

SURVEY OF VESSELS

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The survey of vessels is carried out by qualified persons called marine surveyors.

Marine surveyors are mainly marine engineers and naval architects who spend their time in supervising constructions and repairs and carrying out hull and machinery surveys and surveys required by IMCO and other international agreements; also prepurchase, condition, damage and cargo surveys.

Surveyors are employed by:

- (a) classification societies;
- (b) Federal and State governments;
- (c) United Kingdom and United States salvage associations;
- (d) underwriters; and
- (e) private consultancies,

and in each case, carry out surveys required by these bodies.

Classification Societies and Surveys

Classification societies are the watchdogs of world shipbuilding and ship operating standards, concerning themselves with safety of life and safe operation of vessels at sea.

They were initially formed in the 1800s — Lloyds Register generally being regarded as the premier society. Lloyds in their present form were created in 1834.

The American Bureau of Shipping was incorporated in 1898 from the American Shipmasters' Association of 1862.

Det Norske Veritas was formed in 1864; Bureau Veritas in 1828; and Germanischer Lloyd in 1867.

The prime function of these societies, numbering some eight to ten, is the classification and survey of ships. Ships must be built and maintained to standards which are universally accepted and such standards, referred to as "rules", are promulgated by the classification societies. These rules provide naval architects and owners with standards for design and construction of marine vessels. The rules are based on decades of building and service experience and are continually updated, generally on a yearly basis.

After a vessel's construction, it is subject to a series of periodic surveys throughout its economic life and also to damage surveys where necessary.

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The rules of the societies outline these required surveys. A typical periodical survey requirement for a classed vessel, including internationally required loadline and safety surveys would be as follows:

Vessel: S.S. "Shining Light" of Panama R.P.
 Details: 40,000 ton bulk carrier with crew of 30 persons built at Kandoo Shipyard & Drydock, Japan in 1973.
 Classification Certificates: Classification of hull and equipment.
 Held: Classification of Machinery.
 International Certification Issued by Societies: Safety Construction Certificate (SOLAS 1960).
 Safety Equipment Certificate (SOLAS 1960).
 Safety Radio Telegraphy Certificate (SOLAS 1960).
 International Loadline Certificate.
 also:
 Cargo Gear Register.

The foregoing are the major certifications required; other minor certificates are issued periodically.

The survey life of the vessel will commence following the initial hand-over with full certification and then continue in this fashion:

Yearly Cycle: Annual inspection of hull and machinery and cargo gear.
 Annual loadline inspection.
 Safety radio telegraphy survey.
 Two Year Cycle: Drydocking survey.
 Main or auxiliary boiler survey.
 Safety equipment survey.
 Four Year Cycle: Year of grace survey for extension of special survey.
 Propeller shaft survey.
 Quadrennial cargo gear survey.
 Five Year Cycle: Completion of special surveys on hull and machinery.
 Loadline renewal survey.
 Safety construction renewal survey.

So, a typical five year cycle for the "Shining Light" would be as follows:

First Year 1974: Annual survey of hull and machinery.
 Annual loadline inspection.
 Annual cargo gear inspection.
 Safety radio survey.

Second Year 1975: Annual survey of hull and machinery.
 Annual loadline inspection.
 Annual cargo gear inspection.
 Safety radio survey.
 Main and auxiliary boiler survey.
 Drydocking survey.
 Safety equipment survey.
 Third Year 1976: Annual survey of hull and machinery.
 Annual loadline inspection.
 Annual cargo gear inspection.
 Safety radio survey.
 Fourth Year 1977: Annual survey of hull and machinery.
 Annual loadline inspection.
 Annual cargo gear inspection.
 Cargo gear quadrennial survey.
 Safety radio survey.
 Safety equipment survey.
 Main and auxiliary boiler surveys.
 Year of grace for special survey No. 1.
 Propeller shaft survey.
 Drydocking survey.
 Fifth Year 1978: Special survey No. 1 hull and machinery.
 Annual survey hull and machinery.
 Loadline renewal survey.
 Safety construction renewal.

There are variations on the list above, brought about by owners having a continuous survey on machinery or hull, the continuous survey being used to prevent lengthy layups for survey at the end of the cycle; however, the end results are similar. The vessel during this time would also be subject to damage surveys, loading surveys and condition surveys for charter.

The societies normally are represented in all seagoing nations and particularly in areas where major ship repairs or construction are carried out, by exclusive surveyors — employed full time by the societies. In areas not covered by exclusive surveyors, societies normally employ professional surveyors on a part-time basis. These people are termed "non exclusive" surveyors.

It therefore becomes possible for one person or one company to be a representative for all major societies without their own representative in a local area. The non-exclusive surveyors employed by the societies are generally marine engineers with a percentage of master mariners and naval architects. The basis for this career, then, is (and hopefully will remain) the practical engineer.

Responsibilities of Societies

The acceptance of responsibilities by the societies is defined in the disclaimer attached to the bottom of each sheet of reports and certificates; the disclaimer is approximately the same in each instance. It is impressed on surveyors that it is imperative that the owner's agreement is given, in writing, to accept the societies' stipulations. Initially, this is accomplished when a request for classification is completed by an owner stating his intention to class his vessel with a society. Succeeding surveys are then carried out at the owner's or owner's representative's request, or in some other agreed manner.

A typical disclaimer is appended; this particular one is the American Bureau of Shipping appendage and appears on class and damage reports. Similar statements are on Det Norske Veritas, Bureau Veritas and other society reports.

Whether the type of application and wording of disclaimers affords the society or surveyor, particularly non-exclusive surveyors, sufficient protection from ship owners taking recourse at law for allegedly unwarranted decisions, is a moot point and one on which there was not time to collate information for this meeting.

As a final word on societies, one of their major functions is to carry out a continuous research and development role with regard to new vessels and types of vessels, particularly in the last twenty years, with the massive increase in vessel size — tankers from 50 to 500,000 tonnes, for instance and the increase in offshore oil drilling and production activity and the corresponding technology involved. The funding for these programmes is from fees charged for services, the societies being totally self sufficient and, in most cases, non-profit making.

Commonwealth and State Government Surveys

The area of survey responsibilities covered by the Commonwealth Government is extensive and virtually unlimited under the government's *Navigation Act* power.

Other of our panelists today can speak with authority on the subject of State Government surveys with the Department of Harbours and Marine in Queensland and I would not try to pre-empt him; however, as I see it, the government bodies, both State and Australian, are responsible for the administration of the respective *Navigation Acts* and the enforcement of regulations under the acts.

In the case of the Australian Government the Department of Transport administers the *Navigation Act*, which covers a variety of areas in subjects connected with ships and shipping. Australia, in line with other maritime nations, is signatory to various international agreements formulated by the Intergovernmental Maritime Consultative Organisation (IMCO) conferences, involving loadline, safety equipment, construction, radio and collision prevention, and carries out surveys under the requirement of

these agreements on Australian flag vessels. The Department, as it is commonly called, sets the standards for construction materials and equipment used on Australian operated vessels and, as well, examines and sets standards for the examination of seamen on vessels under its jurisdiction.

Officers of the Department are also empowered under the *Navigation Act* to conduct surveys of hull, machinery or equipment on *any* vessel, Australian or foreign, in an Australian port. The most usual problems in this regard are associated with faulty cargo gear and safety equipment.

Allied to this, we have the officers employed by the State Governments, who operate under the authority of the State's *Navigation Acts*.

The State's responsibilities parallel the Department's as regards survey of vessels and education and examination of seamen. However, their operations are generally applied to smaller vessels such as trawlers, charter craft, ferries and barges and the scope of their surveys and requirements is generally scaled down to suit the requirements of these vessels.

The various State bodies throughout Australia have, since 1971, been endeavouring to piece together a uniform set of requirements for the construction, operation and manning of vessels under their jurisdiction. This action was brought about by the realisation that the Commonwealth had a constitutional inability to apply the *Navigation Act* to certain vessels. The loss of life and vessels, in particular accidents in the 1960s, highlighted the problem. The Australian Transport Advisory Council (ATAC) agreed in 1968 to establish a working committee of Commonwealth and State representatives to examine the problem and draft proposals for a scheme to be used nationwide.

From this, the Marine and Ports Council of Australia, a body comprising Commonwealth and State ministers responsible for ports and marine affairs, has adopted a code titled "Uniform Shipping Laws Code", the requirements of which have been drawn up by the association of Australian port and marine authorities, which since its formation in August 1971 as the instrument set up by ATAC, has been formulating the Code's requirements using five technical groups working in different areas. The provisions of the Code adopted by the Marine and Ports Council do not have the force of law, except to the extent that they have been incorporated in Commonwealth or State legislation. The general adoption of the Code should be Australia-wide by late 1981, and if that is the case, will remove the anomalies that have bedevilled the owners of commercial craft in recent years.

Insurance Industry and Surveys

It is reported that the origin of marine insurance can be attributed to certain Mediterranean countries during the period 900 to 700 B.C. when, apparently, certain maritime provisions allied to today's marine laws were supported by various trading nations, and that the actual practice of marine insurance can be traced into European commercial centres in the

twelfth or thirteenth century, this period having a direct link with today's industry. So, it follows that, presumably, a variation on today's surveyor was necessarily active possibly in the period B.C. The involvement of surveyors in those early days, if known, would make an interesting contrast to today where, as independent, self-employed surveyors, we are involved in surveys in various areas, on vessels and cargo carried by vessels, guarding the underwriters' interest by giving an unbiased opinion of cause and effect that fulfils the requirements of underwriters. These survey areas are, in general:

- (a) valuation surveys;
- (b) condition surveys;
- (c) damage surveys;
- (d) towage surveys; and
- (e) cargo surveys.

(a) Valuations are essential if vessels, particularly commercial craft, are to be maintained satisfactorily insured — neither over- nor under-insured. As an indication, a "local" example best illustrates what is meant:

Market values in the past three years for commercial craft such as trawlers and particularly in Queensland, have tended to escalate rapidly, and yearly valuations have been necessary to maintain some sense of equilibrium in valuation and to keep the market value (insured value) up to date with current trends.

Just recently, following a reportedly disastrous prawn fishing season when overseas markets have found alternative suppliers, the values of some vessels has fallen appreciably and, of other existing vessels, stabilised.

While inflation still affects the new vessel values which are rising, the situation becomes confused and is not helped by the presence of over-capitalised vessels, particularly those of great age.

A fringe benefit of these valuations is that each vessel has a substantial inventory of gear and a written appreciation of the overall condition and this becomes easy reference for the underwriters or attending surveyor in case of damage occurring or of a salvage operation being required.

(b) Condition surveys are generally performed concurrently with valuation on smaller vessels such as trawlers and, for the underwriters' benefit, a list of defects affecting "seaworthiness" is attached to valuations. Condition surveys are carried out for charterers of vessels or owners of chartered vessels to ensure that the contract conditions of the charter are being maintained and, consequently, that the insurance cover of the vessel is not at risk. To achieve, as far as is possible, a common denominator in the description applied to the various areas of condition surveys, we apply a standard list of defined wording — "very good", "good", "satis-

factory" and "unsatisfactory" being the most usual and in a covering letter to the principal, define the terminology — for instance:

- "Very Good" A condition equivalent to new or "improved from new" condition.
- "Good" A condition maintained "as new".
- "Satisfactory" A condition indicating wear and tear commensurate with the vessel's age.
- "Unsatisfactory" A condition indicating wear and tear with immediate repair necessary.

(c) Damage surveys on both hull and machinery are carried out on behalf of underwriters; in general, the surveyor is to report to his principal on the reason for, the extent of and the nature of, and the estimated cost of repair of damage. The information forwarded normally includes the proposed repairer and repairs and information as to whether the repairs are permanent or temporary. If required, the surveyor will follow through the repairs and then recommend payment of accounts forwarded by the owner or on account of the owner.

Depending on the wishes of the underwriter and the type of claim, the surveyor may be asked to only submit a basic report to the underwriters or principal and then leave the end result to the owner and underwriters. In other cases, the surveyor will virtually act as a third party, assist the owner in appointing repairers and arrange with the owner an agreed method of repair then approving repair accounts forwarded by owners to underwriters. At times, the surveyor also acts as salvage advisor, particularly in the case of small vessels, when the owner normally does not have expertise or necessary information required to satisfactorily salvage his vessel and, hopefully, both the owner's vessel and the underwriters' money can be saved.

(d) Towage surveys are carried out generally at the request of underwriters and involve the surveyor in checking all aspects of the tow and towing vessel from suitability for the tow to the amount of beer in the icebox!

The towed vessel is examined to ensure its watertight integrity and the provisions for towing arrangements, access to the vessel, compliance with navigational requirements and securing of the vessel and cargo are all determined.

The towing vessel is examined for towing arrangements, towing equipment, spare equipment, fuel provision and crewing arrangements and a list of restrictions or requirements considered essential for safe passage is normally given to the tow master and arrangements made for a regular radio progress report to be received.

The complete tow is normally sighted on departure to ensure all connections and fittings are as planned and are operable.

(e) **Cargo surveys** have been the domain of the master mariner surveyor for many years and are surveys carried out at owner, charterer or underwriters' request and, in the broad context, can cover liquid surveys or tank loading, bulk loading inspection, including coal and grain, damaged cargo surveys and loading surveys. The surveyor is required to determine, as in any other damage investigation, the cause and to report on the conditions and pertinent facts associated with or, in the surveyor's opinion, affecting the claim.

Salvage Associations

The Salvage Association, London based, and United States Salvage Association are the two associations we are most acquainted with. They are independent organisations formed by underwriters and insurance companies to give a world-wide service and representation for the interests of its clients in the matter of damage claims, salvage and prevention of fraud. The associations will act not only for the members of the body but as independent organisations, can act for shipowners, P & I clubs, average adjusters, solicitors on behalf of clients, government departments and others.

They appoint surveyors in outports through people such as Lloyds agents, issue their own instructions and advice to surveyors and generally act with an impartial attitude in the matter of claims.

Private Consultancies

In Australia, as opposed to overseas, consultancies are generally only small concerns operating locally on a State basis. A large private survey consultancy business in Australia today would likely have a maximum of three surveyors full time; partnerships with two members seem to be the most favoured and practical arrangement from a business point of view.

As previously outlined, the people that inhabit consultancies have the basic qualifications of the government and classification surveyors and are usually at least as well qualified to perform the duties of either as the people employed by these organisations.

Surveyors in private practice have the obvious advantage of being involved more fully in the industry than those restricted by the terms of their employment such as State or Commonwealth or classification-employed surveyors. The private surveyor associated with classification societies, for instance, is authorised to carry out all internationally required surveys and to issue certificates as directed by the particular society, the same function being performed by Commonwealth-employed surveyors or classification exclusive surveyors. In addition, the surveyor in private practice, if associated with more than a single society, has the advantage of being supplied regularly from all parts of the maritime globe with updated information and requirements for the various societies.

As previously explained, the surveyor in a private capacity is employed by societies, underwriters, salvage associations and private persons to

carry out survey functions. It is also possible to ally to the list above, the pure consultant work that can involve the surveyor in the planning side of fleet maintenance, or powerhouse planning, or wharfage arrangements and so on.

Qualifications of Surveyors

The basis of the surveyor's qualification, whether a private surveyor, government or classification surveyor is a practical one. That is, the application of practical experience gained, generally at sea, whether as a master mariner or engineer.

As previously mentioned, surveyors for classification societies, in this part of the world and generally throughout, have experience as sea-going engineers. The societies do not normally employ master mariners on a full-time basis, though the masters do have a fair representation as non-exclusive surveyors. Obviously, the practitioners of the science of engineering have that capability which is regarded as the criteria for the job.

Private or consulting surveyors are a combination of both engineers and master mariners, usually with a first class engineer or foreign-going master's qualification or some other qualification allied to the field — naval architecture or mechanical engineering.

Australian Government surveyors normally have at least the previously mentioned qualifications and most have the additional qualification of "extra" — be it extra first class engineer, or extra master. These additional qualifications have been required over the years, traditionally, so that these organisations can carry out the examination and education of seamen. This area, until recently, has been one of the primary functions of the Department of Transport Surveyor. Recent changes have removed the bulk of the responsibility for examination to approved colleges, with the exception of the dreaded "oral" examination, a shattering experience for many hopefuls — this still being carried out by specially designated and trained examiners.

The formation of the Maritime College in Tasmania heralds a complete restructuring of the Australian education and examination system from deck boy to master and the possible end of the old institutional imperial validity of certificates issued in Commonwealth countries.

State Government surveyors are usually either engineers with a first class certificate or shipwright surveyors with a trade background. The use of surveyors with a trade background occurs because the State surveyors are more usually involved with small craft — wooden trawlers, charter vessels, coasters — where the level of qualification required is not as high as for the more heady requirements of the Australian Government and the aspects of safety and construction administered by the State is more practical and basic.

There are no statutory requirements for registration of marine surveyors outside of the requirements for employment of surveyors by State and

Australian Governments and some outmoded requirements in New South Wales and Western Australia, which obviously means that anybody at all with the desire, can declare that he is a marine surveyor and practise as such.

To date, the business of being a marine surveyor has managed to be self-regulating in that, with few exceptions, people in organisations that employ marine surveyors require a person with a proven background in the field: one that can appear in a court of law, if required, as an acknowledged expert; the other limiting factor being the problems associated with convincing people to employ you when you don't have what is required.

There is an obvious need to have some form of regulation, be it State by State through legislation, or an Australia-wide institute of surveyors and there has been some talk and other moves in the past twelve months within the industry itself with a view to arranging some form of regulation. The basic problem with the licensing of surveyors is that there is a great difficulty in deciding what will be the basic qualification, as "survey" as a word covers work done by class and Government surveyors to work done by boatbuilders — all carrying out a necessary function in a capable manner within the area of their own interest, knowledge and influence.

Summary

In the introduction to this paper, it was pointed out that the paper was to be a surveyor's view of surveys.

In conclusion, it is considered that the full scope of survey work and surveyor's involvement would take a much more expansive paper than this to cover fully.

The business of marine surveys is a complex one and generally little understood outside of the shipping industry and those people directly involved.

So, if this paper has been able to enlighten participants in this conference, those who are removed from direct contact with the industry and to further enlighten others present from various parts of the industry, it has fulfilled the purpose intended for it.