite the unavoidable postponent of core joint-industry meetings such as Tripartite. There are also articles on IACS' ongoing work in the quality sphere as well as a wide variety of technical items including an assessment of the impact of the Enhanced Survey Programme, work on the improvement of cast steel and copper alloy propellers, and on new interim guidelines to assess criteria for dynamic stability failure in waves for all ships (known as the 'Second Generation Intact Stability Criteria'). Also included is the traditional IACS Class Report containing the latest data on the IACS fleet of Classed Ships along with a complete listing of all new and revised IACS publications issued in 2020.

It is clear from this short summary that IACS is continuing to deliver on its commitment to support the maritime industry and, following the implementation of its new governance structure, IACS will be even better positioned to do so in the months and years to come. As we face not only the immediate difficulties posed by the ongoing Covid-19 pandemic but also the longer-term challenges of decarbonisation and digitalisation, IACS' resolve to be a trusted partner of regulators with respect to the development of maritime regulations and to maintain classification as the primary mechanism for practical self-regulation of the maritime industry is as strong as ever. ■



"Responding appropriately to the challenges posed by Covid-19 was the key objective of IACS … it was essential that the primary objective of keeping shipping operating smoothly was achieved"

Credit: Portpictures.nl

About IACS

Maintaining safety in a changed world

IACS ensures that safety is not compromised in a challenging operating environment.

By Robert Ashdown, Secretary General.

Maintaining safety is at the core of IACS' Members global operations, and while the Covid-19 pandemic has put pressure on operating procedures, managing safety risks remained IACS' number one priority through 2020. Throughout the pandemic, IACS Members continued to abide by their defining aims of saving lives and protecting the environment through their assurance of safe operations of ships and other floating structures.

IACS Member classification societies collectively boast unrivalled expertise and technical understanding of ships' structures and the stresses they are subject to and, working in partnership, they continue to set and maintain high standards for commercial shipping through the development of unified technical requirements and the production of other Recommendations and guidance.

Ship classification itself is defined as the verification of the structural strength and integrity of the essential parts of a ship's hull and its appendages, as well as the authentication of the reliability and function of its propulsion and steering systems, and power generation, alongside other features and auxiliary systems built into the ship to maintain essential on-board services for safe operation.

To enable effective classification of ships, independent classification societies develop and apply Rules. These are then complemented by the verification of compliance with international

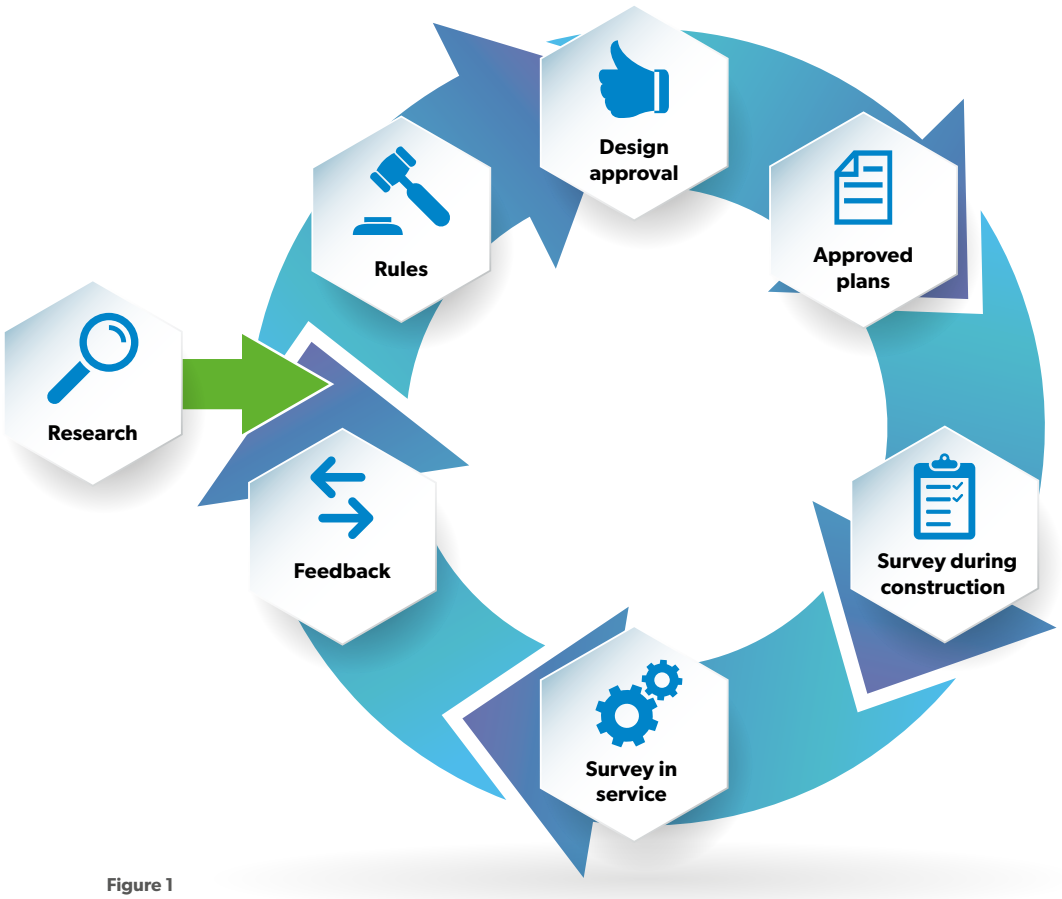


Figure 1
The class cycle

and/or national statutory regulations on behalf of flag State Administrations. Classification Rules are subject to a process of continuous refinement, supported by extensive research and development as well as service experience. IACS Unified Requirements, once agreed by IACS Members, are also transposed into individual Members' Rules. The vast majority of commercial ships are built to and surveyed for compliance with IACS Members' Rules.

Robust research and data collection underpin today's classification societies' activities. Sitting in an enviable position with their involvement through the entire life cycle of ships, classification societies have data from, and direct experience of the design approval process, from new construction – including the certification of materials, equipment and components – to the surveys of ships in service. This connection enables classification societies to drive research and development, leading to the continuous improvement of classification Rules. This 'class cycle' involvement is a key supporting element of the purposes and objectives of IACS (see Figure 1).

IACS Members continue to assure the safe operations of ships and other floating structures

Credit: Portpictures.nl

Safety in partnership

With regards to safety, the link between classification and statutory certification is also significant. Classification by a society recognised by a flag State Administration is usually a prerequisite for both registration of a ship with its flag State Administration and for certification of its compliance with the International Convention on Load Lines and the International Convention for the Safety of Life at Sea.

Classification societies' and their surveyors' unmatched understanding of internationally applicable statutory requirements for ships and other floating structures support IACS' position as the International Maritime Organization's (IMO) technical advisor. This symbiotic relationship allows IACS Members direct access to the development of international regulatory instruments and a unique channel to share technical information with the industry. This partnership facilitates consistent implementation of international mandatory conventions and codes as part of the statutory services societies provide on behalf of flag State Administrations, when authorised.

However, the responsibility of ship safety does not rest solely on classification societies as a classification certificate is not a warrant of a ship's safety, fitness-for-purpose or seaworthiness. By definition, a classification certificate is a confirmation that at a certain date the vessel complied with the Rules developed and published by the society issuing the certificate.

It is also important to note that classification societies are not guarantors of the safety of life or property at sea, or the seaworthiness of a vessel. When a ship is issued its classification certificate, it is issued on the understanding that the ship will be loaded, operated and maintained in a proper manner by competent and qualified personnel. Classification societies have no control over how a vessel is operated and maintained between the periodical surveys they conduct, which check that a vessel remains in compliance with the relevant requirements. Safety, therefore, relies on proper maintenance and operation by shipowners or operators, as well as on the competence of seafarers on board.

Shipowners and operators have a responsibility to inform their classification society without delay of any defects found that may affect class, or if any damages are sustained. Once aware of those conditions classification societies have the right to suspend, withdraw or revise class if the conditions for maintenance of class cannot be complied with.

Credit: Portpictures.nl

IACS' comprehensive scope of work on safety and the protection of the marine environment is beyond compare

Setting standards

Setting statutory requirements for shipping is the remit of the IMO and the International Labour Organization, who both ensure that those requirements address the safety and security of ships and those on board, as well as protection of the environment. International in nature, these organisations ensure that there is a level playing field regarding regulations, which in turn allows a compliant ship flying the flag of one State to trade internationally. This ultimately facilitates the efficiency of global trade.

IACS supports this statutory role through its development and adoption of Unified Interpretations (UIs). These support global and consistent implementation of IMO regulations and are defined as adopted Resolutions on matters arising from implementing IMO-agreed provisions. UIs are necessary to address incidences where IMO-agreed texts are either left to the interpretation of the flag State Administration or are vaguely worded. The development of UIs consequently encourages consistent global implementation of regulations.

IACS also establishes, reviews, promotes and develops Unified Requirements (URs) in relation to the design, construction, maintenance and survey of ships on matters directly connected to or covered by specific Rule requirements and practices of classification societies. These are considered minimum prerequisites, but Members are free to set and publicise requirements that result in an equivalent or higher safety level compared with IACS' URs.

In addition to these interpretations and requirements, IACS offers technical expertise to assist international regulatory bodies and standards organisations to develop, implement and interpret statutory regulations and industry standards in ship design, construction and maintenance. This is undertaken with a view to improving safety at sea and preventing marine pollution. IACS also offers assistance at a regional level, making technical contributions to European Union regulatory developments related to shipping.

IACS also actively engages with individual flag State Administrations and regulatory bodies to ensure that IACS Members can have confidence in certifying compliance with statutory regulations on behalf of authorising flag State Administrations.

In conclusion, IACS' comprehensive scope of work on safety and the protection of the marine environment is beyond compare and its dedicated work in unprecedented times ensures the continued safe operation of the shipping industry today and in the future. ■

IACS VALUES

IACS ascribes to the following values in its assistance to regulators, including the IMO and ILO, and industry:

1. **Leadership:** the ability to be ahead and to co-operate with regulators and industry on initiatives that can effectively promote maritime safety, protection of the environment and sustainability.

2. **Technical knowledge:** collective and individual knowledge and experience leading to the development, adoption and implementation of technical rules and requirements reflecting current practice and changing demands of society, supporting innovation and new technologies.

3. **Quality performance:** commitment of Members to define and adhere to the highest global quality standards.

4. **Transparency:** the ability to provide advice on the implementation of regulations, interpretations or enhancements thereof, if the need is identified, so that practical solutions can be effectively developed in co-operation and with the support of other stakeholders, increasing the trust on class.

"IACS' dedicated work in unprecedented times ensures the continued safe operation of the shipping industry today and for the future"

IACS COVID-19 Response

Surveying adjusts to the new normal

Pandemic prompts a sea change in methods to assess ship safety compliance.

By Tim Kent, Covid-19 Task Force Chair.

The COVID-19 global pandemic has challenged and disrupted every aspect of normal life during 2020. Recognising the key role played by the shipping industry in delivering food, fuel, household goods and medical supplies around the world, the IMO Secretary-General called upon the maritime sector to unite to ensure trade could continue safely and compliantly during the pandemic. IACS stood ready to assist and an Open Letter was quickly issued to industry confirming IACS' support to IMO's request to all industry groups to help ships continue trading during the developing situation.

A COVID-19 Task Force was created by IACS to facilitate focussed engagement in the multi-faceted issues arising from the pandemic and to ensure timely responses to the developing situation. The IACS Task Force first met virtually on 7 April 2020 and continued to meet regularly during the global spread of the pandemic with the aim of addressing issues as they arose as swiftly as possible.

An initial concern was around the potential transmission of the virus and safety impact of visitors to ships on the crew, and the safety of surveyors working onboard. IACS worked with the International Chamber of Shipping to contribute to their paper 'COVID-19-related guidelines for ensuring a safe shipboard interface between ship and shore-based personnel' and has made clear to industry that measures to ensure the safe continuation of survey activity were enabled through Members' pro-active risk assessment and management protocols.

Continuing compliance

As a priority, IACS worked to ensure that surveys could be carried out, confirming ongoing safety of the ship and ensuring ships carried the necessary evidence of Convention compliance. In some cases, provisions were agreed to enable Members to use other Members' exclusive surveyors in cases where they were unable to arrange attendance – class surveyors faced some of the same travel restrictions behind the industry's crew change challenge. In others, remote survey approaches were suggested, where appropriate, as an alternative means of evidencing compliance. And in all cases, where the practice differed from the established norm, flag Administration agreement was obtained.

The postponement of statutory certificates beyond the three months permitted by the major Conventions proved problematic; there was no internationally recognised legal basis to do so. When IMO decided to address this with advice to flag Administrations, IACS was able to work closely with IMO in drafting 'guiding principles for the provision of technical and implementation advice to flag States when considering whether to permit statutory certificate extension beyond 3 months', published as an Annex to IMO Circular Letter 4204/Add 19. These principles firmly established that IACS Members would work with all parties to complete the survey to such an extent that ongoing compliance with Convention requirements could be evidenced and a further postponement could be safely recommended by class and granted by flag. In some cases, unconventional means – including remote survey approaches – may have been required; but the focus on evidenced compliance was central to any recommendation. Closing this loop, the approach was shared with the Port State Control regimes at global teleconferences hosted by IMO so that their enforcement inspections were fully informed of the international and multi-party effort to keep trade flowing safely.

Remote survey facts

Remote surveys, which some Members were developing as early as 2018, became the subject of much discussion during the COVID-19 pandemic. There were some

industry whisperings of many surveys going uncompleted or completed without surveyor attendance, but data collected by IACS shows this not to be the case. In fact, during the period January-September 2020, IACS Members completed slightly more scheduled surveys (annual, intermediate, and renewal) than in the same period for 2019; and of these, less than 0.5% were completed entirely by remote means (i.e. with no onboard surveyor presence whatsoever). Some other surveys held may have had elements delivered remotely; and ad-hoc surveys may have been delivered by remote means. IACS continues to work with industry regulators and other stakeholders on the evolution of the remote survey regime – and the experience gained during 2020 will help industry use such approaches in the future where appropriate.

Commitment to quality

Throughout all of this, IACS was well aware that delivery of compliance assurance services by its Members must also stand up to scrutiny from regulators and other stakeholders. Several IACS Procedural Requirements (PRs) have been updated to reflect the different ways of working during the pandemic, and the continued effectiveness of Members' quality management systems has been under constant review to make sure this is the case.

At the time of writing, the pandemic is not yet over. The global maritime industry can rest assured that IACS will adapt to the changing circumstances and continue to support safe and compliant shipping as the situation develops, and hopefully resolves, during 2021. ■

"There were some misplaced rumours of surveys going uncompleted or completed without surveyor attendance, but data collected by IACS shows this not to be the case"

Governance

A new governance structure for IACS

New measures will provide better, more consistent and continuous support for IACS stakeholders.

By Robert Ashdown, Secretary General.

In recent years, the challenges posed by rapid technological development, constant regulatory evolution and changing market dynamics have grown considerably. For IACS, whose Members are obliged to incorporate IACS Resolutions into their own Class Rules and who therefore rightly scrutinise each decision, this situation is exacerbated by the volume and rapid pace of change as well as by the need to maintain a robust and traceable decision-making process.

To meet these challenges, it was agreed that IACS' governance structure, adopted for an association of six members back in 1969 and not significantly changed since, despite doubling the number of members, would have to change; a decision made more complex by the central role the Chairing society has traditionally played in the day-to-day functioning of the Association.

In updating the governance structure of IACS, the ability to identify evolving issues quickly and then resolve and implement the appropriate responses, in a consistent fashion, over a longer period was considered paramount. It was therefore key to not only make the Association more nimble and more responsive but also to improve the consistency in representation to provide continuity of approach as issues are taken forward.

It was clear that this continuity needed to start from the very top of the Association and so a Chair in post for two years (with the possibility of extension) was necessary. This meant departing from a rotational system to choose the Chair, to a Chair being elected from among the Members. It also meant that the traditional obligation for the Chair's society to run, through the concurrent Chairing of the General Policy Group, the technical work of the Association would need an alternative approach.

It was therefore also decided that the elected Chair of the Association would be complemented by an elected Chair of the General Policy Group who, together with a supporting technical team, would be in place for three years and join the IACS Permanent Secretariat in London. Aside from adding a further layer of consistency in representation, a further significant advantage lies in bringing these highly expert, technical specialists closer to the IMO and other industry associations.

Together, the consistency in representation provided by a two-year Chair, a permanent Secretary General and a GPG Chair in post for three years, will reinforce the establishment and maintenance of key industry relationships. Deeper and wider co-operation will allow potential issues to be identified early on while also providing time for solutions to be discussed and worked through in a more consistent fashion at both the policy and technical levels.

Internal changes

Complementing these external-facing measures, IACS' new governance approach will also streamline IACS' internal decision-making, necessitated by the increasing number and pace of new initiatives. As a technical standards-setting body, the results of which are embedded into IACS Members' own Class Rules, IACS needs to balance the need for robust adoption criteria with the need to minimise bureaucracy. Hitherto, this robustness has been provided by having a significant three-quarter majority required for a Council decision and a two-third majority for a GPG decision.

Increasingly, IACS finds that there are often perfectly valid alternative approaches to resolving issues and so, even when the overall objective is not disputed, this can sometimes make it difficult to achieve the high majority needed. This then requires further rounds of consultation, discussion and voting and therefore leads to delay. IACS therefore decided to move to a simple majority voting system to avoid unnecessary delay, with the robustness of that process protected by requiring any such majority decision to be comprised of Members who collectively represent fifty percent or more of IACS' total registered gross tonnage. The introduction of a tonnage element also protects all IACS Members from being overridden in situations where those Members with the largest tonnage are not numerous enough to gain a majority vote, or where the more numerous Members with smaller tonnage cannot use their numbers to gain a majority vote unless they can also obtain the tonnage element. This introduces a useful 'check and balance' into the decision-making process and also gives IACS' stakeholders confidence that decisions taken have the majority support of the IACS membership who also, collectively, will be representative of over 50% of IACS' Members global tonnage.

The majority of voting decisions taken by IACS in any given year relate to issues concerning technical developments. The main purpose of the change to the voting mechanism is to make IACS more responsive to these issues. Council is, however, also responsible for the Association per se and so decisions related to the running of the Association (such as changes to the IACS Charter, procedures, decisions on membership and so on) will remain subject to the existing voting requirements.

"Deeper and wider co-operation will allow potential issues to be identified early on while also providing time for solutions to be discussed and worked through in a more consistent fashion at both the policy and technical levels."

Chair's Office reconstituted

The final element in the package of measures designed to improve the governance of IACS is a reconstituted 'Chair's Office'. This is designed to help reach early agreement on measures. The Chair's Office will be comprised of the Chair, three Council members, the Secretary General and the GPG Chair and will act in an advisory capacity to the IACS Council. The three Council members will rotate annually and be reflective of the make-up of the IACS membership, including its geographical spread, and so, together with the standing members, will provide a balanced and indicative assessment of issues under discussion. The three Chair's Office members will be selected according to a rotation principle meaning that each IACS Member will either Chair, or sit in the Chair's Office, at least once every four years.

The newly elected Council Chair and GPG Chair will begin their terms of office on 1 July 2021. The first elected Council Chair will serve an extended period as it is intended that this role be aligned with the calendar year and so they will serve until 31 December 2023. To avoid a simultaneous change of Council and GPG Chair, the latter's three-year term will run until 30 June 2024. The new voting arrangements will enter into force on 1 July 2021 as will the reconstituted Chair's Office.

IACS vision and mission

The IACS vision and mission remains the same: to be a trusted partner of regulators with respect to the development of maritime regulations and to maintain classification as the primary mechanism for practical self-regulation of the maritime industry. IACS recognised that to successfully deliver on this required fundamental organisational change. The package of measures outlined in this article ensures that IACS remains well positioned to work with its partners in the successful delivery of its core mission of achieving safer and cleaner shipping, bringing IACS closer to its stakeholders at a time when the key challenges facing the maritime industry require a sustained and joint effort by all concerned. ■


IACS
Data Driven Policy

New data policy enhances transparency

IACS adopts a policy for a structured, systematic and uniform approach to the compilation, management and application of data.

By Ajay Asok Kumar, General Policy Group Chairman.

Transparency is one of the four key overarching values of IACS alongside leadership, technical knowledge and quality performance. It is an IACS long-established principle to promote transparency and openness to relevant stakeholders about its Members' high professional standards and the concept of classification as well as the vital role that this concept plays in contributing to safety at sea and the prevention of marine pollution. In line with this principle, IACS places all technical resolutions along with the respective technical background documents in the public domain for use by non-IACS classification societies and other stakeholders. A wide range of other non-technical documents are also published for the benefit of stakeholders. To further enhance the principle of transparency, in 2020 IACS Council adopted a policy on 'Data' utilised to effectively facilitate any task.

Data gathered through experience and feedback has always been at the heart of strategic decision-making, policy development and technical work within IACS. In the past, IACS has utilised data compiled by individual Members as well as by other external parties and it is considering even greater use of data in its future work, including for the development and revisions of various IACS Resolutions, Recommendations and other technical as well as non-technical documents. The success of this data-driven approach is based upon the quality of the data and the effectiveness of its analysis and interpretation.

Policy addresses trust

Instilling trust among all the stakeholders regarding the use of data in IACS' work is

"Each Data Collection & Analysis Report, which will be published with the results of every item of IACS work, will contain records of identification, collection, validation, analysis, copyrights, utilisation, sharing, storage, maintenance and retrieval of the data used to carry out the work."

fundamental to maintaining transparency. To meet this objective, IACS has adopted a policy to implement a structured, systematic and uniform approach to the compilation, management and application of reliable, traceable and retrievable data in all the work carried out by IACS. With a focus on enhancing integrity, data will be collected with a well-defined purpose under specified tasks, and validated, utilised and stored with clear documentation.

IACS Council has adopted detailed procedures for compilation, management and application of data, to be followed by all IACS bodies (working groups). Central to these procedures is the mandatory development of a Data Collection & Analysis Report for all tasks carried out by IACS that utilise data.

Each Data Collection & Analysis Report, which will be published with the results of every item of IACS work, will contain records of identification, collection, validation, analysis, copyrights, utilisation, sharing, storage, maintenance and retrieval of the data used to carry out the work. The report will be developed alongside conventionally developed materials, such as the Technical Background document for IACS Resolutions.

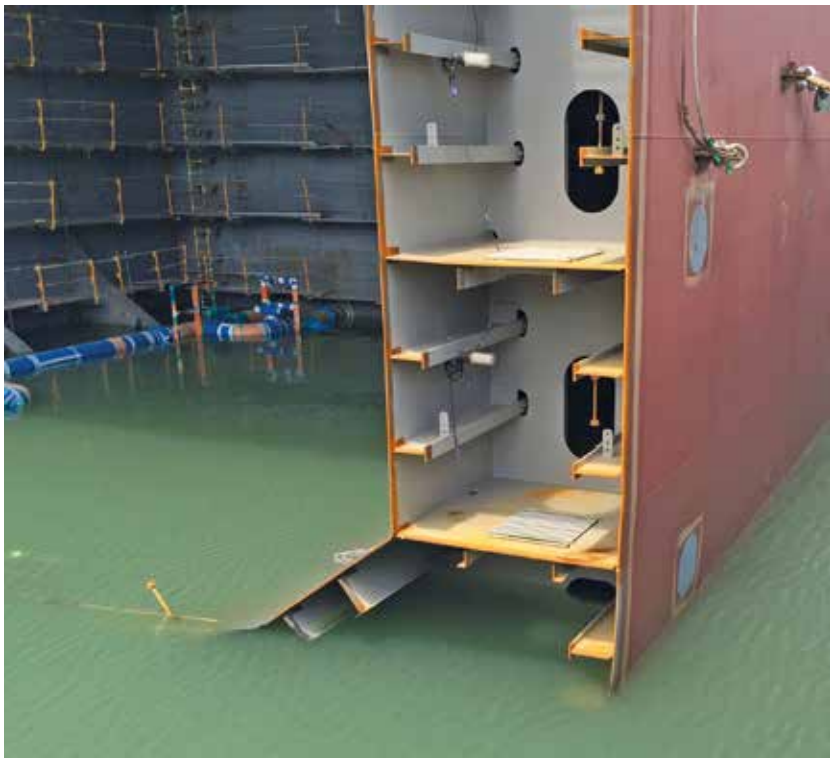
Pilot projects implementing the new procedures on data are underway to test and verify the practical implications. Once the new procedures come into force, Data Collection & Analysis Reports related to new IACS publications will be made available for external stakeholders through the IACS website. ■

IACS
Technical Work

Monitoring the success of corrosion work

Extensive analyses of thickness measurements show a clear reduction in corrosion after the implementation of the Enhanced Survey Programme.

By Åge Bøe, IACS Hull Panel Chairman, and Jaehyeon Ko, IACS Survey Panel Chairman.



"From these measurements it is possible to assess how corrosion in ballast water tanks of tankers and bulk carriers has changed over the last 20–25 years."

When considering the improvement in structural strength and safety of bulk carriers and oil tankers during the last 25-30 years, several IACS requirements and International Maritime Organization (IMO) regulations are of importance. These include the Enhanced Survey Programme (ESP), the IACS Unified Requirements on survey, IACS Common Structural Rules for Bulk Carriers and Oil Tankers (CSR) as well as SOLAS regulations for coating of ballast tanks.

Better control of corrosion in ballast tanks has been a key parameter in the development of these requirements and has been addressed by an enhanced survey regime, as well as improved corrosion protection.

ESP was originally introduced by IACS with UR Z10.1 and Z10.2 in 1992 and later adopted as Guidelines on the Enhanced Programme of Inspections during Surveys of Bulk Carriers and Oil Tankers, Resolution A.744(18) in the 1994 SOLAS conference. From 1996 the provisions of the Guidelines became mandatory under SOLAS regulation XI-1/2.

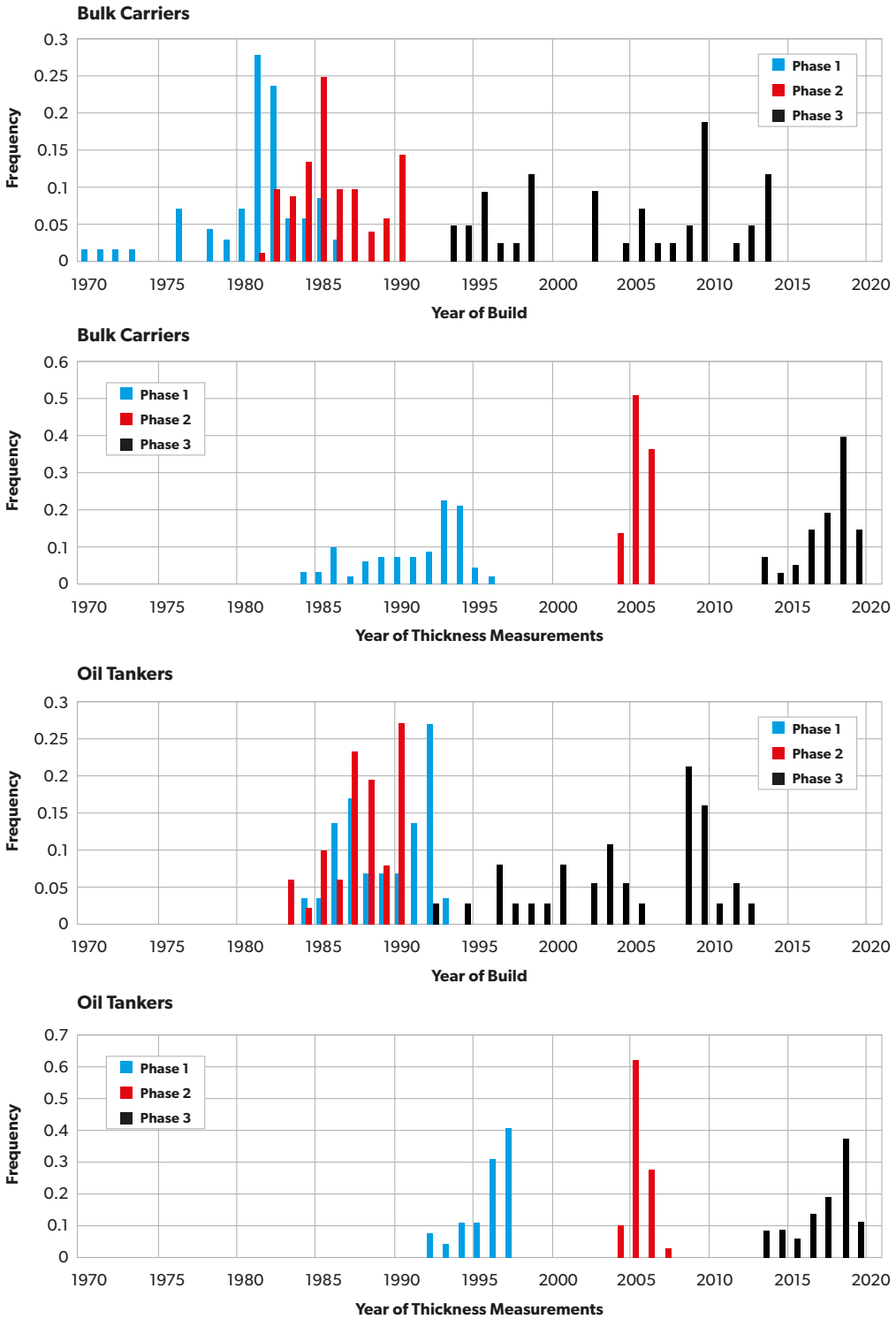
Further updates were adopted at IMO's Maritime Safety Committee (MSC) 74th Session and entered into force in 2001 and revisions adopted at MSC.197(80) were applicable from 2007.

The 2011 ESP Code, as adopted by Resolution A.1049(27), was implemented in SOLAS (SOLAS reg.XI-1/2) by Resolution MSC.325(90) entering into force in 2014. It has been amended by Res.MSC.371(93), Res. MSC.381(94), Res. MSC.405(96), Res. MSC.412(97) and consolidated in Res. MSC.461(101), and has been amended in the IACS Unified Requirements for survey (UR Z10 series).

For the corrosion protection of ballast tanks of bulk carriers and oil tankers, SOLAS reg.II-1/3-2, referring to IMO Res. A 798(19) and further reflected in IACS Unified Interpretation UI SC 122 (which came into force in 1998), increased attention and transparency which led to a general improvement of the coating standard of ballast tanks. Several flag States implemented this requirement early; in some cases these had already been adopted by 1995.

SOLAS reg.II-1/3-2 – IMO Performance Standard for Protective Coating for Dedicated Seawater Ballast Tanks in All Types of Ships and Double-side Skin Spaces of Bulk Carriers (PSPC) was adopted by resolution MSC.215(82), as amended (building contract of 2008, keel laying 2009, delivery date 2012). IMO's PSPC included more specific minimum requirements for ballast tank coating than the earlier requirement. These enhanced requirements had already been implemented in IACS Common Structural Rules for Oil Tankers (CSR-OT) and IACS Common Structural Rules for Bulk Carriers (CSR-BC) in 2006.

Figure 1 Year of build and year of thickness measurements for the ships used in the corrosion analyses, Phase 1-3



Corrosion analyses

IACS has carried out three comprehensive statistical analyses of corrosion data obtained from the thickness measurements from tankers and bulk carriers, referenced as Phase 1, 2 and 3. The year of build for the ships used in Phase 1 to 3 is shown in Figure 1.

Phase 1 was carried out between 2004 and 2005 and formed the technical background for the corrosion additions implemented in IACS CSR-OT and IACS CSR-BC. Most of the corrosion data in this first analysis – 72 measurement reports for bulk carriers and 30 measurement reports for oil tankers – was collected on ships that did not follow the coating condition scheme of ESP. These ships were constructed before any of the SOLAS requirements on ballast tank coating had been implemented.

Phase 2 was carried out between 2010 and 2012

Figure 2 Histogram of corrosion measurements for web frames in ballast water side tanks – Phase 1

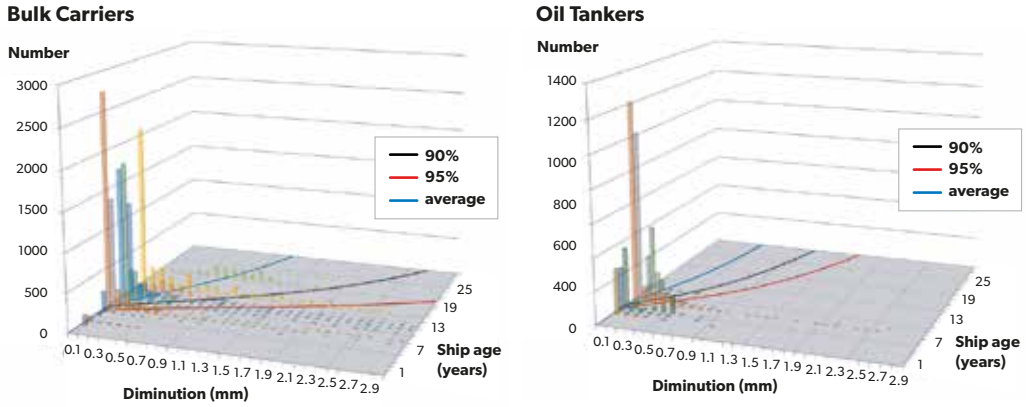


Figure 3 Histogram of corrosion measurements for web frames in ballast water side tanks – Phase 2

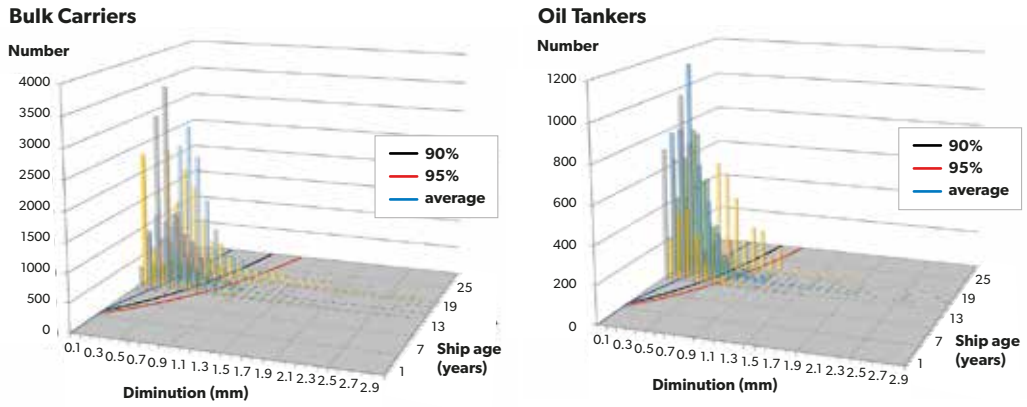


Figure 4 Histogram of corrosion measurements for web frames in ballast water side tanks – Phase 3

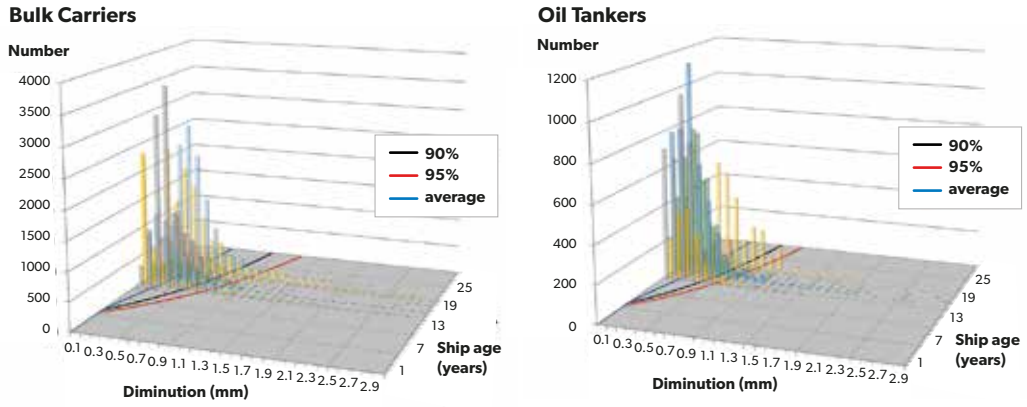
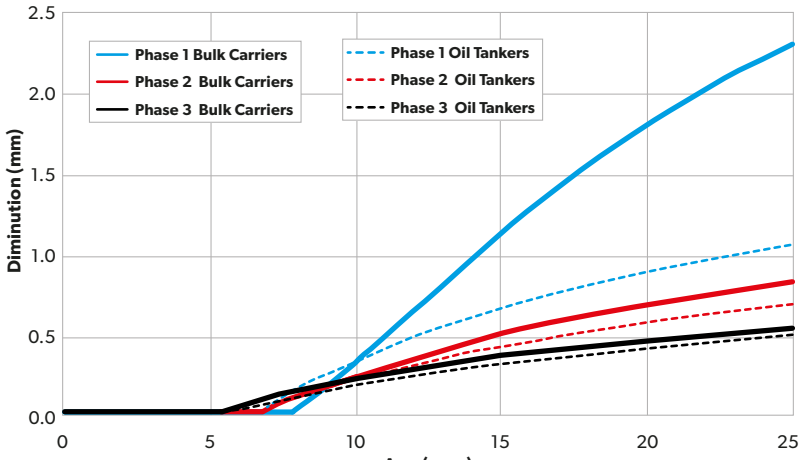


Table 1 Corrosion diminution in mm (both sides) of 90% cumulative probability, for web frames in ballast water side tanks – Application of ESP and coating requirements for ballast water tanks are indicated

Vessel type		Phase 1	Phase 2	Phase 3
Bulk Carrier		2.3 mm	0.82 mm	0.53 mm
Oil Tanker		1.1 mm	0.68 mm	0.50 mm
Requirements	Enhanced Survey Program (ESP)	No	Yes	Yes
	Ballast tank coating requirement	No	No	Yes

Figure 5 Corrosion diminution in mm (both sides) of 90% cumulative probability, for web frames in ballast water side tanks – Phase 1-3 for bulk carriers and oil tankers



as a part of the IACS harmonisation project for CSR. This study was based on new corrosion data from 105 measurement reports for bulk carriers and 52 reports for oil tankers. Most of the data was collected from ships which had been following ESP.

Phase 3 was carried out between 2018 and 2020 under a corrosion re-analysis which was part of IACS' planned maintenance activity on CSR. This re-analysis was based on new data collected from IACS Members and consisted of 43 measurement reports for bulk carriers and 30 reports for oil tankers. All vessels in this phase followed the coating condition scheme of ESP. Also, most of these vessels had been built after 1998 and complied with Res. A 798(19) or PSPC, as they had been built according to CSR.

To monitor the corrosion in ballast water (BW) tanks, thickness measurements on the web frames in BW side tanks - inclusive of hopper and top side tanks - were selected. From these measurements it is possible to assess how the corrosion in BW tanks of tankers and bulk carriers has changed over the last 20-25 years.

Results review

The results from Phase 1 (2004-2005) are visualised in Figure 2, illustrating that both the spread in age and the measured corrosion were higher for bulk carriers than for oil tankers. The 90% cumulative probability value for bulk carriers was 2.2 times the corresponding value for oil tankers.

The 90% cumulative probability values after 25 years from Phase 1 formed the basis for the corrosion addition in CSR, with a reserve, tres = 0.5 mm, added. In general, the total corrosion additions inclusive tres have been close to the 95% cumulative probability values, that is to say that when comparing with the CSR corrosion additions there is a 5% probability of exceedance after 25 years based on the statistical analysis in Phase 1.

The results from Phase 2 (2010-2012) are shown in Figure 3. The 90% cumulative probability values after 25 years are 65% lower for bulk carriers and 36% lower for oil tankers compared with the values obtained from Phase 1. However, there are some differences between bulk carriers and oil tankers, with bulk carriers 20% above oil tankers.

Phase 3 (2018-2020) shows a further reduction in the measured corrosion over Phase 2, see Figure 4. The 90% cumulative probability values after 25 years are 77% lower for bulk carriers and 53% lower for oil tankers compared with the values obtained from Phase 1. By Phase 3 the difference between bulk carriers and oil tankers has almost disappeared: bulk carriers are only 6% above oil tankers. The 90% cumulative probability values from all three phases are presented in Figure 5 and Table 1.

As shown in this comparison, the typical corrosion in BW tanks significantly reduced between Phase 1 and Phase 2. The main difference between the ships used in the Phase 1 analysis and the Phase 2 analysis was the implementation of ESP. Therefore, we can conclude that an improved and more systematic survey regime had a great impact on standards with respect to corrosion of BW tanks, especially for bulk carriers.

Further, when comparing the results from Phase 2 and Phase 3, there is a clear reduction in the corrosion level, however the difference is not as large as between Phase 1 to Phase 2. For the ships used in Phase 3, improved corrosion protection from the implementation of coating requirements to ballast tanks in addition to ESP contributed to the reduction in corrosion.

From the Phase 1, 2 and 3 analyses, it can be concluded that an improved inspection regime of ship structures during operation (ESP) combined with improved corrosion protection (coatings) has resulted in a large reduction in corrosion diminution in ballast tanks and contributed to improved structural safety.

IACS carried out the corrosion re-analysis in Phase 3 to develop an updated and strong technical background for the corrosion margins used in CSR. An outcome of this comprehensive corrosion analyses is that corrosion additions for CSR may be re-considered in the future.

ESP updates

IACS has also collected additional thickness measurements from its Members. The actual wastage reported at the first renewal survey was determined by a random selection of 157 double hull oil tankers with cargo tanks that were either fully coated, partially coated or not coated.

This data showed that the normal range of reported wastage was minimal and, on average, was in the range of approximately zero to 3%. Even considering localised extreme values, the maximum reported wastage was 11%, which is still well below the substantial corrosion level, as shown in the data sheet provided in the annex to document SDC 7/INF.5.

Further, as mentioned earlier, at the time when the thickness measurements requirements were developed, there was no requirement for corrosion protection of the upper portions of the cargo tanks. However, in 2010, amendments to the SOLAS Convention were adopted introducing regulation II-1/3-11, which requires corrosion protection for cargo tanks of crude oil carriers, with reference to resolution MSC.291(87).

Based on the analysis of the collected data and considering the corrosion protection requirements in the aforementioned amendment to the SOLAS Convention, IACS considered that only 'suspect areas' should be subject to thickness measurements at the first renewal survey of a double hull oil tanker. This will bring the requirements for oil tankers in line with the requirements for bulk carriers in the 2011 ESP Code, as amended.

Taking into account the above consideration, IACS proposed an amendment to the column entitled 'Renewal Survey No.1' in annex 2 of part A of annex B of the 2011 ESP Code, as amended by resolution MSC.461(101). The proposal was to delete all items except 'suspect areas'.

This proposal was approved at MSC 102 and will be considered for adoption at MSC 103. If it is adopted at 103, it will enter into force from 1 January 2023. ■

Inside a bulk carrier hopper tank

Pooling expertise on dynamic stability

New stability guidelines cover the ship in a dynamic sea-state.

By Rhoda Willson, IACS Safety Panel Chair.

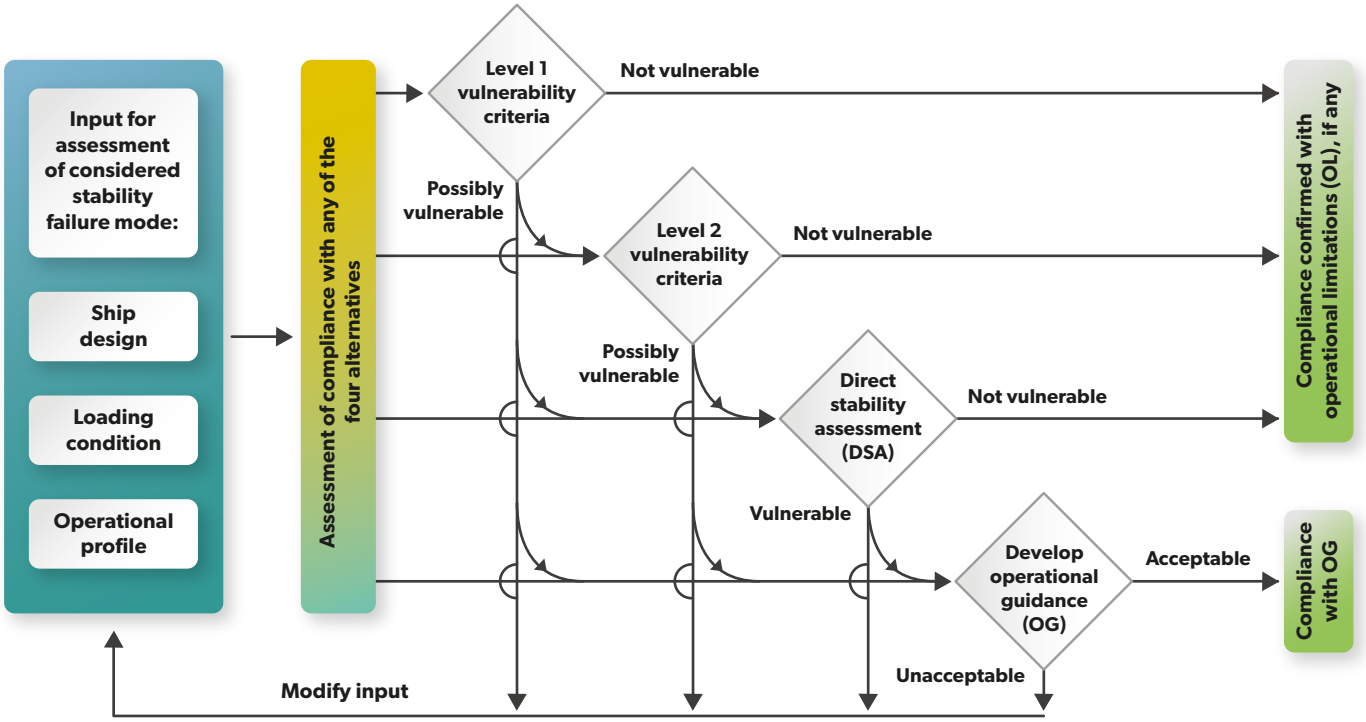
At its 102nd session, the International Maritime Organization's (IMO) Maritime Safety Committee agreed new interim guidelines which include criteria for and means to assess dynamic stability failure in waves for all ships. These criteria are known as the 'Second Generation Intact Stability Criteria' and are to be used initially as recommendatory criteria on a trial basis, with a view to making them mandatory after extensive experience has shown that they are sufficiently robust, technically sound and useable.

Designers, builders, masters, owners, operators and companies are recommended to use the criteria on all ship designs and to report their experience to their industry body or flag State Administration so that the IMO has a clear understanding of their practical implementation. Indeed, the IMO states early in these guidelines: *"Member States and international organizations are invited to submit information, observations, suggestions, comments and recommendations based on the practical experience gained through the application of these Interim guidelines. To support the objective of obtaining robust criteria for regulatory use, suggestions for alternatives to and/or refinements of the criteria elements contained in the Interim guidelines are encouraged. The suggestions should compare the outcomes with the criteria elements included in the Interim guidelines."*

The criteria themselves will be supported by a substantive set of supporting explanatory notes which will provide more detail on the development of the criteria and methods of calculation. These are still being worked on and are anticipated to be finalised and agreed in 2022.

Moving from static to dynamic stability assessments

The current intact stability criteria in the 2008 Intact Stability Code provide an approximate safety factor for dynamic stability derived from the static stability characteristics of a



IACS has been deeply involved with the development and finalisation of this work

ship. However, the 2008 Intact Stability Code does include basic information on dynamic stability failure modes (see section 1.2 in Part A). Ships, of course, seldom operate in a static environment and the new dynamic stability criteria cover the ship while in motion. The criteria address the following issues:

- Dead ship condition (possible large roll due to the absence of stabilising effects of speed).
- Excessive acceleration (possible harm to passengers, crew or cargo due to large lateral accelerations).
- Pure loss of stability on a wave crest (ship loses stability because it spends a significant time on the wave crest and therefore the water profile is different from design i.e. level waterline).
- Parametric roll (excessive roll due to longitudinally running waves, e.g. in head or following seas).
- Surf riding/broaching (excessive heel due to ship being captured by a wave in following seas and loss of yaw control after being caught on downward slope of wave).

Whereas direct stability assessment provides maximum accuracy at the present state of technology, direct stability calculations are resource intensive. Therefore, so-called vulnerability criteria have been developed so that simpler, albeit conservative, assessments are also available for each of the identified issues. As an additional alternative, the interim guidelines also include operational measures, allowing achievement of the required safety level in operation, through ship-specific onboard recommendations to the ship master. Operational measures may be in the form of operational guidance or operational limitations.

Assessment requirements

There are two levels of vulnerability criteria for each of the phenomena: the easiest level 1 and a more advanced level 2. The ship is required to pass any level of design assessment (level 1, level 2 or direct stability assessment) or, alternatively, develop ship-specific operational measures.

IACS has been deeply involved with the development and finalisation of this work. Our active contributions in the various working and correspondence groups established by the IMO's Ship Design and Construction Sub-Committee, and its predecessor the Sub-Committee on Stability and Load Lines and on Fishing Vessels Safety, have helped to shape the criteria and text. The interim guidelines were finalised in February 2020 and work continues on the finalisation of the explanatory notes.

IACS' contributions to this work are focused on practical and regulatory aspects of the interim guidelines and explanatory notes, in particular shaping their format, structure and contents to make them a suitable tool for practical design and approval, treatment of particular design elements – such as anti-roll devices – and refinement of formulations to prevent non-conservative errors in implementation.

IACS recognises these guidelines as a big step forward in the improvement of the safety of ships in the intact condition and our Members are ready to assist as and when required. The Safety Panel plans to keep anonymised example cases under review to draw any common themes together and work towards the practical resolution of any difficulties which are encountered. ■

The IACS Safety Panel kindly assisted with this article.

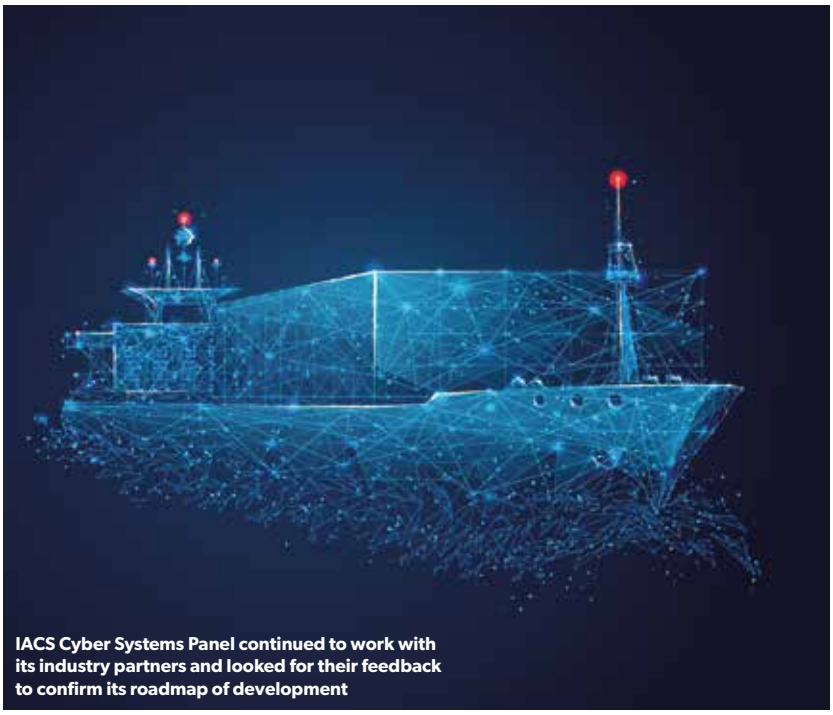
Cyber resilience Recommendations consolidated

IACS clarifies and simplifies cyber requirements.

By Vincent Lagny, IACS Cyber Systems Panel Chair.

On 4 May 2020, IACS was pleased to announce the publication of its Recommendation on Cyber Resilience (Recommendation 166). This single, standalone Recommendation consolidates IACS' previous 12 Recommendations related to cyber resilience (Recommendations 153-164) and applies to the use of computer-based systems which provide control, alarm, monitoring, safety or internal communication functions which are subject to the requirements of a classification society.

Part of the objective in consolidating the 12 Recommendations was to define responsibilities and harmonise and simplify the language used therein. This Recommendation has benefited from the valuable input of a wide range of industry partners contributing via the Joint Industry Working Group on Cyber Systems (JWG/CS – see also the article on the JWG/CS) and covers the constructional aspects of the 12 previously published Recommendations. It provides information on matters such as reference guidelines and standards, terms and definitions, goals for design and construction, functional requirements, technical requirements and verification testing.



IACS Cyber Systems Panel continued to work with its industry partners and looked for their feedback to confirm its roadmap of development

The publication of this important Recommendation marked a significant milestone in IACS' work to support the maritime industry in the delivery of cyber resilient ships. The significant cross-industry co-operation that led to its development should be highlighted and the IACS Cyber Systems Panel looks forward to maintaining that dialogue.

This new Recommendation is applicable to a vessel's network systems using digital communication to interconnect systems within the ship and ship systems which can be accessed by equipment or networks off the ship. The network design forms the basis for a reliable and robust network. Issues such as compatibility of various devices, communication between devices, communication from various systems and sub-systems, need due consideration during the design phase. This Recommendation is an important step in addressing cyber resilience from the earliest stages of a vessel's life.

Operational aspects that were included in the superseded 12 Recommendations have been identified and grouped under a separate annexure. Following the publication of this consolidated Recommendation, the earlier 12 Recommendations have been officially deleted by IACS.

Setting a roadmap

During the second part of 2020, the IACS Cyber Systems Panel continued to work with its industry partners and looked for their feedback to confirm its roadmap of development. Three prioritised project teams were thus agreed and established by the Panel. The first project team was tasked with translating appropriate portions of consolidated Recommendation 166 on cyber resilience of ships into a Unified Requirement with the following objectives:

1. Building on the experience and knowledge acquired in the development of the consolidated Recommendation, produce a

Unified Requirement with minimum goal-based requirements for cyber resilience of new ships. The focus will be on Operational Technology systems and cyber incidents resulting from any type of offensive manoeuvre that targets such systems, excluding system failures. The extent of requirements will be limited to the most common and effective cyber security barriers, feasible for a smooth implementation on all new ships. Such requirements will be mandatory for Operational Technology systems that, if compromised, could immediately lead to dangerous situations for human safety, safety of the vessel and/or threat to the environment.

2. Organise the Unified Requirement to make it possible to implement the requirements contained therein uniformly and smoothly by class societies and industry and make it applicable to all types of vessels, in such a way that the requirements enable a minimum level of security and apply to all classed vessels/units regardless of operational risks and complexity of Operational Technology systems.

3. Organise the Unified Requirement to encourage its evolution and improvement to continuously provide answers to industry expectations on, for example, systems connectivity, digitalisation and smart shipping, anticipating the needs of Maritime Autonomous Surface Ships and supporting the effort of national and international authorities on cyber risk management.

The second project team aims to establish a Unified Requirement for onboard systems and equipment with regards to cyber security. The objective is to determine which requirements are to be met in order for cyber system equipment to be certified for cyber security, when used for essential and critical systems on board.

The aim of the third project team is to update the Unified Requirement about onboard use and application of computer-based systems (UR E22) in order to improve and clarify the requirements for the life cycle activities of computer-based systems for both suppliers and system integrators.

Indeed, during the evaluation of the current UR E22 by the IACS Cyber Systems Panel, it was agreed that an upgrade of UR E22 was needed. The objective is to provide a minimum set of requirements to suppliers and system integrators of software-based automation that ensures that both individual systems and the total integrated functionality is of high quality and safe for use.

Publication of these three new cyber-focused Unified Requirements is planned during the second half of 2021. ■

Supporting global emission goals

IACS continues to provide technical expertise and implementation advice to regulators.
By Li Lu, IACS Environmental Panel Chair.

After adopting its initial strategy on the reduction of greenhouse gas (GHG) emissions from shipping, the International Maritime Organization (IMO) is now focused on developing short-term measures to reduce GHG emissions. In November 2020, the 75th session of its Marine Environment Protection Committee (MEPC) approved amendments to MARPOL Annex VI, integrating mandatory technical energy efficiency through the Energy Efficiency Existing Ship Index (EEXI), operational energy efficiency requirements through a carbon intensity indicator (CII) and a CII rating mechanism applied to most of the existing ships operating internationally.

According to the requirements of the amendments, ships will need to satisfy both technical energy efficiency (EEXI) requirements and operational energy efficiency (CII) requirements, and they will be rated according to their annual operational energy efficiency (from level A to E). This requirement is expected to be implemented from 2023. IMO is developing technical guidelines on carbon intensity reduction, which will provide a basis for the implementation of this 'hybrid' measure.

The hybrid measure takes into account IMO's three-step strategy and the 2030 carbon intensity goal, as well as the current situation of the shipping industry. To ensure that the measure can achieve the goal established in the initial strategy, IMO intends to review the implementation of the measure by 2026.

The incorporation of the hybrid measures into amendments to MARPOL Annex VI reflect co-operation between the IMO and its Member States to achieve a reduction in GHG emissions. The adoption of the amendments sends a clear signal to the industry, leading the shipping industry to further strengthen its emissions reduction and encourage ships to have both good technical energy efficiency and continuous improvement in operational energy efficiency.

While developing short-term measures, IMO has also continued to strengthen the relevant energy efficiency requirements of the existing legal framework applied currently for new ships only. This includes the adoption at MEPC 75 of the amendments to MARPOL Annex VI with regard to the early implementation of a ship's EEDI phase 3 and mandatory EEDI data reporting requirements, which will take effect in April 2022. IMO is currently conducting a review on the possible introduction of EEDI phase 4 requirements.

European GHG developments

In December 2019, the European Commission (EC) released a communication on the European Green Deal, proposing that Europe take the lead in achieving climate neutrality by 2050. This document, which is part of a strategic programme, aims to promote sustainable development objectives for the EU economy, and demonstrates the leadership of the EU in reducing global GHG emissions. The EU plans to intensively introduce relevant policies, legislation and measures during 2020-2021, including: a European 'Climate Law' which will enshrine the 2050 climate neutrality objective in legislation; a review and revision of the EU's GHG emission reductions target for 2030 and relevant climate-related policy/legislative instruments, including an extension of the EU Emissions Trading System (EU-ETS) for the shipping industry; promotion of the reduction in transport emissions and pollution, boosting the production and uptake of sustainable alternative fuels; and a proposal to revise the Energy Taxation Directive, introducing relevant directives on accelerating the application of alternative fuels.

The European Commission has proposed an increase to the GHG reductions target for 2030 to 55% compared with 1990, which is expected to lay the foundation for achieving climate neutrality by 2050. In October 2020, the European Parliament adopted its negotiating mandate on the EU climate law which raised the target even further, calling for a reduction of 60% by 2030.

In this context, on 16 September 2020, the European Parliament adopted draft amendments to its Monitoring, Reporting & Verification (MRV) Regulation, proposed by the European Commission, at first reading. It also proposed including shipping emission reduction

"In 2020, IACS actively participated in the working group on technical energy efficiency and operational energy efficiency led by relevant IMO Member States, providing technical support to the IMO secretariat and conducting research together with the industry"

targets, prohibiting greenhouse gas emissions from ships at berth, extending the application scope to other greenhouse gas emissions, and using an environmental performance-labelling system in the MRV Regulation. At the same time, proposals for amending the EU-ETS Directive were put forward to include CO_2 emissions from shipping, and also for the establishment of an Ocean Fund for the period from 2022 to 2030. As of December 2020, the European Parliament was ready to start negotiations with EU Member States on the final shape of the legislation.

Driven by the European Green Deal and the 2030 GHG emissions reduction target, the EU continues to promote a GHG emissions reduction from shipping. It is expected that on the basis of global GHG emission reduction measures, the EU is likely to introduce substantial regional shipping emission reduction measures in the near future, in addition to implementing more stringent requirements on shipping to achieve additional emission reductions to ensure the EU's emission reduction targets for 2030 will be achieved.

IACS emissions-related work

As GHG emission reduction has become a key issue of widespread concern in the international maritime community in recent years, in 2020 IACS actively participated in the working group on technical energy efficiency and operational energy efficiency led by relevant IMO Member States, providing technical support to the IMO secretariat and conducting research together with the industry.

IACS conducted an analysis of the proposed 'hybrid' short-term measures and submitted proposals to the IMO Intersessional Meeting of the Working Group on Reduction of GHG Emissions from Ships (ISWG-GHG 7) on the feasibility of the measures and potential difficulties related to implementation. IACS' recommendations concerning the implementation of the hybrid measure attracted the attention of many delegations and received significant support from Member States and industry organisations for its technical input and interventions at ISWG-GHG 7.

As the 2020-published Fourth IMO GHG study will serve as an important reference for subsequent IMO policy formulation, IACS also assigned an expert to represent the Association in an external quality assurance and quality control (QA/QC) review of the draft final report of the Study. The expert then proposed substantive IACS technical opinions and suggestions to the report.

The development of relevant technical guidelines for the hybrid measure has been a key focus since the MEPC 75 meeting. IACS will continue to draw on its Members' expertise in advising on the development of IMO guidelines for EEXI and CII, as well as for the Ship Energy Efficiency Management Plan and other related procedures, providing technical support from the perspective of implementation.

In 2020, IACS also actively participated in meetings and technical discussions of the European Sustainable Shipping Forum's group on ship energy efficiency and provided technical opinions for consultations on relevant alternative fuel legislative initiatives from the EU.

It could be noted that there are certain differences between the EU's strategic goals and IMO's GHG emission reduction targets, and the potential effect of regional measures the EU intends to develop on the IMO's global emission reduction measures is unclear. However, relevant emission reduction measures have the overarching aim of meeting the temperature control goal of the Paris Agreement. Although IACS has always supported the establishment of a global GHG emission reduction mechanism through the IMO – and considers that the high-level IMO agreement and its implementation should be sufficient to avoid any future regional measures – IACS will continue to provide its technical expertise and advice for the development and consistent implementation of global or important regional measures from a technical perspective. ■

Spare parts Recommendations' review

Rapid technological advancements have prompted IACS' Machinery Panel to draft amendments to Recs. 26-30.

By Yukihisa Shibata, IACS Machinery Panel Chairman.

In 1990, IACS established Recommendations 26-30 as a guide for the minimum number and type of spare parts that should be carried on board ships for reciprocating internal combustion engines, steam turbines and essential auxiliary machinery of ships.

Some revisions were made in 2006, but in light of technological advancements – including shifting from mechanical to electronic control systems – and to meet changed environmental regulations, IACS initiated a review of these Recommendations in 2020.

The 2006 revisions constituted only a partial review of the Recommendations and considering the speed of change in the industry since then a full review was proposed in 2020. Additionally, the Marine Technical Managers Association (MARTECMA) raised the following concerns with IACS, adding weight to the need to review the Recommendations:

An example of a spare part cylinder liner

1. There are many cases where the change from 3.5% to 0.5% sulphur content fuel oil or use of marine gas fuel may have caused incidents of cylinder liner failures and cylinder oil suppliers have not been able to introduce new cylinder oil lubricants which might avoid such incidents.

2. Cost competition in the declining new building market has led to design and installation onboard of auxiliary machinery based upon shore technology and not proven for marine services.

IACS' Machinery Panel as the responsible Working Group (WG) was tasked to update IACS Recommendations 26-30, taking on board MARTECMA's concerns in combination with technological advancements since the 2006 review. The WG was also asked to consider whether the determination of critical spare parts should be part of the type approval procedure of each IACS Member.

The Machinery Panel is working with the International Council on Combustion Engines and industry to revise the Recommendations. ■

Fast-tracking remote survey developments

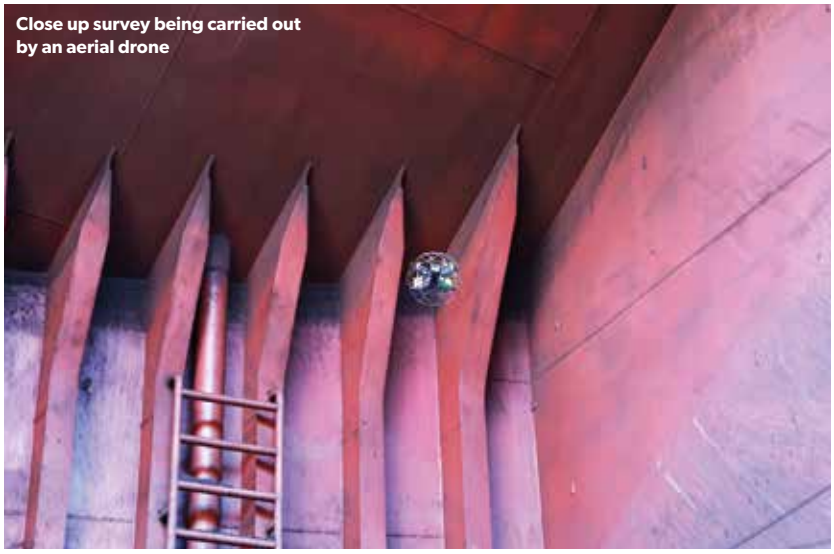
The pandemic has spurred analysis and advancement of remote surveys.

By Jaehyeon Ko, IACS Survey Panel Chairperson.

As early as the 1990s, IACS had anticipated the use of remote inspection techniques (RITs), including drones and remote operated vehicles for ship surveys. In readiness for their use, IACS developed Recommendation 42, 'Guidelines for Use of Remote Inspection Techniques for Surveys' in 1996.

Since then, technology has improved considerably to the point where some of the mobile and remote technologies available today are considered to be viable building blocks that can lead to performance of surveys without surveyors physically attending ships.

In response to the evolving RIT landscape, in 2019 IACS revised its Unified Requirement (UR) Z17 on Procedural Requirements for Service Suppliers to include firms engaged in surveying using RITs as an alternative means for close-up survey of the structure of ships and mobile offshore units. IACS also submitted a paper to the 7th session of IMO Sub-Committee on Ship Design and Construction (SDC) in February 2020 on the use of RITs during Enhanced Survey Programme surveys (SDC 7/10 'Use of Remote Inspection Techniques (RITs)'). However, those suggestions and adoptions were conditional on the surveyor being onboard. When the attending surveyor confirms that the ship's condition is good and, after a review of documentation and confirmation of local conditions, the attending surveyor approves all processes, RITs by an Approved Service Supplier can then be used under the presence of the surveyor.



Close up survey being carried out by an aerial drone

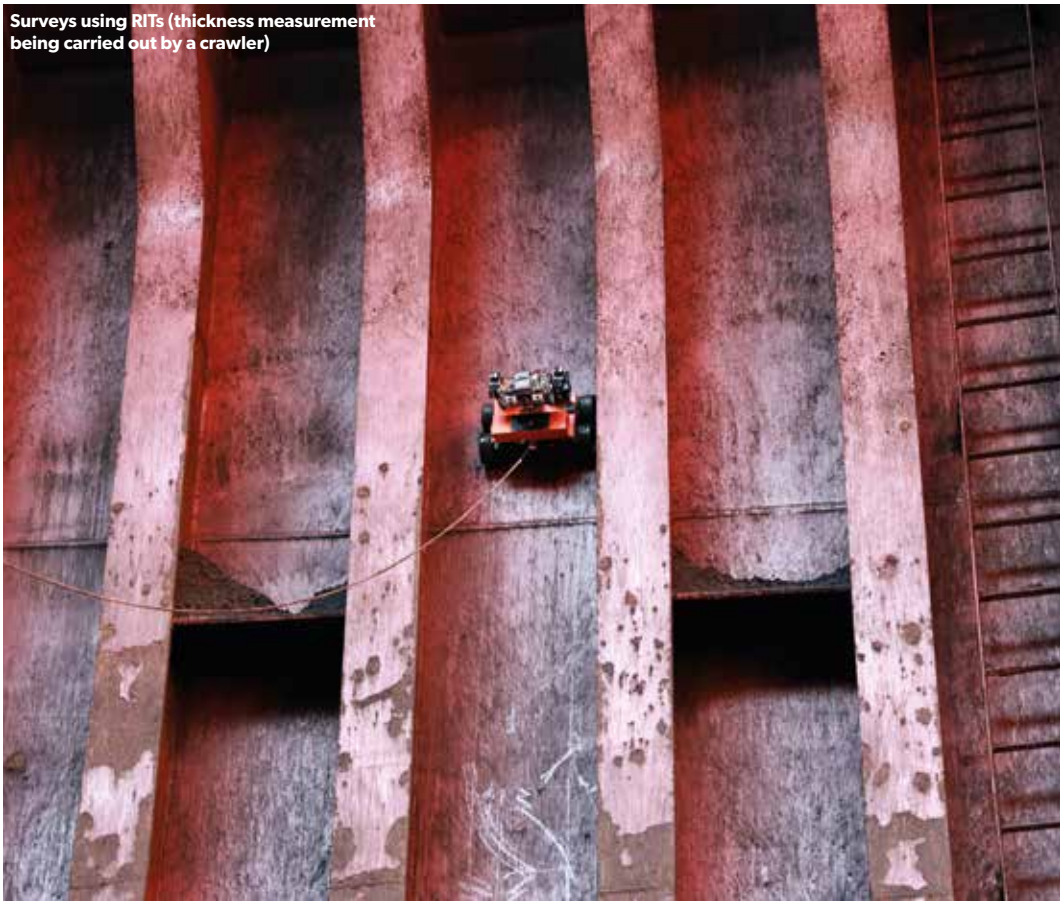
The Covid-19 pandemic accelerated the need for remote survey approach without a surveyor on board as in many cases surveyors could not access ships to physically conduct surveys. In response, IACS established a Covid-19 Task Force to identify and access measures that could be implemented in a co-ordinated fashion to help facilitate business continuity *(see page 14)*. In parallel, IACS Members sought to resolve the challenges in certain conditions without being on board, where appropriate and subject to the permission of flag State Administrations.

The situation has also underlined the importance of developing common requirements for the implementation of remote survey approach as an acceptable form of intervention in some circumstances to overcome the challenges of physical attendance surveys. Further, it is very likely that there will be increased and progressive development and adoption of remote surveys beyond the Covid-19 emergency situation as the benefits of advanced technology and greater flexibility in conducting surveys by deploying specialist surveyors, and flexibility for dealing with simple issues – while ensuring comparable quality and safety standards – are realised.

Project Team established

In response to these trends, IACS established a Project Team in 2020 to develop common requirements for remote survey approach. The Project Team will consider diverse aspects such as:

- Equivalency between remote and traditional survey with surveyor attendance.
- Impediments in existing IMO instruments and IACS Resolutions to remote survey and any inconsistencies which may exist



Surveys using RITs (thickness measurement being carried out by a crawler)

in the Harmonized System of Survey and Certification Guidelines.

- Quality of information communication technologies, including connectivity and speed.
- Scope and detailed remote survey process.
- Evidence/documentation to be recorded and reported.

It is anticipated that this project, which is expected to be completed in 2021, will form a solid foundation for the development of regulation for remote surveying. IACS stands willing to support the development of such regulations if industry requests it. IACS, as an expert group and advisory partner of industry, will continue to work closely with IMO and industry on remote surveying monitoring and evaluation, helping to develop and assist with the technical implementation of regulations. ■

"It is very likely that there will be increased and progressive development and adoption of remote surveys beyond the Covid-19 emergency situation as the benefits of advanced technology and greater flexibility in conducting surveys – while ensuring comparable quality and safety standards – are realised."

Consistency and relevance review of repair requirements

Improvement in quality of materials prompts revision of two propeller related URs.

By Maxim Yurkov, IACS Expert Group on Materials and Welding Chairman.

The shipbuilding industry is rapidly evolving under the influence of both internal and external pressures. New technologies are being regularly commissioned and product quality and care is continually improving. A high level of quality – previously achieved by only a small number of manufacturers – is fast becoming the standard. This is the essence of progress.

With its development of Unified Requirements (URs), IACS has always been at the forefront of consolidating, maintaining and improving the safety of vessels. Every year, dozens of URs are revised and improved by IACS' Working and Expert Groups. Some require revision due to incidents or difficulties faced by the industry, while others are updated due to their technical obsolescence. IACS' Expert Group on Materials and Welding (EG/M&W) closely and continually monitors the quality level of ship components and sets the standard to be achieved in its URs.

In 2020, EG/M&W established that two IACS URs, UR W24 Cast copper alloy propellers and UR W27 Cast steel propellers needed to be revised due to new requirements which come into force in 2021. These URs apply to propellers made from copper-base alloys and stainless steel respectively. The current revisions of the Requirements were published in 2013 and 2004. Since then there have been significant improvements in product quality, and this formed the basis for the 2020 revisions.

The revision of the two URs focused on a review and harmonisation of non-destructive testing requirements as well as a review of the repair welding requirements contained in both. The URs were also reviewed for consistency of the definition of liquid penetrant indications and for evaluation of technical requirements – an issue that had been raised at a previous EG/M&W meeting. Several draft revisions were extensively discussed by the Group, paying particular attention to repair of defects, mechanical properties and range of qualification for thickness.

The revisions also reviewed the definition of severity zones with regard to current propeller design established by the marine industry, as well as the status of sampling and testing requirements for mechanical properties. In addition, the repair welding requirements were reconsidered in relation to the recognised standards and current foundries practice.

Standards compliance

The proposed revisions take into account existing classification society Rules as well as international standard ISO 11970:2016. The URs also refer to international standards ISO 3452-1:2013 Non-destructive testing – Penetrant testing – Part 1: General principles and ISO 9934-1:2016 Non-destructive testing – Magnetic Particle Testing – Part 1: General principles.

Testing sampling was discussed by the Group with regard to mechanical properties and it was agreed that reference should be made to the recognised standard for the thickness of the test sample as stated in para 7.1 of UR W27.

The requirements related to the repair of defects in Zone A were reworded in UR W24 (para 11.3) and UR W27 (para 11.5) to introduce cases where a propeller designer could submit technical documentation to propose a modification to Zone A.

The welding repair procedure described in para 12.3 of UR W24 was also reworded to state that the requirement is intended for repairs by arc welding. New requirements to prevent hot straightening of weld repairs in the concerned area were introduced into para 13.2 Hot straightening of UR W24.

Appendix A Welding procedure qualification tests for repair of cast copper alloy propeller of UR W24 was also revised with particular reference to para 5.2 on base metals, advising application of the principles of ISO 15614-6 for base metal range approval.

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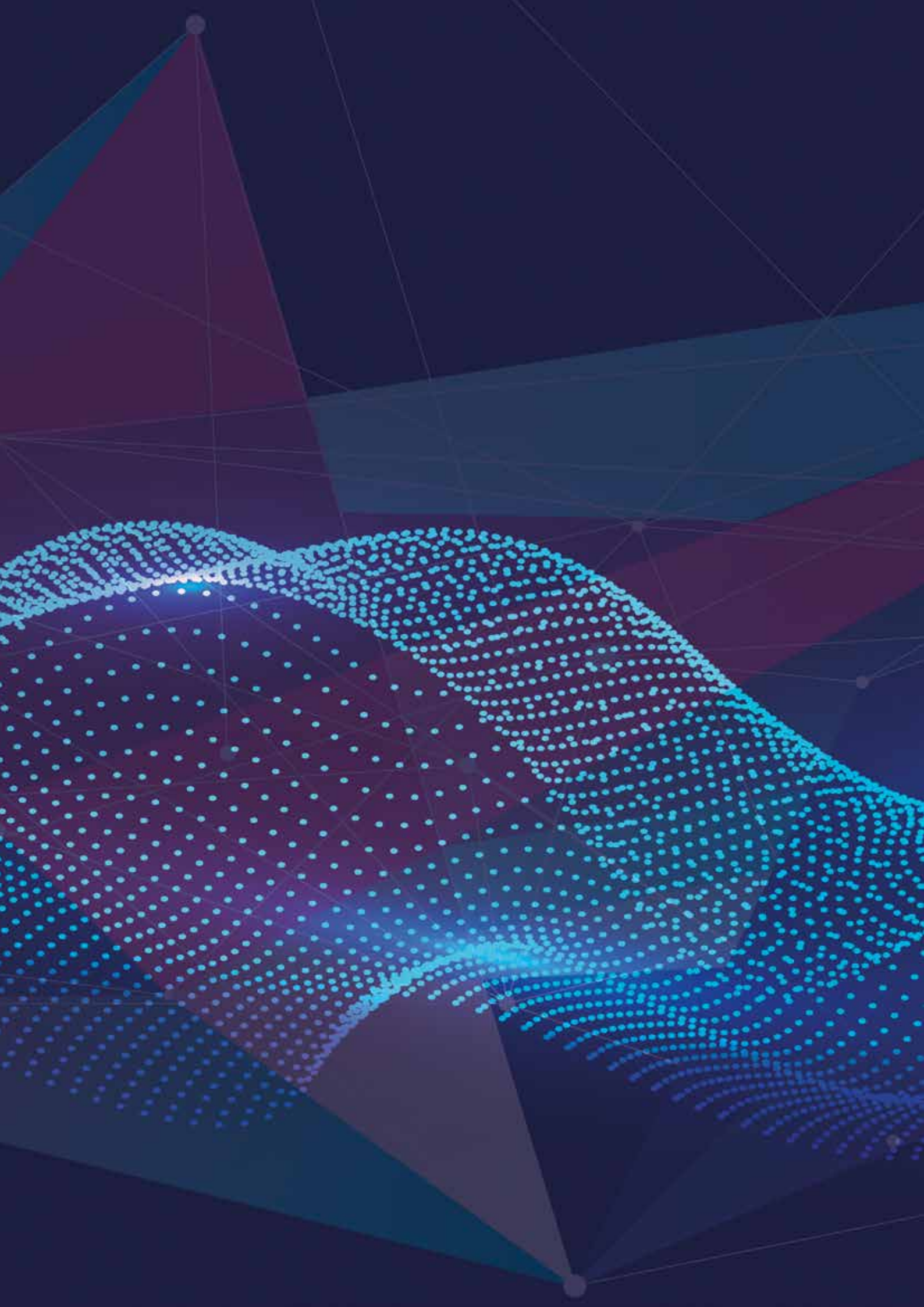
A high level of quality – previously achieved by only a small number of manufacturers – is fast becoming the standard

Finally, the range of qualification for thickness as contained in Table A.4 of UR W24 Appendix A was also revised to maintain a pragmatic approach as a change to the ISO standards would require requalification of the current procedure qualification records for repairs less than 15mm thick.

IACS' EG/M&W anticipates that the updated URs will be of great use to both shipbuilders and classification societies. ■

"The revision of the two URs focused on a review and harmonisation of non-destructive testing requirements as well as the review of the repair welding requirements contained in both"



Quality and Safety

Adapting to the use of remote audits

Covid-related travel restrictions have inevitably and unavoidably impacted the 2020 audit cycle.

By Peter Williams, Quality Secretary.

The Covid-19 pandemic has impacted all our lives, professionally and privately. By its nature, IACS Quality System Certification Scheme (QSCS) – the management system IACS Member classification societies developed and put in place during the early 1990s – involves a significant amount of travel: in a typical audit year there are around 250 audits. The travel restrictions imposed by national governments in the fight against Covid-19 have, therefore, significantly affected the 2020 audit cycle.

However, the International Accreditation Forum, the world association of Conformity Assessment Accreditation Bodies under whose auspices all IACS Accredited Certification Bodies (ACBs) operate, has formal guidance for the remote conduct of audits. It is by this means that the majority of the 2020 audits of IACS Members have been conducted. In fact, all land-based audits were completed in 2020, either by physical attendance or by remote means.

The audit types that have been most severely impacted are the Vertical Contract Audits (VCAs). The majority of these audits are in connection with the practical survey and audit functions that classification societies carry out. Such audits, which often require the auditor to accompany the surveyor onboard the ship or attend an equipment manufacturer's premises, do not lend themselves to be audited by remote means, not only from the perspective of auditing but also in paying due regard to safety considerations of the personnel involved. Despite this, however, ACBs completed around 25%-30% of all VCAs in 2020.

Remote progress

Remote auditing, while having been trialled prior to 2020, has necessarily been advanced as a consequence of the pandemic. The capabilities of all parties involved in the conduct of remote audits have inevitably increased with experience and the general feeling is that remote audits may not always be a substitute for the traditional face-to-face audit. However, like remote surveys, the technology exists to make remote auditing a realistic alternative in particular circumstances and it will no doubt be here to stay. ■

"Like remote surveys, the technology exists to make remote auditing a realistic alternative in particular circumstances and it will no doubt be here to stay"

Quality review body celebrates progress

IQARB appoints Steering Group to work intersessionally.

By Matthieu de Tugny, IACS Small Group-Quality Policy Chairman.

The second meeting of the International Quality Assessment Review Body (IQARB), still in its trial phase, was held at the International Maritime Organization headquarters on 27-28 February 2020 and was reported by note MSC 102/22 of the IMO Secretariat. The meeting was chaired by Lars Lange (International Union of Marine Insurance (IUMI), and attended by Chile, Liberia, the Marshall Islands, New Zealand, Singapore, the United States, European Commission, IUMI, INTERTANKO, The International Group of P&I Clubs, the Active Shipbuilding Experts' Federation, SEA Europe and the IMO Observer to the IACS Quality System Certification Scheme (QSCS). All had been invited as the initial members of IQARB, based on the Protocol as agreed by IQARB Members. Also in attendance were the Secretary General of IACS, the IACS Quality Secretary and the IMO Secretariat. Additionally, to assist with discussion and assessment, representatives of each Accredited Certification Body (ACB) and each IACS Member classification society were present.

The meeting considered, among other things, reports of the IACS Quality Committee Chair on QSCS developments, of the IMO Observer to the IACS QSCS and of the IQARB Analyst. These were heard together with the IACS Quality Secretary's explanation of the Factual Statement on individual classification societies and the ACB performance methodology, the gap analysis between the IACS Quality Management System Requirements (IQMSR) and the Recognized Organization (RO) Code, the Factual Statements and information on further development of IQARB.

Certification process checks

Based on the progress made in the inaugural meeting, this second meeting focused on the review of the certification process of the quality management system of IACS Members with a view to issuance of the Factual Statements for IACS Members, as well as the consideration of further development of IQARB.

At the request of the inaugural meeting (MSC 101/23/3), IACS carried out a gap analysis between IQMSR and the RO Code by means of correlation matrices between paragraphs of IQMSR on the basis of ISO 9001: 2015 and provisions of the RO Code (parts 1 and 2) on the basis of ISO 9001:2008. The analysis demonstrated that all of the relevant provisions of the RO Code can be found in the corresponding paragraphs of IQMSR.

In this context, the meeting concluded that there are no substantial gaps between IQMSR and the RO Code, but that further work on this aspect could be referred to a Technical Committee.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Based on the working method stated in the Protocol, and following a run-through of the structure of the presentations that would be given for each individual classification society, the meeting concluded that the statistics and analysis presented met the requirements of the follow-up action to the inaugural meeting, as referred to MSC 101/23/3. As a result of the process of assessment, the meeting agreed unanimously to issue Factual Statements for each classification society/RO stating: "IQARB endorses the Quality Secretary's Factual Statements without comment." The actual Factual Statements are set out in an annex to document MSC 102/INF.9. As agreed by the inaugural meeting, the Statements should be released into the public domain, including the possibility of its inclusion in the public area of the Global Integrated Shipping Information System. They will also be included on the quality section of IACS' website.

Further development of IQARB

In light of the relevant provision of the IQARB Protocol, IQARB members – having noted the need for IQARB work to progress intersessionally – agreed to the establishment of a Steering Committee.

The meeting also considered and agreed to a proposal from IACS to establish a Technical Committee under the Steering Committee, to explore the possibility of shared steering of IQMSR in line with the goal-based model, to enable IQARB members to contribute to the further development of the audit standard IQMSR.

The meeting agreed that the Steering Committee, once established, should consider a list of topics/items for development of amendments to the Protocol, with a view to consideration and adoption by IQARB members in due course.

Regarding funding and an independent entity to provisionally manage IQARB's affairs, IUMI agreed, for a trial period, to take responsibility for exploring those issues, subject to formal agreement of the IUMI Executive Committee. ■

Keeping quality front and centre

IACS initiated Covid-19 workarounds to maintain a quality focus throughout 2020.

By Łukasz Korzeniewicz, IACS Quality Committee Chair.

The emergence and subsequent spread of the SARS CoV-2 coronavirus and, as a result, the declaration of Covid-19 as a global pandemic by the World Health Organization, led to an unprecedented range of control and response measures being implemented by many governments and organisations all over the world during 2020. These responses had a significant impact on the normal operations of ships, and had the potential to affect both world trade and IACS Members' quality certification.

Each IACS Member is subject to annual audits against the requirements of ISO 9001:2015 and IACS' Quality System Certification Scheme (QSCS) by an independent Accredited Certification Body (ACB). Provided the results of the audits are satisfactory, the ACB issues or endorses the Member's ISO 9001 certificate.

In addition, the ACB annually furnishes each IACS Member with a Statement of Compliance, demonstrating the requirements of QSCS – and consequently of the IMO Recognized Organization Code – have been fulfilled.

In response to requests from the IMO Secretary-General, industry stakeholders and several industry associations for proactive actions to ensure minimal disruptions to safe and compliant ship operations, and also in response to individual actions by some national flag State Administrations permitting extensions to the validity of statutory certificates, IACS established appropriate temporary amendments to relevant procedural requirements in light of the Covid-19 force majeure situation. Persistent worldwide travel and quarantine restrictions due to the Covid-19 pandemic have had a significant impact on IACS Members' ISO 9001 and QSCS certification.

Monitoring and consulting

The IACS Quality Committee decided to change its normal proceedings and introduced monthly video meetings to closely observe the situation and to develop appropriate counter-measures to guarantee the continued quality certification of IACS Members. The IACS Quality Committee, in co-operation and consultation with other IACS bodies as well as external stakeholders, developed the IACS Policy Paper 'Covid-19 impact on IACS Members' quality certification' which was made available to all interested parties and published on the IACS website. This is reviewed and amended on a monthly basis, as needed.

In developing the Policy Paper, the IACS Quality Committee considered International Accreditation Forum (IAF) and National Accreditation Bodies (NAB) requirements as well as any existing experience of the use of remote auditing techniques (Information and Communication Technology (ICT) according to the IAF MD 4:2018). Safety precautions related to ACB auditors, IACS Members and staff of third parties involved in the audit execution were also considered, as was the risk of spreading the virus among ships' crew.

In accordance with IAF and NAB requirements, the Policy Paper encouraged IACS Members and their ACBs to:

- Implement remote auditing techniques for auditing survey locations and, as far as

practicable, for head offices, controlling offices and plan approval centres (if any).

- Complete all head office audits planned for 2020 as well as those of controlling offices and plan approval centres (if any), and all survey locations as required by the ISO 9001 certification programme.

Remote requirements

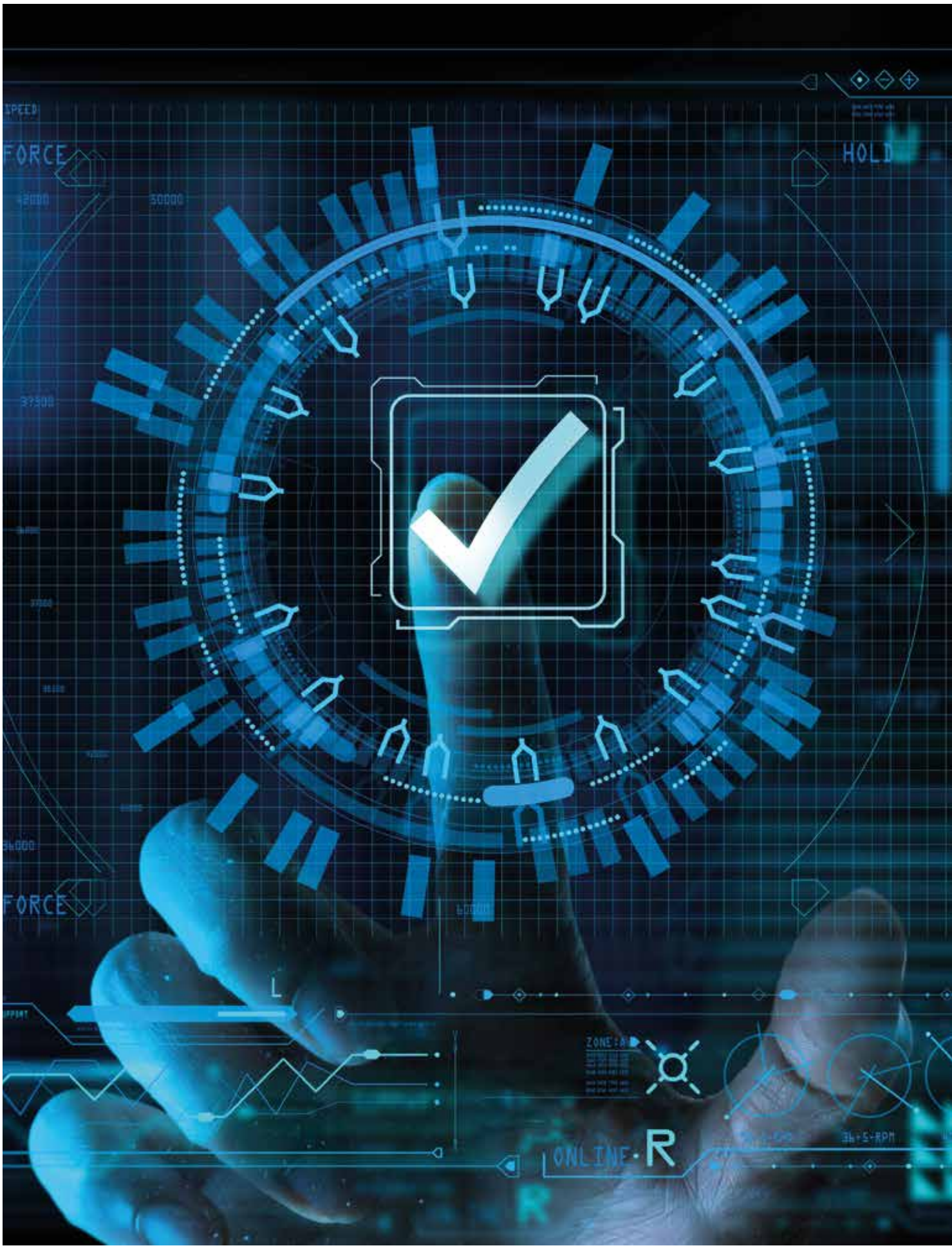
Additionally, the Policy Paper prescribed that the use of remote auditing techniques for Vertical Contract Audits (VCA) required by QSCS cannot be effectively carried out; and that the conducted audits would cover the whole scope of services and fundamental processes as per the Quality Management System Requirements (QMSR) provisions. Finally, the Paper stated that VCAs conducted in 2020 should cover the following:

- New construction.
- ISM Code, ISPS Code, or MLC Convention.
- Significant equipment and/or material certification.
- Ships in service.

Finally, while the Covid-19 pandemic has had a tremendous impact on the maritime community, it did not prevent IACS from further developing its QSCS in 2020. The IACS Quality Committee's study in reply to the International Quality Assessment Review Body review initiative proved that there were no gaps between the QMSR and the IMO's Recognized Organization Code.

"While the Covid-19 pandemic has had a tremendous impact on the maritime community, it did not prevent IACS from further developing its Quality System Certification Scheme"

The amendments introduced in Revision 9 of the QSCS, among others, gave full responsibility for the development of IACS Annual Focus Areas to the IACS Quality Secretary, thus strengthening the independence of QSCS. ■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Competence Building

Supporting a cadre of classification specialists

Monitoring and building competences of employees, classification societies and ultimately IACS.

By Łukasz Korzeniewicz, IACS Quality Committee Chair.

Competences are crucial to every organisation, especially those competences that have been built up through years of operation. Classification societies, drawing on tens, or in some cases hundreds, of years of maritime industry service provisions, have collectively developed excellent competence development practices.

The competence level of each classification society greatly depends on its employees – the individuals that understand and implement the policy, vision and mission of the organisation. IACS Members have all developed and implemented similar policies, visions and missions with the overarching goals of safer seas and environmental protection. While the visions and missions may seem general, IACS Members have set clear courses, exemplified by years of delivering highly professional and competent services. IACS and its Members communicate and implement their visions and missions internally among employees but also globally within the maritime community.

"A lifelong career is common for classification specialists, with a career usually starting with an apprenticeship and, in many cases, continuing long into retirement when the expertise and knowledge gained over many years of work is passed on to the next generation of classification specialists"

For IACS Members, their success depends on their individuals; the well-educated and highly competent surveyors, auditors, inspectors, plan approval engineers, and so on, who can rightly be referred to as specialists. To be permitted to join these classification 'families', these specialists must meet certain, often very strict, educational criteria. They need to understand the very philosophy of classification; they must hunger for continual development and improvement; and they must feel and understand the responsibility attached to their professional decisions.

A lifelong career is common for classification specialists, with a career usually starting with an apprenticeship and, in many cases, continuing long into retirement when the expertise and knowledge gained over many years of work is passed on to the next generation of classification specialists. Ethnicity, gender and beliefs are irrelevant for such a career – competences and knowledge are paramount.

These specialists co-operate daily, share understanding, and exchange knowledge and ideas with each other and with the incoming generation, all of which is essential for the continuous development and understanding of the tradition and philosophy of classification societies and of IACS.

Education requirements

While, as mentioned above, a classification specialist's career may start with an apprenticeship, there is still a need to fulfil certain criteria, including formal education requirements and adequate professional experience. Those criteria vary depending on the requirements of each classification society and also on the chosen specialisation.

After recruitment, the classification society employee must pass several specially designed modules, covering both theoretical and practical training. During this initial training, they will be introduced to the policy, vision and mission of the classification society and will be obliged to implement and strictly follow these to further their professional career as a classification society specialist. This training will also equip them with a high resistance to stress and a sense of responsibility for themselves and for others.

Only after passing all the required relevant training will the specialist be authorised to

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To be permitted to join these classification 'families', these specialists must meet certain, often very strict, educational criteria

perform classification-related tasks, but the learning journey does not stop there. During a classification society specialist's career, their classification society will continually track, monitor and update their competences. This continuous professional development depends on the sharing of experiences horizontally between specialists, and vertically with the incoming generation. Indeed, the incoming generation's knowledge of the rapidly changing digital world is, in many respects, a highly desirable wisdom that they already possess.

As the personal development of staff is a key issue for each classification society – as well as having a tremendous impact on the quality and effectiveness of the classification society's services to the maritime community – classification societies enable and encourage their employees to enhance their competences and knowledge through internal courses and through close co-operation with academic centres.

Additionally, even the system of tracking, updating and monitoring competences of classification society specialists is continually developed, ensuring that it covers the latest developments in the field, for example use of virtual reality.

IACS, its Members and individual employees and specialists remain rightly focused on the continual development and improvement of competences and therefore of classification. ■


International and
Inter-Industry Relations

Uninterrupted cycle of contribution to IMO

Cradle-to-grave engagement with ships secures IACS' position as principal technical advisor to shipping's global regulator.

By Konstantin Petrov, IACS Accredited Representative to IMO.

Since 1969, IACS has held the position of non-governmental organisation with observer status at the International Maritime Organization (IMO). This means that when decisions on technical matters are made by the IMO's Member States, IACS adds value to those decisions with its accepted and valued expertise.

IMO Member States develop regulations based on an agreed programme of work. Once adopted into Conventions and Codes, those regulations are then applied to ships based on instructions from flag State Administrations. The implementation of those agreed requirements at construction and then throughout a ship's life is the responsibility of Recognized Organizations (ROs), following a flag State's instructions. All twelve IACS Members are ROs.

"IACS aims to assist the IMO by translating the practical experience of the application of regulations into a language that helps to develop those same regulations"

Dual support

IACS Members' cradle-to-grave engagement with ships creates a cycle of contribution to regulatory development, combining an understanding of the requirements and the unique instructions of flag States with an appreciation of how those instructions play out in 'real life'. Any lessons learnt can then be fed back into the IMO. This constructive statutory regulatory development cycle has changed little since it was first applied to the development of classification rules in the 1800s.

IACS' input to the IMO carries with it not only the completeness of learning from all stages of the regulatory process, but also the unparalleled accumulation of knowledge from the application of regulations to more than 90% of the international trading fleet, in gross tonnage terms. Hence, the value derived from this relationship is practical, global and consistently implementable regulations that support the objectives of the IMO. In short, IACS aims to assist the IMO by translating the practical experience of the application of regulations into a language that helps to develop those same regulations – and a language that can be understood by those who are drafting new and updated regulations.

The learning cycle works in the other direction as well, for example when technical solutions require policy decisions. This is when discussions at the IMO with Member States – who ultimately set policies – is helpful and needed. Engagement and dialogue are beneficial and help to ascertain when questions are of a technical or policy nature, and aid all involved in the process of maintaining the safety and security of shipping and environmental protection.

These interactions are facilitated by IMO's methods of work and structure and supported by clear terms of reference for the various bodies. IACS follows those helpful provisions in both planning for and undertaking actual work at the IMO. This process usually starts with identification and formulation of a question alongside consideration of a possible solution, or maybe two. It can be easy for engineers to get consumed by their enthusiasm in the pursuit of solutions to a technically detailed problem. However, the IMO Committees and Sub-Committees demand sharp and clear observations on an issue, stressing the importance of adhering to the IMO's timing and language objectives.

As the IMO is a results-focused organisation, IACS' practice is to come at the problem with a proposal for a solution. Alternatively, IACS tries to ascertain the general support for a direction in which to take the development of a future proposal for a solution. This dynamic approach assures that IACS' efforts are not wasted and that the limited session times at the IMO are used wisely.

Process change

The Covid-19 pandemic has, however, had an effect on IACS' considerations of its input into the IMO's work programme. Postponed meetings, limitations imposed by the delivery of sessions to cater for the differing time zones of delegates, and reduced agendas have combined to reframe IACS' approach to its contributions. Some suggestions had to be postponed, some had to be reformatted, while others required numerous consultations with the IMO Secretariat to understand the best format for presentation.

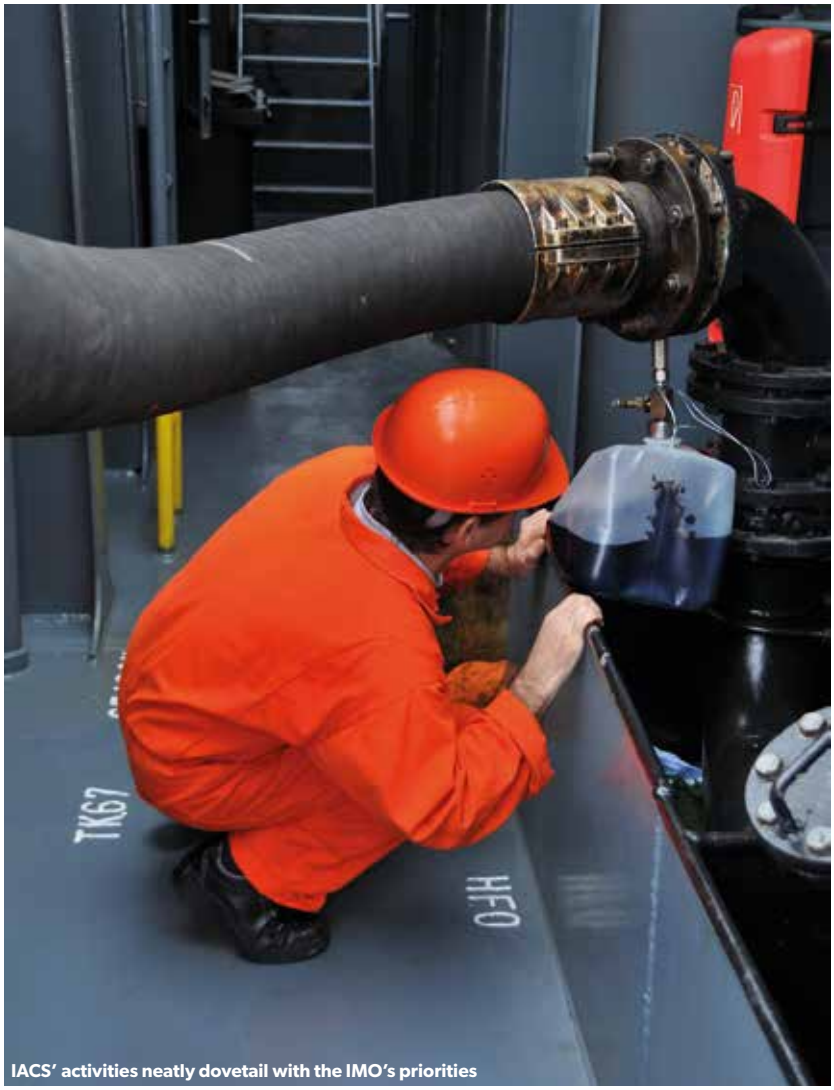
In these unprecedented circumstances, IACS has had to engage creatively to be able to respond to the new issues that have emerged in 2020. IACS' flexibility and the speed of the development of appropriate materials and tools assisted the IMO Secretariat, Member States, Port State Control Memorandums of Understandings and industry to quickly respond to the practical challenges of the Covid-19 reality.

IACS wrote a set of Guiding Principles to be used by flag State Administrations when determining if the validity of ships' certificates could be extended. As was necessary with the preparation of all papers and arguments for IMO meetings, the Guiding Principles had to be expressed in a language that upheld the goal of safety and environmental protection even in the difficult exceptional circumstances. Successful modelling of the language ultimately made the document acceptable to and used by flag States.

Overall, thanks to strenuous efforts of all its Members, IACS did exceptionally well in supporting the creation of international solutions for the industry during the pandemic. There continues to be no doubt in IACS' mind that the IMO is the most appropriate body to discuss and agree the regulatory framework applicable to international shipping, and IACS is fully committed to supporting IMO's activities in that respect.

Aligning values

IACS is also acutely aware of the value of alignment with the IMO. In his message on last year's World Maritime Day, Secretary-General Kitack Lim spoke about the IMO's actions and how they are guiding shipping towards a sustainable future. These actions clearly align with IACS' activities and many of IACS' activities neatly dovetail with the IMO's priorities.



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IACS' activities neatly dovetail with the IMO's priorities

In particular, the work of IACS related to enhancing maritime safety and digital shipping encompasses not only the need for classification rules and regulations to keep pace with technology, science and operational progress, but also explores the next immediate steps as well as the long-term vision towards safe digitalisation of shipping and sourcing of data to enhance classification requirements. Proposals to use remote inspection techniques such as drones to survey ships subject to the Enhanced Survey Programme Code were submitted to the 7th session of the IMO's Sub-Committee on Ship Design and Construction (SDC). To further assist the IMO, IACS will submit information on the further evolution of classification tools where it is relevant to the IMO for it to make use of in the statutory domain.

As the shipping world's confidence in the practical implementation of IMO measures to reduce the sulphur content of ships' fuel oil increases, and as the IMO takes further significant steps towards the decarbonisation of international shipping, IACS Members continue to gather experience of the potential of

IACS continues to deliver tools such as industry best practice to assist in the most effective application of the Polar Code

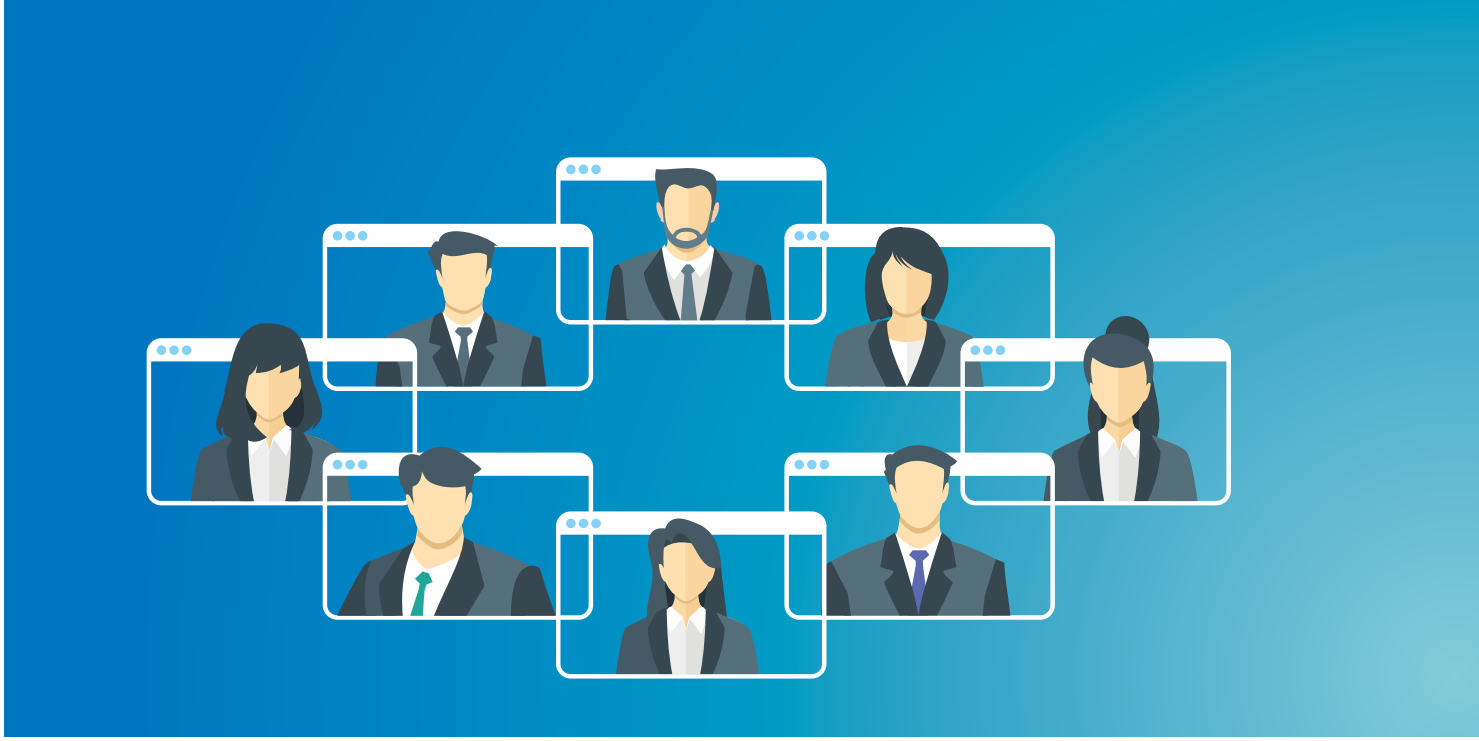
alternative energy sources and their delivery to shipboard consumers. IACS is contributing to the work of the IMO's Intersessional Working Group on Reduction of GHG Emissions from Ships as well as to its Marine Environmental Protection Committee with specific proposals aimed at aiding smooth implementation of the short-term measures being finalised by the IMO.

The safety of new, and the adaptation of existing, technologies and the deployment of alternative energy sources on ships – complex structures operating in harsh marine environments – in pursuance of greenhouse gas reduction goals cannot be separated from environmental aims. As a safety driven organisation, IACS will be robust in ensuring that all new measures remain consistent with the IMO's commitment to safer and cleaner shipping.

Similarly, care for the world's Polar regions also requires the attention of all involved parties. The goal here must be not only to support the life of the indigenous and local population and ensure sustainable development of remote regions, but to also preserve the environment for future generations by observing the highest maritime safety standards for polar shipping. IACS' work supporting these regions aims at developing industry standards to structurally and mechanically equip ships with the capability to operate safely in those waters through its Unified Requirements I1, I2 and I3 and to provide the necessary technical support to deliver on the goals of the Polar Code. In collaboration with other interested non-governmental organisations, IACS delivers other needed tools too, such as industry best practice to assist in the most effective application of the Polar Code.

While not operating ships and therefore not employing seafarers, IACS relies heavily on a pool of experienced engineers and master mariners who come from shipping companies to support its work. Therefore, IACS is naturally interested in and supports work to enhance the professionalism, competence and workplace environments of seafarers. IACS' input to the International Labour Organization's (ILO) Maritime Labour Convention and subsequent delivery of tools to implement the Convention has been recognised by the ILO and others. Additionally, IACS' work in its Expert Group on Safety of Surveyors sets standards for a safe working environment on ships for classification surveyors, and by extension for seafarers, on board ships. IACS is also in partnerships with educational institutions, and in particular with the World Maritime University, where it shares the knowledge and experience accumulated over several hundreds of years by its Member societies.

These are just a few examples of work where IACS is aligned with the IMO's activities and contributes to the work of the IMO and to society at large. In its role as the principal technical advisor to the IMO, IACS and its Members continue to stand ready to provide advice, expertise and experience both to the IMO and to the wider maritime industry to ensure that ships continue to operate safely. ■



Maintaining momentum without physical meetings

Ensuring progress across a range of technical subjects despite the challenges faced by a global industry unable to travel.

By Robert Ashdown, Secretary General.

IACS greatly values the expert input and feedback that is provided by our numerous meetings with industry associations across a variety of forums each year. IACS has looked to deepen this engagement even further in recent times, expanding its outreach programme and regularising the process so that work items are taken up, worked upon and completed in a coherent and efficient fashion.

The success of this approach manifested itself most recently at Tripartite 2019, the annual meeting of shipowners, shipbuilders and classification societies, which saw the launch of several new initiatives on carbon reduction, mitigating underwater noise, and new ship designs and practices to prevent biofouling. Given the importance of these cross-industry endeavours, and recognising that this valuable process of engagement would be significantly disrupted by Covid-19 restrictions, IACS has made every effort in 2020 to maintain momentum and to continue to take forward these initiatives.

An important follow-on step from Tripartite is the annual IACS/Industry Technical Meeting which was hastily reconfigured so that each of its wide range of agenda items could be taken forward via correspondence. With the willing support and contribution of the industry associations, progress continued to be made across a number of areas including fire risks due to leakage from low pressure fuel pipes, fires on container vessels, cyber safety and digitalisation and enclosed space entry. New work items have been assigned to participants so that further progress can continue to be made and concrete actions taken to resolve these issues.

In addition, other, more focused Joint Industry Working Groups (JIWG) have continued to be active, albeit virtually, in 2020 including the JIWG on Anchoring, which is currently collating and analysing data regarding anchoring-related incidents and accidents, and the JIWG on Cyber Systems which is providing useful input to IACS' Cyber Systems Panel's work on translating its Recommendation on Cyber Resilience (Rec. 166) into a Unified Requirement.

Work continues

In the absence of physical meetings, it has also been important for IACS to ensure that its policy positions on key issues facing the industry are widely known and understood. Accordingly, IACS issued another of its high-

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"The absence of [physical] cross-industry engagement has highlighted the importance of dialogue between all stakeholders at a time when the key challenges facing the maritime industry require a sustained and joint effort if they are to be met."

level position papers (HLPP) in 2020 on Data which gives details of how IACS will implement a structured, systematic and uniform approach in the compilation, management and application of reliable, traceable and retrievable data in all its work. In addition, the existing suite of HLPPs are regularly reviewed and revised (latest versions available at http://iacs.org.uk/about/iacs-position-papers/). IACS is also working on the development of additional potential position papers on underwater noise and on certain measures associated with the operational energy efficiency of existing ships.

Despite the efforts made to adhere as far as possible to the usual IACS/industry consultation programme it was simply not possible for Tripartite to be convened in 2020. While unavoidable, the absence of this mainstay of cross-industry engagement has highlighted the importance of dialogue between all stakeholders at a time when the key challenges facing the maritime industry require a sustained and joint effort if they are to be met. IACS therefore looks forward to seeing Tripartite return in 2021 and to playing its full part in those discussions.

Another casualty of this most disrupted of years was IACS' now traditional Roundtable meeting with a selected group of senior figures from the shipowning and shipbuilding sectors, flag States and insurers at which certain key issues are discussed under 'Chatham House Rules'. This format allows each participant to understand better their counterparts' particular challenges and concerns. As with Tripartite, IACS will resume this important element of its outreach programme as soon as such in-person events become feasible once more.

Less tangibly, but no less importantly, the overall reduction in direct contact and conversation between industry partners means that two important objectives for 2021 will be to ensure that all sectors are aware of each other's evolving priorities and to do everything possible to align efforts so that, collectively, the many issues facing the maritime industry can be addressed. ■

Translating cyber Recommendations into requirements

Joint industry working group brings cyber expertise together.

By Vincent Lagny, IACS Cyber Systems Panel Chair.

In 2020, all work undertaken by the IACS Cyber Systems (CS) Panel continued to benefit from the valuable input of a wide range of industry partners, contributing via the Joint Industry Working Group on Cyber Systems (JWG/CS).

Given the disruptions caused by the Covid-19 pandemic, the three JWG/CS meetings scheduled in 2020 were held online on 26 March, 21 July and 25 November.

The IACS consolidated Recommendation on Cyber Resilience, Recommendation 166, was distributed to all JWG/CS members for preview at the beginning of March 2020. The preview period ended on 24 March, after which the experience building phase was discussed.

IACS Cyber Systems Panel shared its roadmap and three new project teams were introduced (see the article on the CS Panel). Those were:

1. Translation of Recommendation 166 into a Unified Requirement.

2. Unified Requirement for cyber resilience of onboard systems and equipment.

3. Evolution of Unified Requirement about computer-based systems.

The IACS consolidated Recommendation on Cyber Resilience, Recommendation 166, was distributed to all JWG-CS members for preview at the beginning of March 2020

To understand the expectations of the JWG/CS regarding the development of these Unified Requirements, the JWG consulted on what should be translated into Unified Requirements; the steps necessary for the construction and evolution of the Unified Requirements; what can be translated to Unified Requirements at each step, incorporating any industry reservations on applicability of content of the Unified Requirements; and whether there are any valuable topics not included in the consolidated Recommendation that should be included in the Unified Requirements.

The results of this consultation were presented and included polling results from both JWG/CS members and CS Panel members on 300 Recommendations. The compilation of answers delivered a clear view of Members' expectations and of the level of maturity. More than half of the Recommendations were fully adopted by a majority. These results deliver a confident view on the three Unified Requirements under development.

In other work, an update about European Union matters was prepared and presented by the IACS permanent EU representative to the members during a JWG meeting. The JWG/CS was also invited to comment on the table of contents of an Information Paper to be submitted at the 103rd session of the International Maritime Organization's Maritime Safety Committee.

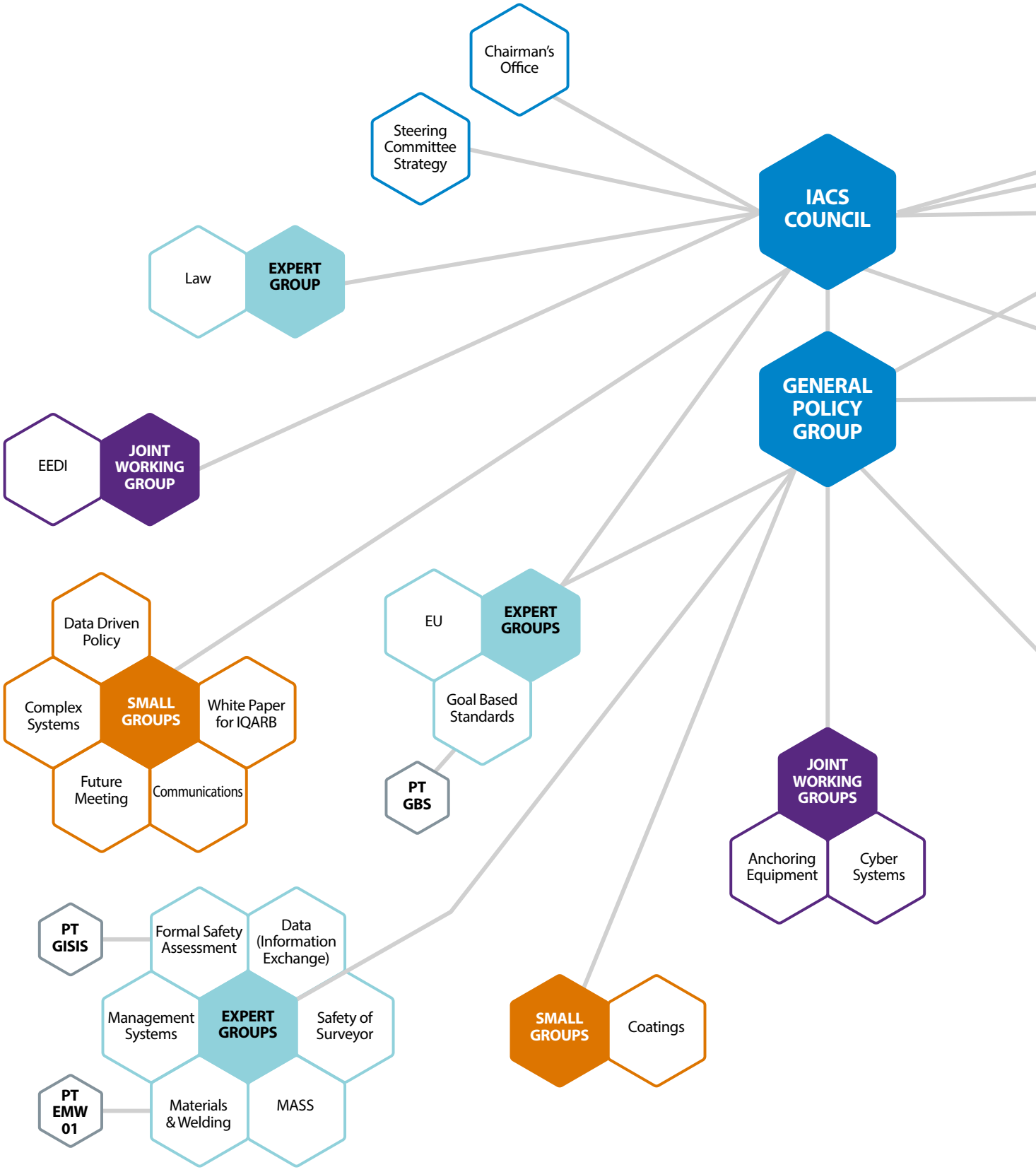
Lastly, three new JWG/CS members were introduced in 2020. They were the Company Security Officer Alliance, the Digital Container Shipping Association, and the Maritime Transportation System Information Sharing and Analysis Center.

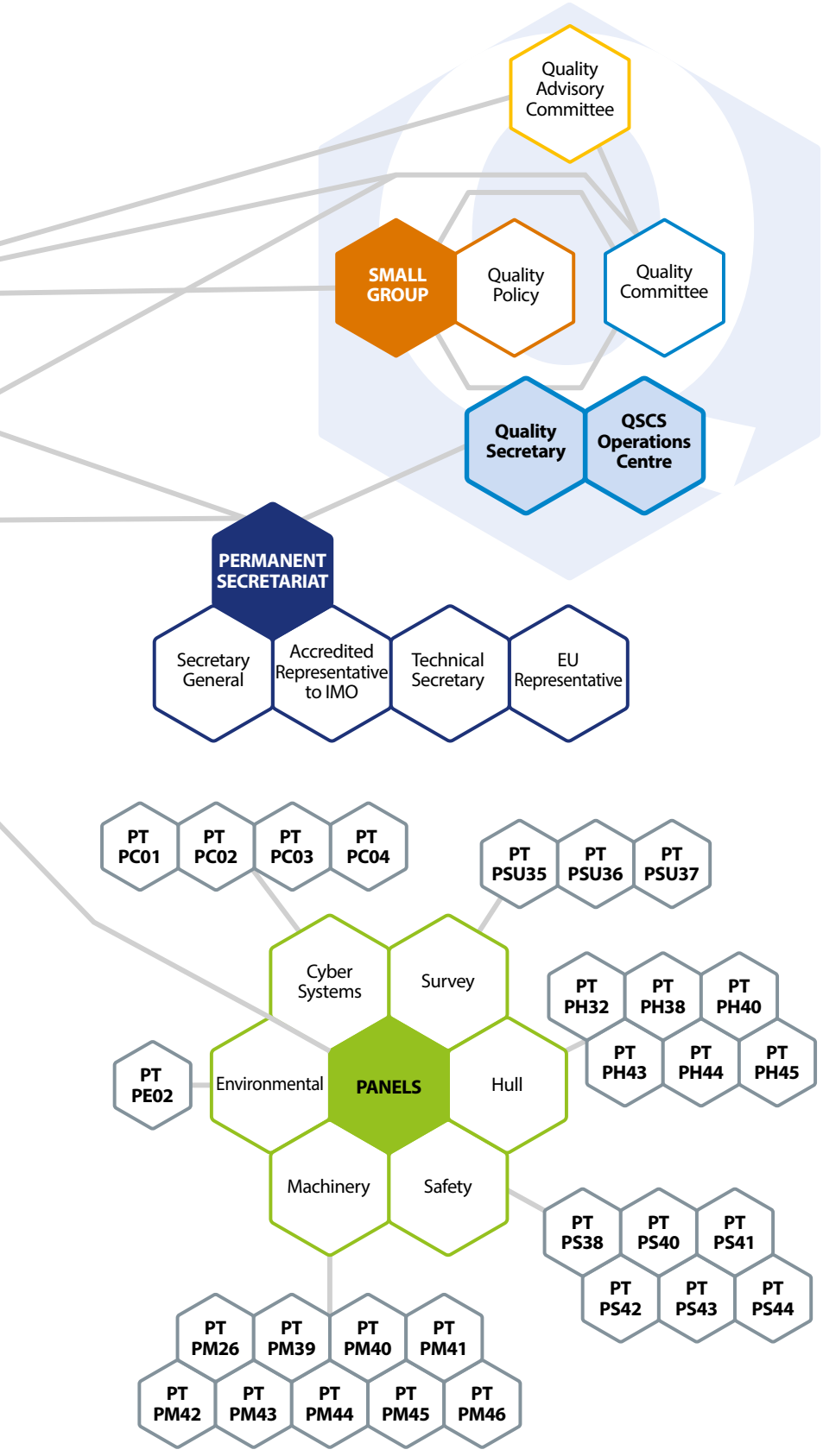
In 2021, the JWG/CS will be regularly involved in the review of the three Unified Requirements under development by the three project teams established by the IACS Cyber Systems Panel. ■

IACS Organisation 2020

IACS Organisation 2020

IACS deals with multiple tasks to advance the goal of safer and cleaner shipping.





Project teams in detail

Cyber System Panel – 4 Project teams

PT PC01	Consolidation of Recommendations
PT PC02	Evolution of UR E22
PT PC03	Requirements for cyber resilience
PT PC04	Translation of the Rec.166 into an UR

Environmental Panel – 1 Project team

PT PE02	Critical review of PR 38

Hull Panel – 6 Project teams

PT PH32	CSR Maintenance Team
PT PH38	Whipping on Containerships
PT PH40	Wave data investigations
PT PH43	Buckling requirements
PT PH44	Fatigue Assessment
PT PH45	CSR corrosion additions reassessment

Machinery Panel – 9 Project teams

PT PM26	IGF development
PT PM39	Polar code issues for icebreakers
PT PM40	Barred speed range investigations
PT PM41	Shaft alignment investigations
PT PM42	Retrofitting issues for BWM
PT PM43	Revision of UR M78
PT PM44	I.C Engine approval and inspection
PT PM45	Marine complex systems
PT PM46	Machinery Piping Systems

Safety Panel – 6 Project teams

PT PS38	IGC Code interpretations
PT PS40	Maintenance of IACS Rec.110
PT PS41	BWTS fire safety protection
PT PS42	UR F44 to include chemical tankers
PT PS43	Underwater Noise
PT PS44	Review UR N1

Survey Panel – 3 Project teams

PT PSU35	IGC Code Loading & Discharging
PT PSU36	Revision of UI GC 12
PT PSU37	Develop PR for Dual Class Ships

EG- Formal Safety Assessment – 1 Project team

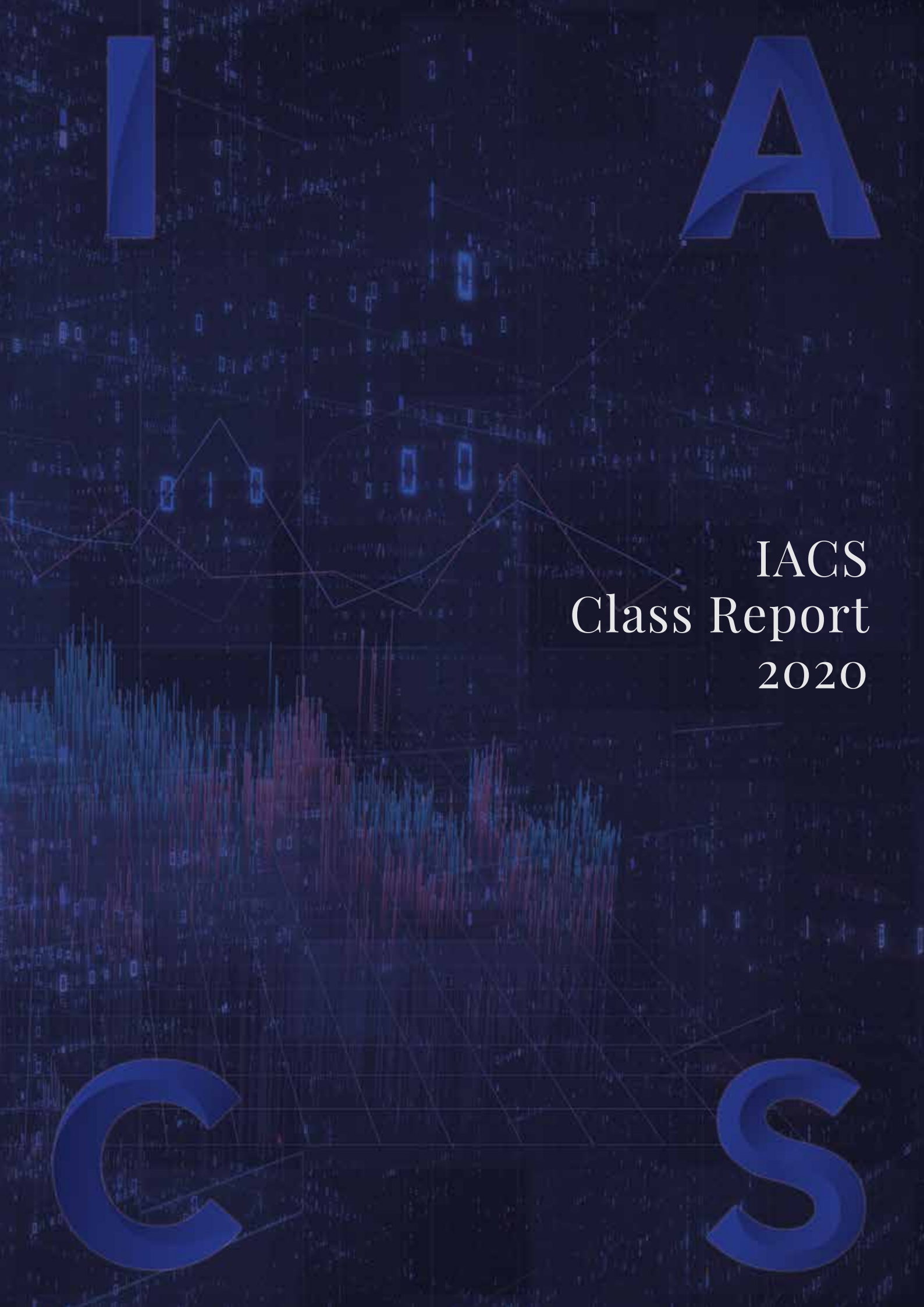
PT GISIS	Examination and Testing of new GISIS MCI module

EG-Goal Based Standards – 1 Project team

PT GBS	GBS Maintenance

EG-M&W – 1 Project team

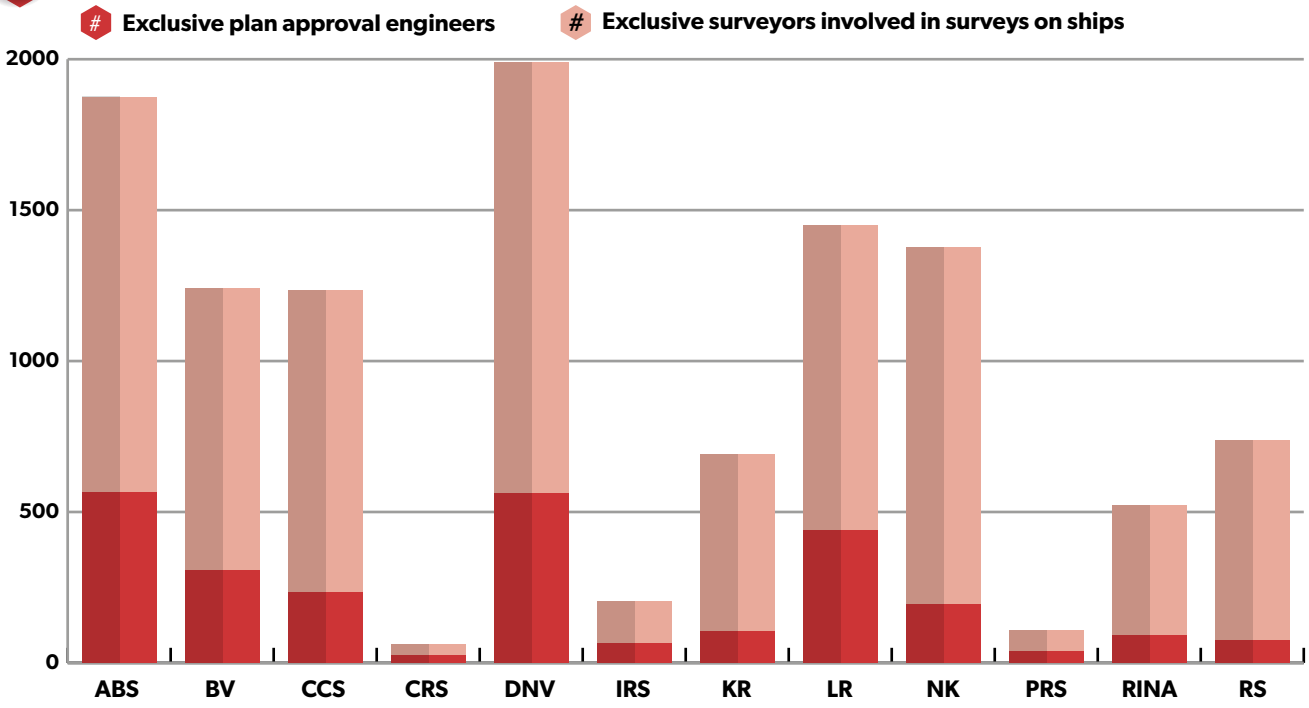
PT EMW01	Advanced NDT techniques


IACS
Class Report
2020

IACS Class Report Data 2020

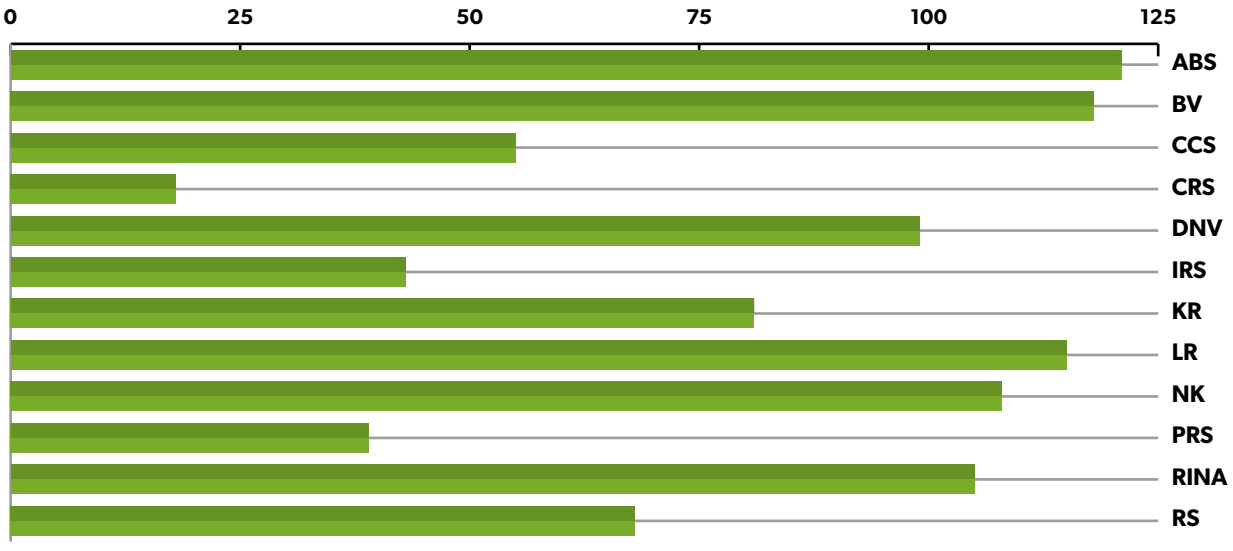
Classed fleet figures include ocean-going self-propelled ships of 100 GT and over, excluding fishing vessels, military vessels and pleasure craft, with dual classed ships counted at 100%.

Number of surveyors*



*Combined total number of surveyors, consisting of **the number of exclusive plan approval engineers** (RO Code A1.1.2 Plan approval staff are the personnel authorised to carry out design assessment and to conclude whether compliance has been achieved), and **the number of exclusive surveyors involved in surveys on ships** (RO Code A1.1.1 Survey staff are the personnel authorised to carry out surveys (in operation and under construction), and to conclude whether or not compliance has been achieved.)

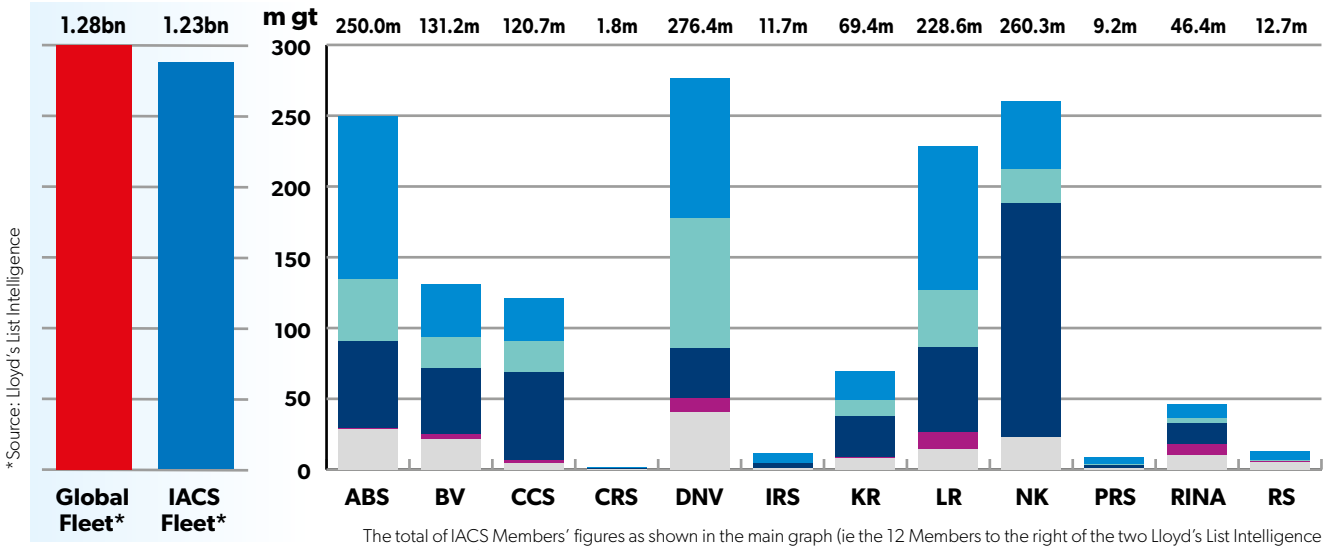
Number of recognising flag State authorities*



*Number of recognising flag State authorities means number of RO agreements with flag States, with general or standing authorisation to act on their behalf for any statutory certificate.

Total gross tonnage by type

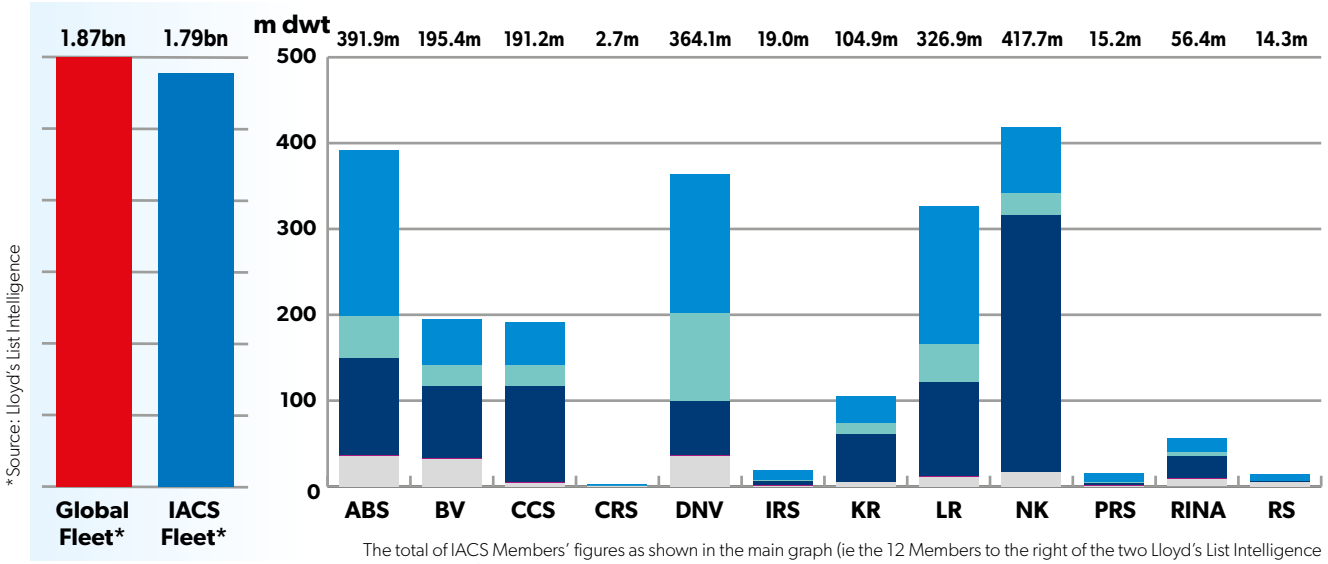
Tankers (crude, product & gas) # Container vessels # Dry bulk # Passenger vessels (over 12 pax) # Other ship types



The total of IACS Members' figures as shown in the main graph (ie the 12 Members to the right of the two Lloyd's List Intelligence columns) is in excess of the Lloyd's List Intelligence global figure as each IACS Member counts dual classed ships at 100%.

Total deadweight by type

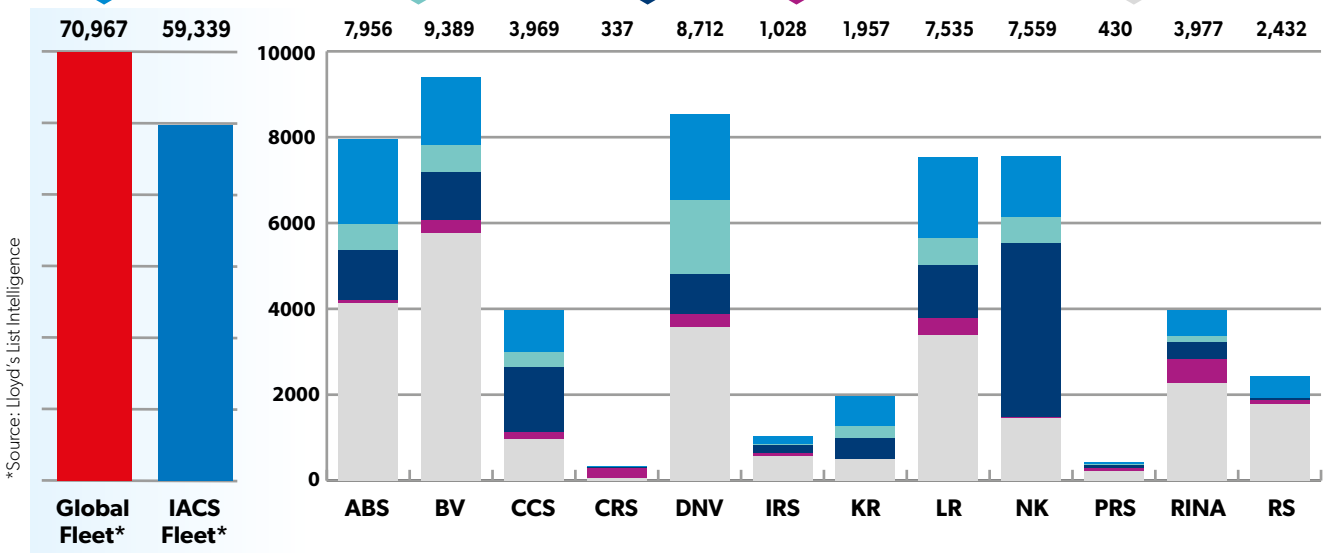
Tankers (crude, product & gas) # Container vessels # Dry bulk # Passenger vessels (over 12 pax) # Other ship types



The total of IACS Members' figures as shown in the main graph (ie the 12 Members to the right of the two Lloyd's List Intelligence columns) is in excess of the Lloyd's List Intelligence global figure as each IACS Member counts dual classed ships at 100%.

Total number of vessels by type

Tankers (crude, product & gas) # Container vessels # Dry bulk # Passenger vessels (over 12 pax) # Other ship types




IACS Publications

IACS' commitment to regulators and industry

IACS Resolutions cover a range of class, regulatory and operational matters of relevance across the maritime industry.

The evolution and continuous review of IACS Resolutions and Recommendations is an essential part of the Association's work. Keeping this large body of material up-to-date is vital to maintain its ongoing relevance while the production of new Resolutions in response to technical, regulatory or operational advances demonstrates IACS' technical leadership and responsiveness. The selection below represents only a small sample of the work undertaken during 2020 and highlights IACS' activity across the maritime sphere. A list of all IACS Resolutions amended or developed in 2020 can be found in the Appendix which starts on page 82.

Measures taken by IACS to mitigate Covid-19 impact

The development and spread of coronavirus Covid-19 has led to an unprecedented range of control and response measures being implemented by many governments and organisations across the world. The cumulative effect of these responses has had a significant impact on the normal operations of ships, potentially impacting on world trade.

In response to requests from the IMO Secretary-General, industry stakeholders and several industry associations, IACS has issued addenda to IACS Procedural Requirements (PRs) in light of the current Covid-19 situation.

The IACS Council will continue to review these addenda depending on the prevailing conditions with regard to Covid-19 and taking into consideration the ongoing control measures in place at that time, assess the ongoing need and, if necessary, the duration of any further extension.

Addenda were issued to PR 1C, PR 6, PR 10 and PR 10B in 2020.

Consolidated Recommendation on Cyber Systems

Cyber incidents on vessels can have a direct and detrimental impact on life, property, and the environment. IACS has steadily increased its focus on the reliability and functional effectiveness of onboard, safety critical, computer-based systems.

IMO Guidelines on Maritime Cyber Risk Management (MSC-FAL. 1/Circ.3, 5 July 2017) came into force on 1 January 2021. The EU is active on several digital and cyber fronts that may have an impact on vessels operating in Europe. The US Coast Guard has also published guidelines for mitigating cyber risks and vulnerabilities in the shipping sector. Maritime industry and regulators welcome the experience of class societies regarding the implementation of the requirements related to the design and construction of onboard cyber systems.

IACS acknowledges the high level of interest in this subject from the maritime industry, OEMs, shipyards and regulators. From the start, IACS has actively supported stakeholder consultation and feedback through its Joint Working Group on Cyber Systems (JWG/CS).

In 2020, IACS published Recommendation 166 which is the consolidated document of the original set of 12 Cyber Recommendations, the first tangible product of the IACS work in this area. It represents good practices and can be considered as an indication of the way forward.

Gap analysis between IACS PRs and RO Code

IACS has continued to show its commitment to quality by taking several measures to address industry concerns on ISM matters. IACS has completed a gap analysis between IACS PRs and the Recognized Organization (RO) Code, resulting in the revision of various PRs in 2020.

Credit: ©ABS

IACS has continued to show its commitment to quality by taking several measures to address industry concerns on ISM matters

PR 6 (Rev.4 Aug 2020)
PR 6 stipulates the procedures for activity monitoring of surveyors, plan approval staff and auditors/inspectors. Activity monitoring is an assessment by the society of the society's technical staff, conducted by a monitor, for plan approval or in the course of a survey, audit or MLC inspection. Rev.4 was adopted to implement the gap analysis results between Appendix 1 to the IMO RO Code and IACS PR 6.

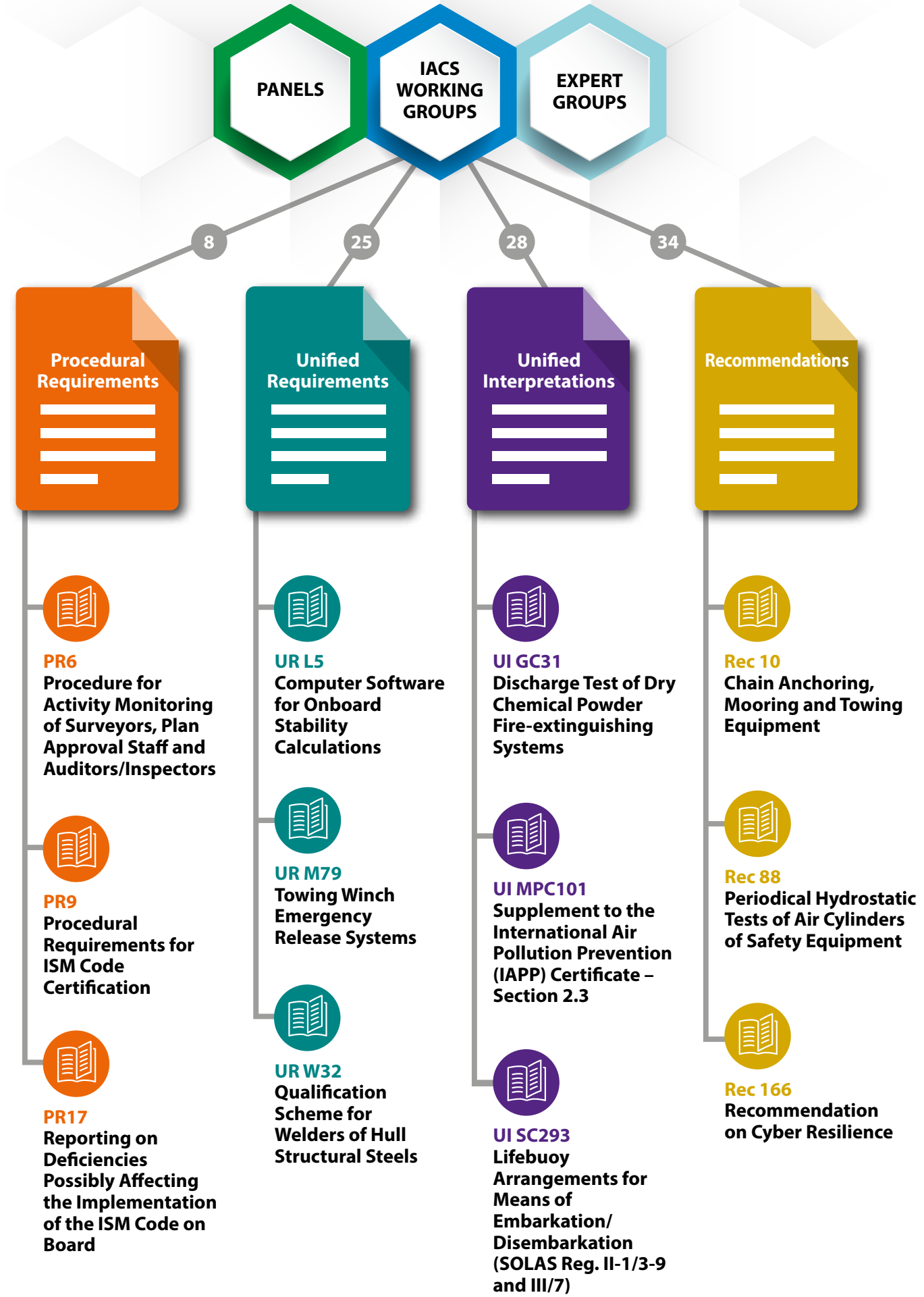
PR 7 (Rev.3 Aug 2020)
PR 7 defines the common training and qualification requirements for survey and plan approval staff in accordance with the requirements of the IMO RO Code and ISO 9001:2015 and ISO/IEC 17020:2012 standards. Rev.3 was adopted to implement the gap analysis results between Appendix 1 to the IMO RO Code and IACS PR 7.

PR 10 (Rev.4 Oct 2020)
PR 10 describes the IACS requirements for the selection, training, qualification and authorisation of marine management systems auditors responsible for verifying compliance with the ISM and ISPS Codes. Rev.4 was adopted to implement the gap analysis results between Appendix 1 to the IMO RO Code and IACS PR 10.

IACS embracing new technologies in welding surveys

Advanced non-destructive testing (NDT) techniques like Phased Array Ultrasonic Testing (PAUT), Time of Flight Diffraction (TOFD) and Automated Ultrasonic Testing (AUT), are being used by the industry for NDT of welds. IACS developed two new URs in 2019 supporting the use of new technologies. In 2020, a review of all existing URs on welding was undertaken by IACS to support these new technologies.

IACS new and revised documents 2020



4. UR W33 (Rev.1 May 2020)
UR W33 contains minimum requirements on the methods and quality levels that are to be adopted for non-destructive testing (NDT) of ship hull structure steel welds during new building. This revision introduced the terms and definitions as used in other IACS URs.

7. UR W24 (Rev.4 July 2020)
UR W24 is applicable to the manufacture, inspection and repair procedures of cast copper alloy propellers, blades and bosses. In this revision, requirements for NDT were updated, harmonising with UR W27, and requirements for welding procedure qualification tests for repairs were updated.

UR W27 (Rev.2 July 2020)
UR W27 is applicable to the manufacture, inspection and repair procedures of cast steel propellers, blades and bosses. In this revision, requirements for NDT were updated, harmonising with UR W24, and requirements for welding procedure qualification tests for repairs were updated. ■

Definitions

UR
Unified Requirements are adopted Resolutions on matters directly connected to or covered by specific Rule requirements and practices of classification societies, and the general philosophy on which the rules and practices of classification societies are established.

Subject to ratification by the governing body of each IACS Member, Unified Requirements should be seen as minimum requirements to be incorporated in the Rules and practices of Members within one year of approval by the IACS General Policy Group.

While each Member remains free to set more stringent requirements, the existence of a UR does not oblige a Member to issue respective Rules if it chooses not to have Rules for the type of ship or marine structure concerned.

CSR
The IACS Council adopted the **Common Structural Rules** for Double Hull Oil Tankers (CSR-OT) and Common Structural Rules for Bulk Carriers (CSR-BC) on December 14, 2005, for implementation on April 1, 2006, on the basis that these Rules were founded on sound technical grounds, and achieved the goal of more robust and safer ships.

These two sets of Rules were developed independently, and in order to remove variations and achieve consistency, IACS decided to harmonise these Rules to create a single set of Rules – '*Common Structural Rules for Bulk Carriers and Oil Tankers*' (CSR BC & OT). This comprised two parts: Part One gave requirements common to both bulk carriers and double hull oil tankers and Part Two provided additional specialised requirements specific to either bulk carriers or double hull oil tankers.

PR
Procedural Requirements are adopted Resolutions on matters of procedures to be incorporated in the practices and procedures of IACS Members within the periods agreed by the IACS General Policy Group.

UI
Unified Interpretations are adopted Resolutions on matters arising from implementing the requirements of IMO Conventions or Recommendations. The Resolutions can involve uniform interpretations of Convention Regulations or IMO Regulations on matters that are unclear.

Interpretations are circulated to the flag State Administrations concerned or sent to IMO for information. They are also designed to aid the development of regulations that are clear, unambiguous and can be easily applied by IACS Members to ships whose flag State Administrations have not issued definite instructions on the interpretation of the IMO regulations concerned, amid statutory certification on behalf of those flag Administrations.

Recommendations
IACS produces **Recommendations** and guidelines related to adopted Resolutions that not only deal with matters of class but also offer some advice to the marine industry.


IACS Members

IACS Members

IACS consists of 12 member societies, details of which are listed below. Chairmanship of IACS is on a rotational basis with each member society taking a turn.

The current chairmanship is as follows:

Chair of Council	Mr. Koichi Fujiwara	ClassNK
Vice-Chair	Mr. Konstantin Palnikov	RS
Vice-Chair (immediate past-Chair)	Mr. Arun Sharma	IRS

ABS
American Bureau of Shipping
www.eagle.org

BV
Bureau Veritas
www.veristar.com

CCS
China Classification Society
www.ccs.org.cn/ccswzen/

CRS
Croatian Register of Shipping
www.crs.hr

DNV
www.dnv.com

IRS
Indian Register of Shipping
www.irclass.org

KR
Korean Register
www.krs.co.kr

LR
Lloyd's Register
www.lr.org

NK
Nippon Kaiji Kyokai
www.classnk.or.jp

PRS
Polish Register of Shipping
www.prs.pl

RINA
RINA Services S.p.A.
www.rina.org

RS
Russian Maritime Register of Shipping
www.rs-class.org/en/

Appendices

Appendix I Summaries of IACS Resolutions published in 2020

Summary of New/Revisions to IACS Unified Requirements published in 2020

New Revised Corrigenda Deleted/Withdrawn

Index	Resolution no.	Revision	Adoption	Title	Implemention Date
1	UR S33	Rev.3	Feb 2020	Requirements for Use of Extremely Thick Steel Plates in Container Ships	01 Jul 21
2	UR M79	Rev.1	Feb 2020	Towing Winch Emergency Release Systems	01 Jul 21
3	UR Z18	Rev.9	Apr 2020	Survey of Machinery	01 Jul 21
4	UR W33	Rev.1	May 2020	Non-destructive Testing of Ship Hull Steel Welds	01 Jul 21
5	UR F7	Rev.3	Jun 2020	Portable Instruments for Measuring Oxygen and Flammable Vapour Concentrations	01 Jul 21
6	UR L5	Rev.4	Jun 2020	Computer Software for Onboard Stability Calculations	01 Jul 21
7	UR W24	Rev.4	Jul 2020	Cast Copper Alloy Propellers	01 Jul 21
8	UR W27	Rev.2	Jul 2020	Cast Steel Propellers	01 Jul 21
9	UR Z1	Rev.8	Jul 2020	Annual and Intermediate Classification Survey Coverage of IMO Resolution A.1140(31)	-
10	UR W32	Rev.1	Sep 2020	Qualification Scheme for Welders of Hull Structural Steels	01 Jan 22
11	UR A1	Rev.7	Sep 2020	Anchoring Equipment	01 Jan 22
12	UR A2	Rev.5	Sep 2020	Shipboard Fittings and Supporting Hull Structures Associated with Towing and Mooring on Conventional Ships	01 Jan 22
13	UR W27	Corr.1	Sep 2020	Cast Steel Propellers	-
14	UR Z17	Rev.15	Oct 2020	Procedural Requirements for Service Suppliers	01 Jul 21
15	UR Z23	Rev.7	Oct 2020	Hull Survey for New Construction	01 Jul 21
16	UR Z28	New	Oct 2020	Surveys of Watertight Cable Transits	01 Jul 21
17	UR F7	Corr.1	Nov 2020	Portable Instruments for Measuring Oxygen and Flammable Vapour Concentrations	01 Jul 21
18	UR Z7	Corr.1	Dec 2020	Hull Classification Surveys	-
19	UR S11	Rev.10	Dec 2020	Longitudinal Strength Standard	01 Jan 22
20	UR E12	Rev.2	Dec 2020	Electrical Equipment Allowed in Paint Stores and in the Enclosed Spaces Leading to Paint Stores	01 Jan 22
21	UR E13	Rev.3	Dec 2020	Test Requirements for Rotating Machines	01 Jan 22

Index	Resolution no.	Revision	Adoption	Title	Implemention Date
22	UR E15	Rev.4	Dec 2020	Electrical Services Required to be Operable Under Fire Conditions and Fire-Resistant Cables	01 Jan 22
23	UR M77	Rev.2	Dec 2020	Storage and Use of SCR Deductants	01 Jan 22
24	CSR	-	Jan 2020	Common Structural Rules	01 Jul 20

1. UR S33 (Rev.3 Feb 2020)

UR S33 provides the requirements for the use of extremely thick steel plates in container ships and also provides measures for the prevention of brittle fracture. This revision included changes due to the adoption of the new UR W33 and the deletion of Recommendation 20.

2. UR M79 (Rev.1 Feb 2020)

UR M79 defines minimum safety standards for winch emergency release systems provided on towing winches that are used in the handling of ships within close quarters, ports or terminals. This revision has added clarification on the applicability of the UR and modified the previous text defining the term “girting”.

3. UR Z18 (Rev.9 Apr 2020)

UR Z18 deals with the periodical surveys of machinery. It stipulates the requirements for special surveys, annual surveys and continuous surveys. This revision included the annual and special survey requirements of the towing winch emergency release systems subject to IACS UR M79.

4. UR W33 (Rev.1 May 2020)

UR W33 contains minimum requirements on the methods and quality levels that are to be adopted for non-destructive testing (NDT) of ship hull structure steel welds during new building. This revision introduced the terms and definitions used in other IACS URs.

5 & 17. UR F7 (Rev.3 June 2020) (Corr.1 Nov 2020)

UR F7 stipulates the requirements of portable instruments for measuring oxygen and flammable vapour concentrations. This revision was adopted to distinguish between portable gas detectors capable of measuring flammable vapour concentrations in air and capable of flammable vapour concentrations in inerted atmosphere, and incorporated the content of UI SC149. A corrigendum was issued to correct the application statement.

6. UR L5 (Rev.4 June 2020)

UR L5 is applicable to software which calculates the stability of actual loading conditions which is installed on ships and on units subject to compliance with the 1966 Load Line Convention or the 1988 Protocol to the Load Line Convention, as amended, the IMO MODU Code and/or the 2008 IS Code. This revision clarified that both sides of the ship are to be modelled in a Type 3 software.

Summary of New/Revisions to IACS Unified Requirements published in 2020

7. UR W24 (Rev.4 July 2020)

UR W24 is applicable to the manufacture, inspection and repair procedures of cast copper alloy propellers, blades and bosses. In this revision, requirements for NDT were updated in harmonisation with UR W27 and requirements for welding procedure qualification tests for repairs were updated.

8 & 13. UR W27 (Rev.2 July 2020) (Corr.1 Sep 2020)

UR W27 is applicable to the manufacture, inspection and repair procedures of cast steel propellers, blades and bosses. In this revision, requirements for NDT were updated in harmonisation with UR W24 and requirements for welding procedure qualification tests for repairs were updated. A corrigendum was issued to correct the application statement.

9. UR Z1 (Rev.8 July 2020)

UR Z1 identifies the annual and intermediate survey requirements of HSSC guidelines, which are to be covered by classification surveys. This revision updated survey items following the publication of IMO Res.A.1140(31).

10. UR W32 (Rev.1 Sep 2020)

UR W32 gives requirements for a qualification scheme for welders intended to be engaged in the fusion welding of steels as specified in UR W7, W8, W11 and W31 for hull structures. This revision was issued to address the concern raised by a shipyards' association on the revalidation of qualification for welders. Existing qualifications are to be renewed, in accordance with this revision, when they become due.

11. UR A1 (Rev.7 Sep 2020)

UR A1 gives the minimum requirements for the anchoring equipment intended for the temporary mooring of a ship within a harbour or sheltered area. This revision introduced a correction in the Equipment Number calculation and introduced the net thickness approach for the calculation of the hull supporting structure of anchor, windlass and chain stoppers.

12. UR A2 (Rev.5 Sep 2020)

UR A2 gives the minimum requirements for shipboard fittings and supporting hull structures associated with normal towing and mooring operations on conventional ships. This revision clarified the projected area and introduced the guidance of meshing size for strength assessment by means of FEA.

14. UR Z17 (Rev.15 Oct 2020)

UR Z17 sets minimum requirements for approval and certification of service suppliers and is applicable to both initial and renewal audits. This revision introduced the requirements for approval of firms engaged in cable transit seal systems inspection and updated sections 5.2.9 and 5.5.3 clarifying the approval of subcontractors.

15. UR Z23 (Rev.7 Oct 2020)

UR Z23 covers the requirements for survey of new construction of steel ships intended for classification and for international voyages. This revision provides the requirements for the Cable Transit Seal Systems Register, the procedure for the use of fabrication standard, NDT replaced with NDE and changes related to deletion of Rec 20 and adoption of UR W33.

16. UR Z28 (New Oct 2020)

UR Z28 introduces survey requirements to the watertight cable transits of all vessels and mobile offshore units contracted for construction on or after 1st July 2021, in addition to the requirements of URs Z23, Z7 and Z15.

18. UR Z7 (Rev.28 Corr.1 Dec 2020)

UR Z7 provides requirements for hull classification surveys applicable to all self-propelled vessels. This corrigendum has updated a reference in para.2.2.2.

19. UR S11 (Rev.10 Dec 2020)

UR S11 provides the requirements for longitudinal strength and is applicable to steel ships of length 90 m and above. In this revision, UR S11 Annex 1 replaced Rec.97 making technical changes and clarifications keeping the application scope the same as UR S11, i.e. excluding CSR BC&OT vessels and container ships.

20. UR E12 (Rev.2 Dec 2020)

UR E12 provides the requirements for electrical equipment in paint stores and in the enclosed spaces leading to paint stores. In this revision, references to industry standards were updated.

21. UR E13 (Rev.3 Dec 2020)

UR E13 provides the test requirements for rotating machinery. All tests are to be carried out according to IEC 60092-301:1980/ AMD2:1995 and records are to be provided for machines for essential services. In this revision, references to industry standards were updated.

22. UR E15 (Rev.4 Dec 2020)

UR E15 provides the requirements for electrical services required to be operable under fire conditions and fire-resistant cables. In this revision, references to industry standards were updated.

23. UR M77 (Rev.2 Dec 2020)

UR M77 provides the requirements for storage and use of SCR reductants which are typically carried on board in bulk quantities. In this revision, references to industry standards were updated.

24. CSR 2020

Common Structural Rules (CSR) consist of two parts. Part One provides requirements common to both Double Hull Oil Tankers and Bulk Carriers and Part Two provides additional requirements applied to either Double Hull Oil Tankers or Bulk Carriers. RCN 1 for CSR 2019 was issued in Jan 2020 and the consolidated version of CSR 2020 (CSR 2019 + RCN 1 for CSR 2019) was issued in March 2020 which came into force on 1 July 2020.

Summary of New/Revisions to IACS Procedural Requirements published in 2020

New Revised Corrigenda Deleted/Withdrawn

Index	Resolution no.	Revision	Adoption	Title	Implemention Date
1	PR 6	Rev.4	Aug 2020	Procedure for Activity Monitoring of Surveyors, Plan Approval Staff and Auditors/Inspectors	01 Jan 21
2	PR 7	Rev.3	Aug 2020	Procedure for the Training and Qualification of Survey and Plan Approval Staff	01 Jan 21
3	PR 10	Rev.4	Oct 2020	Procedure for the Selection, Training, Qualification and Authorisation of Marine Management Systems Auditors	01 Jan 21
4	PR 17	Rev.2	Oct 2020	Reporting on Deficiencies Possibly Affecting the Implementation of the ISM Code on Board	01 Jan 21
5	PR 9	Rev.4	Oct 2020	Procedural Requirements for ISM Code Certification	01 Jan 21
6	PR 16	Corr.1	Nov 2020	Procedure for Providing Lists of Classed Ships to Equasis	-
7	PR 1B	Rev.6	Nov 2020	Procedure for Adding, Assigning, Maintaining or Withdrawing Double or Dual Class	01 Feb 21
8	PR 1A	Corr.1	Dec 2020	Procedure for Transfer of Class	-

1. PR 6 (Rev.4 Aug 2020)

PR 6 stipulates the procedures for activity monitoring of surveyors, plan approval staff and auditors/inspectors. Activity monitoring is an assessment undertaken by the classification society of its technical staff, conducted by a monitor, for plan approval or in the course of a survey, audit or MLC inspection. Rev.4 was adopted to implement the gap analysis results found between Appendix 1 of the IMO Recognized Organization (RO) Code and IACS PR 6.

2. PR 7 (Rev.3 Aug 2020)

PR 7 defines the common training and qualification requirements for survey and plan approval staff in accordance with the requirements of the IMO RO Code and ISO 9001:2015 and ISO/IEC 17020:2012 standards. Rev.3 was adopted to implement the gap analysis results found between Appendix 1 of the IMO RO Code and IACS PR 7.

3. PR 10 (Rev.4 Oct 2020)

PR 10 describes the IACS requirements for the selection, training, qualification and authorisation of marine management systems auditors responsible for verifying compliance with the ISM and ISPS Codes. Rev.4 defined the maximum number of trainee auditors participating in practical training audit and the requirements for final evaluation of trainee auditors before authorisation to conduct audits independently is granted.

4. PR 17 (Rev.2 Oct 2020)

PR 17 ensures that the organisation responsible for the SMS audit of the ship and the flag State Administration, as appropriate, are notified when deficiencies possibly affecting the implementation of the ISM Code on board are identified by a surveyor. This revision introduced new provisions concerning sending reports to organisations issuing Documents of Compliance (DOCs) and to flag State Administrations requiring such reports, establishing databases for collecting reported deficiencies and it also introduced a definition for “leading indicator”.

5. PR 9 (Rev.4 Oct 2020)

PR 9 provides procedures and criteria for the conduct of audits to verify compliance with the requirements of the ISM Code and for the issuance of the corresponding DOCs and Safety Management Certificates (SMCs), including short-term and interim DOCs and SMCs. Rev.4 was adopted to enhance audit performance and the onboard tour undertaken as part of ISM audit. It also redefined the requirements for determination of ship types in DOC.

6. PR 16 (Rev.1 Corr.1 Nov 2020)

PR 16 provides procedure for providing lists of classed ships and changes in class status to Equasis. A name of an IACS Member – Korean Register – has been updated in this corrigendum.

7. PR 1B (Rev.6 Nov 2020)

PR 1B contains procedures and requirements pertaining to adding, maintaining or withdrawing double or dual class. This PR is applicable to classification societies which are subject to verification of compliance with the Quality System Certification Scheme. In this revision, Section C was amended to ensure there are clear responsibilities for each society under the dual class concept.

8. PR 1A (Rev.7 Corr.1 Dec 2020)

PR 1A contains procedures and requirements pertaining to transfer of class from one society to another society. This corrigendum reinstated para.B.2.1.iii) for Rev.7.

9 Addenda to PR 1C, PR 6, PR 10 & PR 10B

The development and spread of coronavirus Covid-19 and its resultant declaration as a global pandemic by the World Health Organisation (WHO) has led to an unprecedented range of control and response measures being implemented by many governments and organisations across the world. The cumulative effect of these responses is having a significant impact on the normal operations of ships, potentially impacting world trade.

In response to requests from the IMO Secretary-General, industry stakeholders and several industry associations, IACS has issued addenda to IACS PRs in light of the current Covid-19 force majeure situation.

The IACS Council will review these addenda from time to time depending on the prevailing conditions with regard to Covid-19 and taking into consideration the ongoing control measures in place at that time, assess the ongoing need and, if necessary, the duration of any further extension.

Summary of New/Revisions to IACS Unified Interpretations published in 2020

New Revised Corrigenda Deleted/Withdrawn

Index	Resolution no.	Revision	Adoption	Title	Implemention Date
1	UI SC242	Rev.2	Jan 2020	Arrangements for Steering Capability and Function on Ships Fitted with Propulsion and Steering Systems other than Traditional Arrangements for a Ship's Directional Control	01 Jul 20
2	UI MPC32	Rev.1	Jan 2020	Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008, Chapter 1, Paragraph 1.3.2.2)	01 Jul 20
3	UI SC207	Corr.2	Jan 2020	SOLAS XII/5 in terms of Structural Strength of Bulk Carriers in case of Accidental Hold Flooding	-
4	UI SC291	New	Jan 2020	Safe Type Requirements for Two-way Portable Radiotelephone Apparatus for Fire-fighter's Communication (SOLAS Regulation II-2/10.10.4)	01 Jul 20
5	UI SC292	New	Feb 2020	Ships Intended to Operate in Low Air Temperature in Polar Waters – Survival Craft and Rescue Boat Communications Capabilities	01 Jul 20
6	UI SC293	New	Feb 2020	Lifebuoy Arrangements for Means of Embarkation/ Disembarkation (SOLAS Reg. II-1/3-9 and III/7)	01 Jul 20
7	UI SC294	New	Feb 2020	Fire Integrity of the Division Between Engine Room and Urea or Sodium Hydroxide Solution Tank Installation Spaces	01 Jul 20
8	UI GC30	New	Apr 2020	Emergency Fire Pump	01 Jan 21
9	UI SC182	Del	Apr 2020	Bulk Carriers Not Complying with SOLAS XII/9 as of 1 January 2004	-
10	UI GC22	Rev.1	Apr 2020	Water Spray System	01 Jan 21
11	UI MPC130	Withdrawn	May 2020	NOx Technical Code 2008, Chapter 2, Paragraph 2.2.5.1	-
12	UI MPC51	Withdrawn Rev.2	May 2020	Resolution 2 of the 1997 MARPOL Conference TechnicalCode on Control of Emission of Nitrogen Oxides from Marine Diesel Engines	-
13	UI MPC115	Corr.1	May 2020	2017 Guidelines Addressing Additional Aspects of the NOx Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines Fitted with Selective Catalytic Reduction (SCR) Systems	-
14	UI GC31	New	Jun 2020	Discharge Test of Dry Chemical Powder Fire-extinguishing Systems	01 Jan 21
15	UI MPC101	Rev.1	Jul 2020	Supplement to the International Air Pollution Prevention (IAPP) Certificate – Section 2.3	01 Mar 20
16	UI MPC20	Corr.1	Jul 2020	Annex VI of MARPOL 73/78 Regulation 13.2.1.1 and 13.2.2	-
17	UI MPC99	Del	Jul 2020	Oil Residue (sludge) Tank Discharge Connections to the Bilge System, Oily Bilge Water Holding Tank(s), Tank Top or Oily Water Separators (MARPOL 73/78 Annex I Regulation 12.3)	-
18	UI MPC101	Corr.1	Sep 2020	Supplement to the International Air Pollution Prevention (IAPP) Certificate – Section 2.3	-

Index	Resolution no.	Revision	Adoption	Title	Implemention Date
19	UI SC117	Del	Sep 2020	Fire Detection system with Remotely and Individually Identifiable Detectors	-
20	UI SC91	Corr.1	Nov 2020	Personal Protection – Protective Clothing (SOLAS Reg. II-2/19.3.6.1)	-
21	UI SC137	Rev.1	Nov 2020	Definition of High-Speed Craft	-
22	UI SC17	Rev.3	Nov 2020	Definitions – Control Stations (SOLAS Reg. II-2/3.18)	-
23	UI SC86	Del	Nov 2020	Weather Decks	-
24	UI LL10	Rev.2	Nov 2020	Air Pipes (Regulation 20)	-
25	UI FTP1	Del	Dec 2020	Adhesives Used in A or B Class Divisions	-
26	UI SC34	Del	Dec 2020	Automatic Sprinkler, Fire Detection and Fire Alarm System	-
27	UI SC62	Rev.2	Dec 2020	Inert Gas Systems	01 Jan 22
28	UI SC125	Rev.3	Dec 2020	B and C Class Divisions	-

1. UI SC242 (Rev.2 Jan 2020)

UI SC242 gives the interpretation of arrangements for steering capability and function on ships fitted with propulsion and steering systems that are not traditional arrangements for a ship's directional control (SOLAS Chapter II-1, Regulations 29.1, 29.2.1, 29.3, 29.4, 29.6.1, 29.14, 28.3 and 30.2). This revision reflects the content of MSC.1/Circ.1416/Rev.1.

2. UI MPC32 (Rev.1 Jan 2020)

UI MPC32 provides unified interpretation for "increase of emission characteristics" according to regulation 1.3.2.2 of the NOx Technical Code 2008. This revision updates the text and references in line with revised NOx Technical Code.

3. UI SC207 (Corr.2 Jan 2020)

UI SC207 provides interpretation for SOLAS XII/5 in terms of structural strength of bulk carriers in case of accidental hold flooding. This corrigendum provides editorial correction for the references made to IACS URs.

4. UI SC291 (New Jan 2020)

UI SC291 provides clarity on the requirements of SOLAS Regulation II-2/10.10.4 regarding mitigation of the explosion hazard with respect to two-way portable radiotelephone apparatus for fire-fighter communication during emergencies.

5. UI SC292 (New Feb 2020)

UI SC292 provides interpretation of requirements for survival craft and rescue boat communications capabilities for ships intended to operate in the low air temperatures in Polar waters stipulated in Polar Code (Res. MSC.385(94)), including those regarding the provision of mandatory communication equipment and the ability of that to function. The UI also provides interpretation for the vague expressions in paragraphs 10.2.2.1 and 10.2.2.2, 10.2.2.3, 10.3.2.3 of part I-A of the Code.

Summary of New/Revisions to IACS Unified Interpretations published in 2020

6. UI SC293 (New Feb 2020)

UI SC293 provides interpretations on lifebuoy arrangements for means of embarkation/disembarkation (SOLAS Regulations III/7/1/3 and II-1/3-9 and MSC.1/Circ. 1331)

7. UI SC294 (New Feb 2020)

UI SC294 provides an interpretation of SOLAS Reg. II-2/3.30, 9.2.2.3.2.2, 9.2.2.4.2.2, 9.2.3.3.2.2 and 9.2.4.2.2.2 in order to clarify the required fire integrity of bulkheads and decks between the engine room and urea or sodium hydroxide solution tank installation spaces for the application of SOLAS II-2 Reg.9.

8. UI GC30 (New Apr 2020)

UI GC30 clarifies the requirement for determining the capacity of the emergency fire pump in accordance with the revised IGC Code (MSC.370(93)) when water spray, hydrants and foam system are fitted.

9. UI SC182 (Del Apr 2020)

UI SC182 is deleted since all the related vessels have been in compliance with SOLAS regulation XII/Reg.9 since 1st July 2006.

10. UI GC22 (Rev.1 Apr 2020)

UI GC22 provides interpretation for paragraphs 11.3.1 & 11.3.3 of the new IGF Code (MSC.370(93)). This revision aligned UI GC22 with the text agreed at CCC 6.

11. UI MPC130 (Withdrawn May 2020)

UI MPC130 (New Nov 2019) adopted on 9 November 2019 was withdrawn on 5 May 2020 prior to coming into force on 1 July 2020.

12. UI MPC51 (Rev.2 was withdrawn in May 2020)

UI MPC51 provides interpretation on how test cycles are to be applied for verification of compliance with the applicable NOx emission limits contained in regulation 13 of MARPOL Annex VI and the provisions of the NOx Technical Code 2008. Rev.2 was withdrawn before coming into force and the original UI continues to be in force.

13. UI MPC115 (Corr.1 May 2020)

UI MPC115 provides interpretation of terms contained in MEPC.291(71), Paragraph 3.2.11. This corrigendum was issued for compatibility of this UI with UI MPC112(Rev.1) for the provisions applied to the NOx measurement device.

14. UI GC31 (New June 2020)

UI GC31 provides clarification on the requirements of onboard discharge testing of dry chemical powder fire-extinguishing systems, as outlined under paragraph 11.4.8 of IGC Code.

15 & 18. UI MPC101 (Rev.1 July 2020) (Corr.1 Sep 2020)

UI MPC101 provides reasonable means to complete Section 2.3 of the Supplement to the IAPP Certificate without doing so repetitively each time the entry into force date for the new fuel oil sulphur limit requirement occurs. This revision aligns the UI with Resolution MEPC.305(73). The Corrigendum was issued to align the UI with paragraph 3.2 of MSC/MEPC.5-Circ.6.

16. UI MPC20 (Corr.1 July 2020)

UI MPC116 provides interpretation for “major conversion” in the regulations 13.2.1.1 and 13.2.2 of Annex VI of MARPOL 73/78. This corrigendum was issued to reflect the term “time of the replacement or addition” with respect to major conversion in MPC 98.

17. UI MPC99 (Del July 2020)

UI MPC99 has been deleted, since the content is now covered by the following:
a) amended text of Reg.12.3 of MARPOL Annex I (amended vide MEPC.266(68)) and
b) new unified interpretation 20(UI 20) "No discharge connection" in MARPOL Annex I, providing interpretation of Reg.12.3.3 (approved at MEPC 70 vide MEPC.1/Circ.867).

19. UI SC117 (Del Sep 2020)

UI SC117 was deleted as the interpretation had already been incorporated in the amendment to the FSS Code (MSC.311(88)) .

20. UI SC91 (Corr.1 Nov 2020)

UI SC91 provides interpretation of requirements to SOLAS Ch-II-2/19.3.6.1 regulation. This corrigendum updates the cross-reference of BC code to IMSBC Code.

21. UI SC137 (Rev.1 Nov 2020)

UI SC137 provides interpretation of the definition of High-Speed Craft for the application of the ISM (International Safety Management) Code. This revision references SOLAS.

22. UI SC17 (Rev.3 Nov 2020)

UI SC17 provides explanations to the term "Control Stations" defined in SOLAS Reg.II-2/3.18. This revision updates the text to make the language mandatory.

23. UI SC86 (Del Nov 2020)

UI SC86 was deleted as "Weather Decks" has been now defined in SOLAS Reg.II-2/3.50.

24. UI LL10 (Rev.2 Nov 2020)

UI LL10 provides interpretation of requirements to regulation 20 of ILLC. This revision has updated the footnote to clarify the interpretation is applicable for both versions of the ILLC i.e. 1966 and 1988 protocol.

25. UI FTP1 (Del Dec 2020)

UI FTP1 was deleted in light of para 3.2.4.2 of the fire test procedures specified in appendix 1 of the revised FTP Code (MSC.307(88)).

26. UI SC34 (Del Dec 2020)

UI SC34 was deleted as definition of "nominal area" has since been specified in FSS/8, 2.5.2.3 as per MSC.339(91).

27. UI SC62 (Rev.2 Dec 2020)

UI SC62 provides interpretation for paragraphs 2.2.3.2.7 and 2.2.3.2.8 of Chapter 15 of the Fire Safety Systems Code. In this revision, references to the FSS Code were corrected.

28. UI SC125 (Rev.3 Dec 2020)

UI SC125 provides the conditions for accepting non-combustible core and combustible veneers as a B or C class division. This revision updates the references to SOLAS.

Summary of New/Revisions to IACS Recommendations published in 2020

New Revised Corrigenda Deleted/Withdrawn

Index	Resolution no.	Revision	Adoption	Title	Implemention Date
1	Rec 75	Rev.3	Jan 2020	Format for Electronic Exchange of Class and Statutory Data	-
2	Rec 46	Rev.2	Jan 2020	Guidance and Information on Dry Cargo Loading and Discharging to Reduce the Likelihood of Overstressing the Hull Structure	-
3	Rec 148	Rev.1	Mar 2020	Survey of Liquefied Gas Fuel Containment Systems	-
4	Rec 17	Rev.1	Mar 2020	Guidelines for the Acceptance of Manufacturer's Quality Assurance Systems for Welding Consumables	-
5	Rec 61	Del	Apr 2020	Recommended Maximum Allowable Rudder Pintle Clearance	-
6	Rec 88	Rev.1	Apr 2020	Periodical Hydrostatic Tests of Air Cylinders of Safety Equipment	-
7	Rec 89	Rev.1	Apr 2020	Firms Engaged in Testing of Navigational Equipment and Systems	-
8	Rec 153	Del	Apr 2020	Recommended Procedures for Software Maintenance of Computer-based Systems on Board	-
9	Rec 154	Del	Apr 2020	Recommendation Concerning Manual/Local Control Capabilities for Software Dependent Machinery Systems	-
10	Rec 155	Del	Apr 2020	Contingency Plan for Onboard Computer-based Systems	-
11	Rec 156	Del	Apr 2020	Network Architecture	-
12	Rec 157	Del	Apr 2020	Data Assurance	-
13	Rec 158	Del	Apr 2020	Physical Security of Onboard Computer-based System	-
14	Rec 159	Del	Apr 2020	Network Security of Onboard Computer-based Systems	-
15	Rec 160	Del	Apr 2020	Vessel System Design	-
16	Rec 161	Del	Apr 2020	Inventory List of Computer-based Systems	-
17	Rec 162	Del	Apr 2020	Integration	-
18	Rec 163	Del	Apr 2020	Remote Update/Access	-
19	Rec 164	Del	Apr 2020	Communication and Interfaces	-
20	Rec 166	New	Apr 2020	Recommendation on Cyber Resilience	-
21	Rec 117	Rev.2	May 2020	Exchange of Statutory Documentation upon Transfer of Class	-
22	Rec 48	Rev.1	Jun 2020	Recommendations on Loading Instruments	-
23	Rec 89	Rev.2	Jun 2020	Firms Engaged in Testing of Navigational Equipment and Systems	-
24	Rec 103	Rev.1	Jul 2020	Guidance for the Compilation of the IOPP Supplement	-
25	Rec 166	Corr.1	Jul 2020	Recommendation on Cyber Resilience	-

Index	Resolution no.	Revision	Adoption	Title	Implemention Date
26	Rec 13	Rev.3	Jul 2020	Standards for Ship Equipment for Mooring at Single Point Moorings	-
27	Rec 38	Rev.2	Jul 2020	Guidelines for the Survey of Offshore Mooring Chain Cable in Use	-
28	Rec 10	Rev.4	Sep 2020	Chain Anchoring, Mooring and Towing Equipment	-
29	Rec 75	Corr.1	Oct 2020	Format for Electronic Exchange of Class and Statutory Data	-
30	Rec 69	Rev.2	Oct 2020	Guidelines for Non-destructive Testing of Marine Steel Castings	-
31	Rec 36	Rev.3	Nov 2020	Recommended Procedure for the Determination of Contents of Metals and Other Contaminants in Stern Tube Lubricating Oil	-
32	Rec 151	Rev.1	Nov 2020	Recommendation for Fuel Oil Treatment Systems	-
33	Rec 167	New	Dec 2020	Guidelines for the Identification of Vibration Issues and Recommended Remedial Measures on Ships	-
34	Rec 73	Rev.1	Dec 2020	Type Approval Procedure for Cable Trays/Protective Casings Made of Plastics Materials	-

1 & 29. Rec 75 (Rev.3 Jan 2020) (Corr.1 Oct 2020)

Rec.75 deals with the format for electronic exchange and standard reports. This revision has harmonised the terms “Condition of Class” and “Statutory Condition”. The corrigendum has updated the name for KR as “Korean Register”.

2. Rec 46 (Rev.2 Jan 2020)

Rec 46 provides guidance and information on bulk cargo loading and discharging to reduce the likelihood of over-stressing the hull structure. This revision has updated operational aspects, for example, flooded conditions, mass curves, and side frame stresses when top side tanks are full in loading conditions with high density cargoes.

3. Rec 148 (Rev.1 Mar 2020)

Rec 148 provides guidance for survey of liquefied gas fuel containment systems for vessels which need to comply with the IGF Code. This revision has inserted the wording “without access openings” in item 1.2.

4. Rec 17 (Rev.1 Mar 2020)

Rec 17 provides guidelines for the acceptance of manufacturer’s quality assurance systems for welding consumables. This revision reflects the latest revisions of UR W17 & W23, aligned with the philosophy of UR Z26, and terminology has been updated in line with current standards.

5. Rec 61 (Del Apr 2020)

Rec 61 was deleted as the maximum allowable rudder pintle clearance should be provided by the OEM.

6. Rec 88 (Rev.1 Apr 2020)

Rec 88 provides the guidance for periodical hydrostatic tests of air cylinders of safety equipment. This revision has replaced reference of “MSC/Circ.850” with “MSC.1/Circ.1432”.

Summary of New/Revisions to IACS Recommendations published in 2020

7 & 23. Rec 89 (Rev.1 Apr 2020) (Rev.2 June 2020)

Rec 89 provides guidance for seeking or approving assistance for the surveyor during initial, annual, periodical or renewal surveys of navigational systems and equipment covered. These revisions updated item 5 according to relevant IMO instruments and deleted the attachments.

8-19. Recs 153 to 164 (Del Apr 2020)

Rec 153 to Rec 164 were deleted in Apr 2020. These 12 cyber Recommendations were consolidated into Rec 166 (New Apr 2020) – "Recommendation on Cyber Resilience".

20 & 25. Rec 166 (New Apr 2020) (Corr.1 July 2020)

Rec 166 was consolidated from 12 earlier Recommendations (No.153 to 164) to define responsibilities, harmonise and simplify language. A corrigendum was issued to some editorial changes.

21. Rec 117 (Rev.2 May 2020)

Rec 117 recommends the exchange of statutory documentation upon Transfer of Class, by the losing society, upon request by the gaining society. This revision added "EEDI technical file" to the list of documentation.

22. Rec 48 (Rev.1 June 2020)

Rec 48 may be used by IACS Members in conjunction with their requirements and procedures when approving loading instruments for ships not yet fitted with an approved loading instrument. This revision has updated the references to ISO standards.

24. Rec 103 (Rev.2 July 2020)

Rec 103 provides the guidance for the compilation of the IOPP supplement. This revision aligned Rec 103 with Resolution MEPC.276 (70), i.e. Amendments to MARPOL Annex I – Form B of the IOPP supplement.

26. Rec 13 (Rev.3 July 2020)

Rec 13 stipulates that upon request from the owner, IACS classification societies will be able to certify that a vessel is specially fitted for compliance with Section 4.3 of "Mooring Equipment Guidelines (MEG 4)". This revision has updated the standard for single point mooring given in OCIMF MEG4 Section 4.3.

27. Rec 38 (Rev.2 July 2020)

Rec 38 provides guidelines for the survey of offshore mooring chain cable in use. This revision has updated the references to industry standards.

28. Rec 10 (Rev.4 Sep 2020)

Rec.10 provides recommendations for anchoring, mooring and towing equipment. This revision recommended the application of UR A3, provided clarification on the definition of mooring loads and also included high-level procedures for direct analysis of mooring loads.

30. Rec 69 (Rev.2 Oct 2020)

Rec 69 provides guidelines for non-destructive testing of marine steel casting. This revision includes:
- Updates to standards (external and IACS) with reference to the current version.
- Editorial changes to clarify the scope of Rec.
- Clarifying text on the use of angle beam probes and on explanatory text when using RT.
- Update on UT and DAC requirements and acceptance criteria.

31. Rec 36 (Rev.3 Nov 2020)

Rec 36 provides the recommended procedure for the determination of contents of metals and other contaminants in stern tube lubricating oil. This revision has clarified that the limits for Total Acid Numbers (TAN) related to aging oil are to be based upon values defined by oil makers.

32. Rec 151 (Rev.1 Nov 2020)

Rec.151 provides recommendation for the treatment of fuel oil on board ships and procedures for tests to confirm the ability of RMF fuel oil pumps operation with marine fuels with low viscosity. This revision was made to reflect the 'non-mandatory' nature of the recommendation.

33. Rec 167 (New Dec 2020)

Rec 167 provides guidance on how to identify vibration problems in hull structures and how to describe remedial actions to make improvements to address such problems.

34. Rec 73 (Rev.1 Dec 2020)

Rec 73 provides the type-approval procedure for cable trays/protective casings made of plastics materials. This revision has updated references to the FTP Code and other international standards.

Appendix II Summaries of IACS Member's Class Report Data 2020

ABS	Gross Tonnes	No of vessels	Deadweight	Total no. of Surveyors	Plan approval engineers	Exclusive ship surveyors	Number of recognising flag authorities
Total Size of classed fleet	**250,000,998**	**7,956**	**391,847,699**	**1,875**	566	1,309	**121**
Tankers (crude, product & gas)	115,696,142	1,990	193,150,016				
Container vessels	43,730,157	609	48,522,932				
Dry bulk	61,310,960	1,166	114,034,664				
Passenger vessels (over 12 pax)	380,118	61	301,983				
Other ship types	28,883,621	4,130	35,838,104				

BV	Gross Tonnes	No of vessels	Deadweight	Total no. of Surveyors	Plan approval engineers	Exclusive ship surveyors	Number of recognising flag authorities
Total Size of classed fleet	**131,212,246**	**9,389**	**195,372,113**	**1,239**	308	931	**118**
Tankers (crude, product & gas)	38,011,224	1,572	54,163,541				
Container vessels	21,368,975	636	24,330,472				
Dry bulk	46,445,512	1,121	84,245,903				
Passenger vessels (over 12 pax)	3,991,087	299	483,634				
Other ship types	21,395,448	5,761	32,148,563				

CCS	Gross Tonnes	No of vessels	Deadweight	Total no. of Surveyors	Plan approval engineers	Exclusive ship surveyors	Number of recognising flag authorities
Total Size of classed fleet	**120,698,197**	**3,969**	**191,231,516**	**1,235**	233	1,002	**55**
Tankers (crude, product & gas)	29,739,264	986	50,514,725				
Container vessels	22,106,890	358	23,859,795				
Dry bulk	62,386,120	1,492	112,551,757				
Passenger vessels (over 12 pax)	1,552,404	170	403,369				
Other ship types	4,913,519	963	3,901,870				

CRS	Gross Tonnes	No of vessels	Deadweight	Total no. of Surveyors	Plan approval engineers	Exclusive ship surveyors	Number of recognising flag authorities
Total Size of classed fleet	**1,786,220**	**337**	**2,699,946**	**62**	26	36	**18**
Tankers (crude, product & gas)	966,967	29	1,683,232				
Container vessels	0	0	0				
Dry bulk	583,176	20	934,161				
Passenger vessels (over 12 pax)	192,748	228	41,820				
Other ship types	43,329	60	42,585				

DNV	Gross Tonnes	No of vessels	Deadweight	Total no. of Surveyors	Plan approval engineers	Exclusive ship surveyors	Number of recognising flag authorities
Total Size of classed fleet	**276,355,217**	**8,712**	**364,108,043**	**1,990**	560	1,430	**99**
Tankers (crude, product & gas)	98,535,219	1,991	161,879,597				
Container vessels	92,032,434	1,734	103,347,214				
Dry bulk	35,241,167	922	62,575,859				
Passenger vessels (over 12 pax)	10,107,048	314	908,868				
Other ship types	40,439,349	3,571	35,396,505				

IRS	Gross Tonnes	No of vessels	Deadweight	Total no. of Surveyors	Plan approval engineers	Exclusive ship surveyors	Number of recognising flag authorities
Total Size of classed fleet	**11,733,089**	**1,028**	**19,037,958**	**204**	64	140	**43**
Tankers (crude, product & gas)	6,985,933	179	11,802,858				
Container vessels	573,587	27	737,883				
Dry bulk	3,187,735	200	5,641,041				
Passenger vessels (over 12 pax)	120,115	48	34,180				
Other ship types	865,719	574	821,995				

KR	Gross Tonnes	No of vessels	Deadweight	Total no. of Surveyors	Plan approval engineers	Exclusive ship surveyors	Number of recognising flag authorities
Total Size of classed fleet	**69,354,743**	**1,957**	**104,945,470**	**692**	105	587	**81**
Tankers (crude, product & gas)	20,143,089	685	31,908,480				
Container vessels	11,455,752	276	12,855,552				
Dry bulk	29,362,299	487	54,934,565				
Passenger vessels (over 12 pax)	224,870	16	75,288				
Other ship types	8,168,733	493	5,171,585				

LR	Gross Tonnes	No of vessels	Deadweight	Total no. of Surveyors	Plan approval engineers	Exclusive ship surveyors	Number of recognising flag authorities
Total Size of classed fleet	**228,587,807**	**7,535**	**326,901,373**	**1,449**	438	1,011	**115**
Tankers (crude, product & gas)	101,566,694	1,890	161,151,353				
Container vessels	40,766,401	625	44,245,535				
Dry bulk	59,994,639	1,232	109,259,309				
Passenger vessels (over 12 pax)	12,029,152	387	1,481,220				
Other ship types	14,230,921	3,401	10,763,956				

NK	Gross Tonnes	No of vessels	Deadweight	Total no. of Surveyors	Plan approval engineers	Exclusive ship surveyors	Number of recognising flag authorities
Total Size of classed fleet	**260,293,478**	**7,559**	**417,681,587**	**1,376**	193	1,183	**108**
Tankers (crude, product & gas)	48,126,356	1,426	75,854,686				
Container vessels	24,257,640	597	26,409,959				
Dry bulk	164,850,582	4,063	298,781,218				
Passenger vessels (over 12 pax)	106,861	6	18,518				
Other ship types	22,952,039	1,467	16,617,206				

PRS	Gross Tonnes	No of vessels	Deadweight	Total no. of Surveyors	Plan approval engineers	Exclusive ship surveyors	Number of recognising flag authorities
Total Size of classed fleet	**9,182,010**	**430**	**15,174,485**	**107**	39	68	**39**
Tankers (crude, product & gas)	5,489,670	63	10,420,633				
Container vessels	628,581	9	674,965				
Dry bulk	1,812,327	79	2,959,549				
Passenger vessels (over 12 pax)	403,493	47	80,978				
Other ship types	847,940	232	1,038,359				

RINA	Gross Tonnes	No of vessels	Deadweight	Total no. of Surveyors	Plan approval engineers	Exclusive ship surveyors	Number of recognising flag authorities
Total Size of classed fleet	**46,348,490**	**3,977**	**56,348,071**	**523**	90	433	**105**
Tankers (crude, product & gas)	9,969,991	626	16,574,420				
Container vessels	4,037,457	124	4,312,829				
Dry bulk	14,322,261	400	25,980,454				
Passenger vessels (over 12 pax)	7,808,779	556	1,327,802				
Other ship types	10,210,002	2,271	8,152,566				

RS	Gross Tonnes	No of vessels	Deadweight	Total no. of Surveyors	Plan approval engineers	Exclusive ship surveyors	Number of recognising flag authorities
Total Size of classed fleet	**12,635,175**	**2,432**	**14,309,066**	**736**	73	663	**68**
Tankers (crude, product & gas)	6,399,599	511	7,917,080				
Container vessels	176,064	16	215,634				
Dry bulk	578,113	25	971,153				
Passenger vessels (over 12 pax)	82,055	93	22,728				
Other ship types	5,399,344	1,787	5,182,471				

Classed fleet figures include ocean-going self-propelled ships of 100 GT and over, excluding fishing vessels, military vessels and pleasure craft, with dual classed ships counted at 100%.

Number of surveyors includes combined total number of surveyors, consisting of the number of exclusive plan approval engineers (RO Code A1.1.2 Plan approval staff are the personnel authorised to carry out design assessment and to conclude whether compliance has been achieved), and the number of exclusive surveyors involved in surveys of ships (RO Code A1.1.1 Survey staff are the personnel authorised to carry out surveys (in operation and under construction), and to conclude whether or not compliance has been achieved.)

Number of recognising flag authorities means number of RO agreements with Flags, with general or standing authorisation to act on their behalf for any statutory certificate.

IACS Membership Criteria

Criterion 1
Evidence that the organisation is a Classification Society as defined in Annex 4 to the IACS Charter and that it meets the requirements as detailed in the guidance for this criterion in section C I-4 of Volume 2 of the IACS Procedures.

Criterion 2
Compliance with QSCS.

Criterion 3
Demonstrated ability to develop, apply, maintain, regularly update and publish its own set of classification rules in the English language covering all aspects of the ship classification process (design appraisal, construction survey and ships-in-service periodical survey).

Criterion 4
4(a) Demonstrated ability to provide surveys of the ships under construction in accordance with the Applicant's rules and in accordance with IMO, ILO and flag State requirements.

4(b) Demonstrated ability to provide periodic surveys of ships-in-service, in accordance with the Applicant's rules and in accordance with IMO, ILO and flag State requirements.

Criterion 5
Sufficient international coverage by exclusive surveyors relative to the size of the Applicant's support of construction programmes and classed fleet in service.

Criterion 6
Documented experience that provides evidence of an Applicant's capability to assess designs for construction and/or major modification and/or ships-in-service of various types subject to any applicable IMO and ILO Convention.

Criterion 7
Significant in-house managerial, technical, support and research staff commensurate with the size of the Applicant's classed fleet and its involvement in the classification of ships under construction.

Criterion 8
Technical ability to contribute with its own staff to the work of IACS in developing minimum rules and requirements for the enhancement of maritime safety.

Criterion 9
Contribution to IACS work by the Applicant, on an ongoing basis with its own staff as described in Criterion 8 above.

Criterion 10
Compliance of classed ships with all IACS Resolutions as defined in Annex 4 to the IACS Charter.

Criterion 11
Evidence that the IMO's Maritime Safety Committee has advised in writing that the Applicant's Rules and Procedures conform to the functional requirements of the International Goal-based Ship Construction Standards for Bulk Carriers and Oil Tankers (SOLAS Reg.II-1/3-10, IMO Resolution MSC.287(87)).

Interpretative guidance in respect of the above criteria is contained in the document – IACS Procedures Volume 2 – Procedures Concerning Requirements for Membership of IACS, which is published and kept updated on the IACS website.

IACS

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