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Role Of IACS and the Classification Societies in Vessel Maintenance

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The modern international ship classification societies establish and administer standards called Rules for the design, construction, and periodic survey of merchant ships and other marine structures. Through the work of their technical and field surveyors, the societies certify that the vessels adhere to these Rules, a procedure known as classification, and to that extent provide for the mechanical and structural fitness of the vessels for their intended service.

Because of the way they are organized and operate, the class societies are able to maintain an impartial and uncompromised position in performing classification functions throughout the world, a position which is in the best interest of, and is fully endorsed by the marine industry. In this way, the societies are most effectively able to act as self-regulatory agencies to the industry.

The Rules upon which classification is predicated are established from principles of naval architecture, marine engineering, and other engineering disciplines that have proven satisfactory by service experience and systematic analysis.

Most major societies promulgate and annually update their Rules through committees composed of prominent naval architects, marine engineers, designers, shipbuilders, manufacturers and underwriters, shipowners and operators, government representatives and other individuals internationally eminent in the marine field, all of whom serve without compensation. The committee arrangement has the distinct advantage of allowing all segments of the industry to participate in developing the various Rules. As a result of these procedures, the Rules are both authoritative and impartial and represent a resource of experience factors brought to it from experts the world over. It is the marine industry, then, who determines the standards for classification which are translated into published Rules and administered by the classification societies.

One of the basic requirements of the Rules is that, once classed, it is incumbent upon the owner to present the vessel for periodic surveys; this is a condition of class. It is also an obligation of the owner to present a vessel for survey that has sustained damage which may affect class. These surveys provide a means for the society to determine that an enrolled vessel is properly maintained in the sense that it continues to meet the Rule requirements and to that extent, continues to be structurally and mechanically fit for its intended service. Periodic surveys are required annually and more concentrated surveys at intervals of four to five years, with intermediate surveys for most vessels.

Periodic surveys are performed by field surveyors of the classification societies. These require individuals with substantial training and experience in this marine specialty. They carefully follow the requirements of the Rules in conducting a periodic survey of a vessel to determine that the vessel, in fact, adheres to those requirements. To assist them, field surveyors have the benefit of circular letters, prepared by the society's headquarters, which are guidance notes relative to the particulars and peculiarities of certain types of vessels, components, structural arrangements or other unique features.

In performing periodic surveys, it is the intent of the society to prevent a vessel from falling into substandard condition as determined by the vessel's ability to meet the Rule requirements. The periodic survey requirements are based upon a vast number of ship-years of service experience. These are continually reviewed and examined for their effectiveness in view of industry developments. Also, a recurring problem in a particular type of vessel component or structural arrangement can be identified and isolated for closer scrutiny and, if considered appropriate by the society's technical committees, revisions to the Rules can be made.

It is the owner's responsibility to maintain the vessel. The field surveyor, and thus the class society, can only record, report, and recommend in accordance with what is seen at the time of a survey. If the vessel should be found in substandard condition in the sense that it is not in compliance with the class requirements, then recommendations are made for corrections. If the corrections are not made in keeping with the requirements of the Rules, then the society would terminate the vessel's classification.

Because of the significant reservoir of marine experience and extensive resources of manpower and technology of the major international classification societies, many governments have authorized the societies to act on their

behalf. This work has increased substantially in recent years with the proliferation of national regulations, and international codes and conventions such as those of Loadline - 1966, Tonnage - 1969, Marine Pollution Prevention - 1973 and Safety of Life at Sea - 1974, MODU Code, Bulk Chemical Code and other Codes together with their associated protocols and amendments.

To give you an idea of the magnitude of the classification societies involvement, it is estimated that more than 96% of all loadline certificates issued to ships engaged in international trade - numbering some 39,000 over a five year period - result from surveys by the major international classification societies as do 90% of all SOLAS Cargo Ship Safety Certificates issued to ships engaged in international trade - numbering some 26,000 over a five year period.

Similar to classification requirements, certain statutory regulations require periodic surveys to determine that the vessel is being maintained as required by those regulations and in that sense does not become deficient. Some of the surveys required for these International Conventions and Codes parallel those required by class whereas others do not. However, the class societies are working to schedule class and statutory surveys to the best advantage of the owner - a procedure which is popularly called harmonization of surveys.

When acting on behalf of the governments in accordance with the requirements of a convention or Code, the societies can only record, report, and recommend based upon that which is seen at the time of the survey. If a vessel is found deficient, the society would recommend to the Owner that which is necessary to fulfill the regulations. Should an Owner not make the necessary corrections, the society would refuse to continue certification and report this to the government who would take appropriate action.

The various aforementioned International Conventions and Codes are developed and promulgated under the auspices of IMO, the International Maritime Organization, which is an adjunct of the United Nations. It was in the early 1960s that IMO, previously called IMCO for Intergovernmental Maritime Consultative Organization, became a viable forum for the development of international maritime regulations at the government level. At that time, the classification societies, as a group, deemed it beneficial to establish a liaison with IMCO. However, as a matter of interest, cooperative efforts among the societies had already commenced, resulting from the 1930 International Convention on Load Lines which urged such efforts "in securing as much uniformity as possible on the application of the standards on which freeboard is based."

Ensuing cooperative efforts led to working parties for in-depth studies of specific topics, the first of which was the Working Party on Hull Structural Steel in 1957, followed by Working Parties on Electrodes and Equipment in 1959, and subsequently others. In 1968 the International Association of Classification Societies - IACS - was formally established as a group with the members being the major international classification societies, namely, American Bureau of Shipping, Bureau Veritas, Det norske Veritas, Germanischer Lloyd, Lloyd's Register of Shipping, Nippon Kaiji Kyokai and Registro Italiano Navale. Since then Polski Rejestr Statkow, Korean Register of Shipping and USSR Register of Shipping have been added as members and Jugoslavenski Registar Brodova as an associate member. According to the charter of IACS, the purpose of the association is to work towards the improvement of standards of safety at sea, to provide for consultation and cooperation with relevant international and national maritime organizations and to cooperate closely with the marine industries of the world. Each society is to promote the aims which the association holds in common.

A focal point of IACS is found in the activities of IMO and in this regard the formation of IACS affords the societies a unified voice for cooperation and consultation with IMO and, in addition, gives it collective input as an organization to IMO deliberations. IMO, in recognition of IACS, granted it consultative status in 1969. It is fair to say the IMO looks to IACS, which has made essential contributions to those portions of international conventions and codes which are within the expertise of the class societies for assistance. For instance, IACS has developed fifty interpretations of parts of the Load Line Convention in the interest of treating all ships alike under the convention. Most of these have been adopted by IMO and, more importantly, by the Administrations which have authorized the societies to act as their assigning authorities.

The IACS Council has adopted over one hundred technical resolutions on matters relating to classification requirements. Overall, about 90% of the requirements are implemented in one way or another by the members. However, adoption by the Council does not mean automatic inclusion into the Rules of member societies. Each society retains full control over the content of its own Rules through its individual rule-making process. Council members are obliged to present adopted requirements to their "governing bodies" for consideration, and in some cases, requirements have been rejected or modified by these governing bodies. Because of this, and because of differing philosophies as to just what should be included in the Rules, the IACS Requirements may be included in full, in part, or in the form of international instructions. It is frequently difficult to make a direct comparison between the Rules of any society and the IACS requirements. When dealing with individual ships, each society follows its own Rules.

Most of the IACS requirements relate to the construction of the ship and its machinery installation. The process of unification among the societies began when shipping and shipbuilding became truly international in the period following World War II, and designers and shipbuilders were

faced with the problem of producing series ships, some of which might be ordered to class with different societies. The Rules of the individual societies were developed on the basis of their own experience and of the engineering philosophies, practices and standards in their own countries. Taken as a whole, each set of Rules provides a satisfactory solution to the engineering problem of how to build a ship which can confidently be expected to satisfy Father Neptune's requirements. Against this background, it will not be surprising that most of the IACS Requirements concern those items which can be dealt with as discrete units, and do not have to be integrated into the overall structure. These include steel specifications, welding consumables, anchors and steering gear, and a number of other machinery components. Unification is not, as some may suspect, a matter of picking the least common denominator. It is rather a refinement of the individual Rules, taking into account the collective experience of all the member societies. In individual cases, some members have been able to relax a little, while others have had to tighten up a bit.

In the early days of IACS, surveys after construction were regarded as an internal matter to be dealt with by each society in accordance with its own procedures. The increased interest on the part of the public and Administrations relative to ship safety and pollution has led us to look into survey requirements and practices. Much of this work has been done in conjunction with IMO, through IACS observers and with support from staff members of the IACS societies serving on national delegations. Thus, we provided substantial input to the IMO guidelines for the Mandatory Annual Survey and for the Intermediate Surveys for Older Tankers. While it is difficult to assess the influence IACS had on the outcome, the result, IMO Assembly Resolution A.413(XII) (Guidelines on Surveys and Inspections Under the Protocol of 1978), is compatible with classification surveys and procedures. The Mandatory Annual Survey is essentially a description of an annual survey for class as it is normally carried out by a competent surveyor. IACS has, in fact, adopted as class requirements those parts of the Resolution which pertain to class items.

The requirements on tanker surveys, with which many of this audience are familiar, were purely an IACS effort undertaken in recognition of the fact that the older, large tankers, which are still working, will need careful surveys, and in the belief that it is highly desirable that the societies take a common approach to these ships. Some owners would like us to examine their vessels very thoroughly with a view to helping them to plan maintenance for the life of the ship. Unfortunately there are a few who would really prefer that the surveyor just verify the name of the ship so it will be correct on his report.

The majority want the classification society to carry out enough examination to assess the vessel's condition properly and to insist on repairs necessary to maintain its fitness for service, at least until the next scheduled survey, to help them fulfill their obligation to maintain the vessel in a condition required to maintain its classification. The IACS requirements reflect what, in our collective judgment, is the extent of examination needed to serve that purpose. Feedback so far reveals that most owners appear to be satisfied with the new requirements. It will be some time, of course, before we can fully assess the effectiveness of the system. In the interim, we are monitoring the effects on structural condition of crude oil washing, inert gas, and segregated ballast.

Other surveys which have been considered by IACS are tailshafts, intervals for boiler surveys, and examination of the ship's bottom, together with related items such as rudder pintles and sea chests.

Several of the IACS requirements, which would seem to relate to new construction, have also proven beneficial in the field of ship maintenance. These are the requirements for hull steel, welding consumables, and anchors and chain. Because the societies' requirements for these items are uniform, surveyors can accept for repair or replacement materials which are properly documented as being in compliance with the requirements of any of the member societies, with a minimum of checking of the materials for himself. Thus, repair yards are spared the expense of maintaining inventories of materials complying with the requirements of each of the individual societies, and owners can be confident that suitable material is being used for repair of their ships anywhere in the world. Naturally, when material has to be ordered for extensive repairs, we expect that it will be ordered to the specific requirements of the society with which the ship is classed.

Looking ahead, IACS is taking an active interest in condition monitoring, which shows promise as a substitute for dismantling many machinery components for visual inspection.

Once the techniques have been sufficiently refined and proven, this is expected to be a development which all owners will welcome. A variation of condition monitoring has already been adopted by some societies for examination of tailshafts with oil lubricated bearings, where checking of weardown and analysis of the oil has let us extend considerably the intervals between tailshaft drawings.

Hull surveillance is another field in which IACS is taking an interest. At present, hull surveillance is directed toward measuring and recording loads imposed on the hull girder and in the slamming area over a period of time, but it is conceivable that the techniques could be used to assess the overall strength of the hull, perhaps more accurately than is now done by taking gaugings.

The fields of condition monitoring and hull surveillance offer considerable promise for improving our ability to assess the condition of ships and their machinery. In the opinion of the author, it will be a long time before dials,

gauges, and gadgets can replace the eyes, ears, and judgment of the experienced surveyor.

Experience is really the core for the classification requirements which, as embodied in the Rules, form a compendium of experience derived from years and years of ship service and the expertise of a worldwide body of individuals prominent in all phases of the marine industry. This is to my mind one of the great virtues of the major class society for there is no other organization with this reservoir of knowledge and empirical data and, I dare say, no other group that could provide a facsimile to the classification function.

Concerns have been expressed from time to time that the societies' requirements in one way or another are not stringent enough; a case in point here being the corrosion of structural members in tanks subject to crude oil washing, which is rather ironic in view of the purposes of crude oil washing. Such deterioration from accelerated corrosion may or may not, in fact, be the case. But you may rest assured that, through our resources and the input of industry, such as is evident here today, the classification societies are closely watching this and other potential problem matters for possible remedial action, such as revisions to the Rules and/or circulars of instruction.

For your information, the IACS Council in February 1991, authorized the formation of an IACS Quality Committee. This will lead to all IACS Societies being audited by an auditing group to be appointed by the IACS Council. While details are not complete at this time, I'm sure that members of the industry will welcome this action by IACS.

Let me leave you with the thought that it is you, the marine industry, who must determine standards; we, the societies, can only translate them into Rule requirements through interaction with you through our Technical Committees. We are always at your service and ready to cooperate in establishing and administering Rules that are considered a minimum necessary to provide for a vessel's structural and mechanical fitness when facing the rigors of the sea.