CLASSIFICATION SOCIETY CERTIFICATES
THEIR FUNCTION AND EFFECT

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INTRODUCTION

In order to understand the role of the Classification Societies within the Maritime Industry, I will briefly look at the origins and history of Classification. I will continue by explaining about the Rules, what they cover and how they are implemented. Next I will point out the dual role of the Classification Society, on one hand working to its own set of Rules and on the other hand being authorized by Maritime Authorities to work on their behalf to nationally or internationally adopted Codes or Regulations. I will quickly go through the most important certificates issued by the Society and take a look at the survey system implemented, in order to assure compliance with the Rules. With regard to inspections carried out on behalf of National Administrations, it is usual that the Society only issues short term certificates, the full term certificates being issued by the Administration. I will round off with some information on marine casualties and the work being done by the Classification Societies to improve on the safety of seagoing ships.

BRIEF HISTORY

The first Classification Society, Lloyd's Register of Shipping, was formed in 1760 in response to the needs of underwriters and cargo-owners. Its task was to develop a system of Classification of merchant ships with respect to the technical condition of hull, rigging and equipment. This later led to the development of special Rules which defined a minimum safety standard according to which ships should be built and a set of survey procedures to ensure that the ship is being maintained in accordance with the Rules. Those Rules were adopted and recognised by all parties in the Maritime Industry, including owners, yards, underwriters, cargo-owners and National Marine Administrations.

New Classification Societies were formed in rapid succession in the major maritime nations. In Norway, Det norske Veritas was founded in 1864 to serve the needs of the rapidly growing Norwegian merchant fleet. The nine Classification Societies which can be called truly international have formed the International Association of Classification Societies. The primary objective of this Association is to work towards unified Rules and practices. It also issues Guidance Notes to owners on various subjects related to the safety of merchant ships.

Det norske Veritas, although originally basically a Norwegian Society, is today one of the major international Classification Societies. There are over 250 survey stations in 100 countries and the present share of the world merchant fleet is close to 12 per cent.

THE RULES

All Classification Societies (within the context of this paper, the term Classification Society refers to the members of the IACS in contrast to the purely national Societies, operating in countries with a more or less protected maritime industry), develop and issue technical Rules for the construction and maintenance of seagoing merchant ships.

As I am most familiar with the Rules of Det norske Veritas, all specific quotes and examples will be taken from these Rules. However, the Rules of the other Societies are very similar.

The Classification Rules define acceptance criteria for the design, construction and testing of steel ships. When a vessel is assigned a special class, it implies that the Society:

- Has been satisfied that the vessel meets the Rule requirements for a particular Class.

- Will, through a system of surveys and recommendations, seek to ensure that the requirements stipulated for retention of Class are complied with.

The Rules for main Class stipulate requirements for the hull, machinery, installations and equipment with respect to strength and performance of the following main functions:

- Ship Hull
- Propulsion
- Steering
- Fire Detection and Extinction
- Drainage and Bilge Pumping
- Ballasting
- Anchoring and Mooring

Classification is based on the assumption that safety equipment requirements outside the scope of work as previously defined, are enforced by national administrations. Such requirements may pertain to life-saving equipment, radio communication equipment etc.

The Rules do not specify any requirements to the operating personnel or to operating procedures. Instead, it is assumed that the vessel with machinery installations and equipment will be competently handled and maintained. In particular, this applies to the stowage of cargo, the distribution of ballast and bunkers, and the speed and navigation in heavy weather.

All vessels found to satisfy the requirements of the Rules will be given a main Class consisting of a construction symbol, a main character of Class, and, where applicable a service restriction e.g. + 1A1 R45.

- the Maltese Cross indicates that the vessel has been built under the supervision of one of the Society's surveyors.

- 1A1 is the Main Character of Class

- R45 is a service Restriction Notation

There are a number of additional Class Notations indicating the type of ship or a special service.

Examples are:

- Tanker for oil

- ICE 1A

- Passenger Ship etc.

In addition, there are various equipment and system notations indicating special features of the vessel.

- Periodically unattended machinery space (EO)

- Helicopter deck (HELDK)

- Inert gas plant (inert)

Thus the complete Class notation of a vessel could be

+ 1A1 Tanker for Oil, EO, ICE1A, inert.

IMPLEMENTATION OF THE RULES

The classification procedure is initiated by a request for Classification of a vessel in writing from the builder. Before construction is started, the builders are to demonstrate their capability to carry out fabrication of adequate quality in accordance with the Rules. The builder shall submit to the local survey station before construction commences, plans, specifications, technical descriptions and data for approval. The approval is done either by the plan approval centre in Head Office or by a local authorized plan approval unit. The approved plans with amendments and recommendations are used as a basis for construction of the vessel and are also used by the local attending surveyor, when inspecting the progress at the yard.

It is important to remember that the Classification Rules should be treated as minimum requirements to obtain an acceptable level of operational and functional safety. It may be that owner's requirements or builder's standards in some instances lead to a higher level of safety than specified in the Rules.

It should be noted that the Rules also cover material, equipment and machinery. Thus steel plates are subject to survey and certification at the steel mill, important equipment and machinery will be surveyed, tested and certified at the manufacturer's shop. The surveyor in charge of the newbuilding will check that all material and components are delivered with the relevant Classification Society Certificate as applicable.

When the surveyor has satisfied himself that the requirements corresponding to the Class in question have been met, he will document the completion of the building supervision by issuing a Certificate of Interim Class. This Certificate is valid until the Society has confirmed the Class and issued the Classification Certificate.

In order for a vessel to retain its Class with the Society, the owners have the following obligations according to the Rules:

- Submit complete and correct information on conditions concerning the vessel and its use, which they should realize would be of significance to the Society for an assessment of the vessel and retention of the Class.

- Subject the vessel to the prescribed periodical surveys, surveys of damages, repairs, conversions and alterations.

- Carry out specific recommendations issued by the Society in accordance with the Rule requirements within the specified time.

The Rules specify in detail the periodical surveys which the vessel should undergo, and to what extent tanks, structures, machinery etc. should be inspected and tested during each survey. These requirements naturally get more stringent with the increasing age of the ship.

CERTIFICATES OF CLASS

I have already briefly mentioned the Classification Certificate which is issued by the Society upon satisfactory completion of a newbuilding to the Rules of the Society. This certificate is accompanied by an Appendix, where special features of the specific vessel are commented upon. The Appendix may contain instructions on limitations of the loading and unloading of the ship, it may list an array of main engine speeds which should be avoided, due to induced harmful vibrations etc. The Appendix to the Classification Certificate is a very important document for the safe operation of the vessel.

The Classification Certificate is valid for 4 years and may be extended by 1 year, subject to a satisfactory sighting survey. The extent of the sighting survey depends on the age, type and general condition of the ship. It usually involves thickness measurements of the decks and hull with internals to determine any corrosion of the structure. It also involves internal inspection of some tanks and holds as applicable. The validity of the Classification Certificate is also dependent on the satisfactory intermediate surveys and inspections. These include an Annual General Survey, where the general condition of the vessel and her safety systems are surveyed, a bottom survey, usually performed in a drydock, to determine the condition of the underwater hull with appendages, rudder, propeller, seachests etc. and any other periodical survey warranted by the vessel's class notations. Each periodical survey will be documented on a survey report, which will be forwarded to the owner and to the central files of the Society.

If, during a survey, something is found not to comply with the Rules, the attending surveyor will issue a recommendation for the rectification of the deficiency. Depending upon the nature and importance of the deficiency, he will specify a time limit when the deficiency shall be rectified.

If the surveyor finds a deficiency of such a nature that he considers it unsafe for the vessel to proceed on its voyage, he may recommend withdrawal of Class, unless the deficiency is put in order prior to vessel's departure. The class can be withdrawn for non-compliance with the Rules, or at the request of the owners.

SURVEYS ON BEHALF OF NATIONAL ADMINISTRATIONS

More than a hundred Governments around the world have authorized the Classification Societies to carry out various surveys on their behalf. The most common authorizations are in connection with Load Lines, SOLAS, MARPOL, and Tonnage, as well as IMO Codes on the transportation of dangerous goods. In addition to survey work based on the above Codes and Conventions, the authorizations may also include statutory work based on National Regulations and even design approval on behalf of the Administration. Usually the authorization includes the issuing of either short term certificates or full term certificates. In the former case, the Administration would issue the full term certificate based on the recommendation from the Classification Society.

The Classification Societies are in a unique position to undertake worldwide statutory surveillance of ships based on standards imposed in the countries where a ship is expected to trade. This dual function of Classification and statutory work has the great advantage of one body being responsible for full technical surveillance of the vessel, both during its construction and throughout its lifetime.

In Australia, Det norske Veritas is authorized by the Department of Transport and Communications to do Load Line surveys and issue full term Load Line Certificates to Australian ships on their behalf. The authorization also covers surveys related to the Safety Construction Certificate and the issuing of a short term certificate. It is understood that the Department presently is investigating various means of streamlining the survey and inspection procedures. In New Zealand, the present status is more or less the same as in Australia, but there the Administration has declared that, on certain conditions, the established Classification Societies may undertake some additional survey work on their behalf. This decision has been made to minimize duplication of work by the Administration and the Classification Society.

THE TRADING CERTIFICATES

It is generally accepted by all parties in the Maritime Industry, that in order for a vessel to be able to trade, all her trading certificates shall be valid for the duration of the sea voyage. There are several categories of certificates. I have mentioned the Classification Certificate and the various statutory certificates. In general, the statutory certificates such as the Load Line Certificate, Safety Construction Certificate, Safety Equipment Certificate and Safety Radio Certificate cease to be valid, if the validity of the Classification Certificate is terminated. Likewise the insurance cover for vessel and cargo ceases to be valid if the Classification Certificate is expired or invalidated.

There are other certificates which do not necessarily affect the vessel's ability to proceed with its voyage, but may affect its ability to enter ports or load cargoes. Examples of these certificates are Certificates for the Carriage of Dangerous Goods according to the various IMO Codes, Deratting Certificate etc. The validity of these is not affected by the expiration of the Classification Certificate, but they are nevertheless, essential for the satisfactory trading of the ship.

A Classification Society will not disclose technical information, drawings or survey reports to any person other than the owner of the vessel or those having been given the authority to receive information by legislation, court decision or written declaration from the owner. Information related to the classification of a vessel may be disclosed by the Society upon request by the Governmental Authorities either of the Flag State, whose certification is based on the classification, or in certain circumstances of a Port State acting within the scope of Port State Control Procedures established by IMO.

MARINE CASUALTY STATISTICS

In later years, there have occurred some major marine casualties which have stirred a rather heated discussion within the industry about the role of the various organizations involved in the work for Marine Safety. The Classification Societies have been criticized for allowing "substandard" and unsafe vessels to proceed with class certificates. It is not my intention to provoke that discussion right now, but I would like to show some slides depicting various aspects on the trend of marine casualties.

The first slide shows the total annual losses from 1971 to 1987. When trying to find a trend, it is very tempting to only look at the losses from 1979 onwards. However, when looking at the total timespan, it would seem, that in terms of gross tons lost, the curve is increasing.

The next slide shows the average loss ratio for some of the major flag states for the years 1978-1982. The ratio is a weighted number, taking into account the size of the fleet under each particular flag. I will refrain from further comments on this graph, as it speaks for itself.

The following two slides are taken from statistics compiled from the fleet Classed with Det norske Veritas. The dry cargo vessels, usually rather small, as can be seen from the tonnage graph, are most prone to accidents. Tankers are rather safe, even if their share of the gross tonnage is significant, the number of total losses is comparatively small. The second graph from our own statistics shows the distribution of the cause of the total losses. Fire and explosion is dominating both graphs.

It may be deducted that the small dry cargo ships are most susceptible to foundering when comparing this graph with the preceding one.

My last slide is taken from statistics published by the Norwegian Shipowner's Association. It shows that the majority of all maritime accidents are due to human failure. Traditionally the Classification Societies have been involved only in the technical safety of ships, perhaps also to some extent in the procedural safety sector. It would seem though, that it would pay to look at the training of the personnel, in order to achieve increased safety.

ASSIGNMENT OF CLASS MEANS THAT THE CLASSIFICATION SOCIETY

- HAS BEEN SATISFIED THAT THE VESSEL MEETS THE RULE REQUIREMENTS FOR A PARTICULAR CLASS.
- WILL, THROUGH A SYSTEM OF SURVEYS AND RECOMMENDATIONS, SEEK TO ENSURE THAT THE REQUIREMENTS STIPULATED FOR RETENTION OF CLASS ARE COMPLIED WITH.

DET NORSKE VERITAS

THE RULES FOR MAIN CLASS STIPULATE REQUIREMENTS WITH RESPECT TO STRENGTH AND PERFORMANCE OF:

- SHIP HULL
- POWER GENERATION
- PROPULSION
- STEERING
- FIRE DETECTION AND EXTINCTION
- DRAINAGE AND BILGE PUMPING
- BALLASTING
- ANCHORING AND MOORING

DET NORSKE VERITAS

CLASS NOTATIONS

MAIN CLASS : ✠ 1 A 1

✠ : VESSEL BUILT UNDER SURVEY

1 A 1 : MAIN CHARACTER OF CLASS

SERVICE RESTRICTIONS : - R 45

- R 280 E.T.C.

ADDITIONAL CLASS : - TANKER FOR OIL

- ICE 1 A

- PASSENGER SHIP E.T.C.

NOTATIONS : - HELDEK

- inert

- EO E.T.C.

DET NORSKE VERITAS

ASSIGNMENT OF CLASS

REQUEST FOR CLASSIFICATION

PLAN APPROVAL

SURVEY

INTERIM CERTIFICATE OF CLASS

CLASSIFICATION CERTIFICATE

ENTRY INTO CLASS REGISTER

RETENTION OF CLASS

TERMINATION OF CLASS

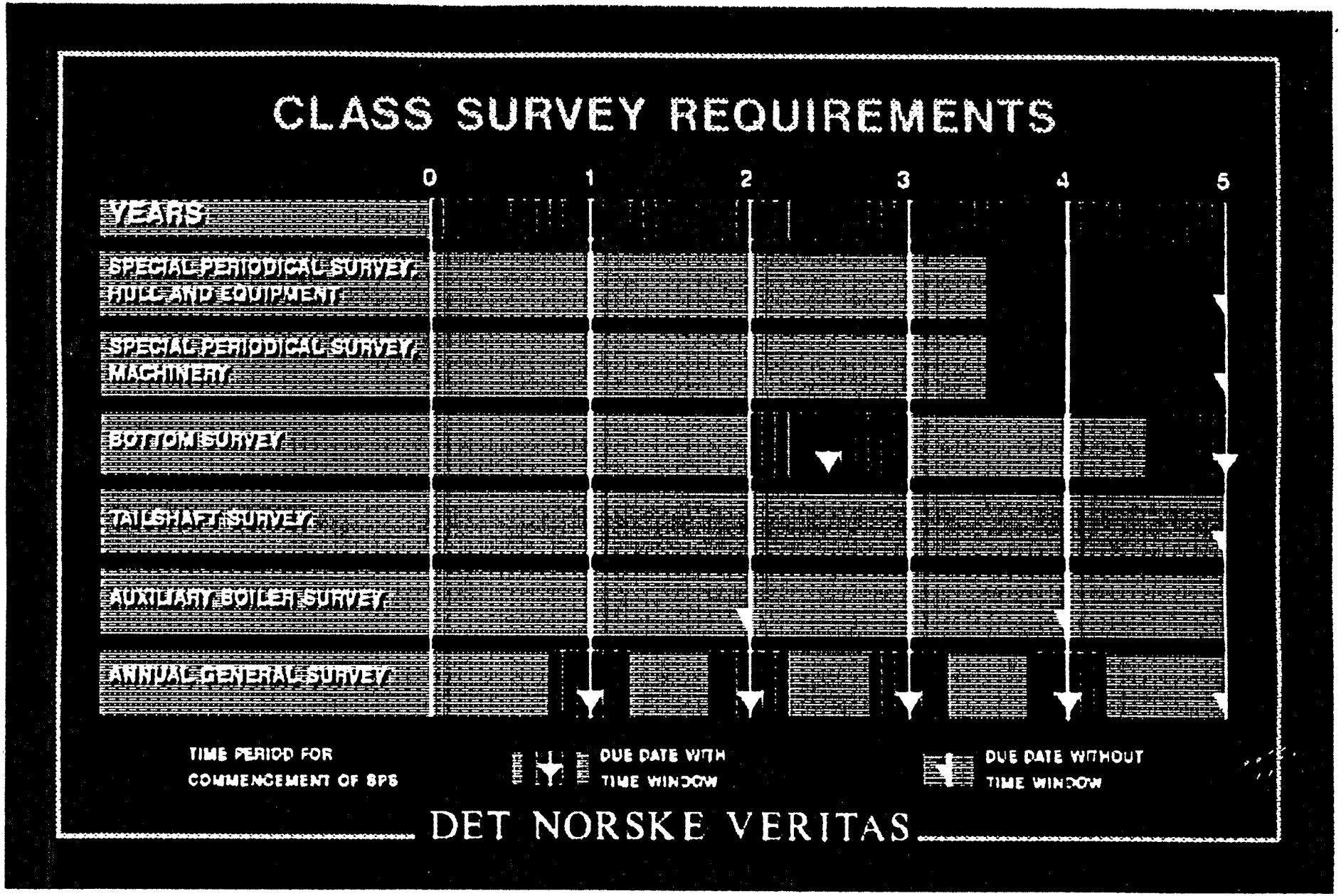
DET NORSKE VERITAS

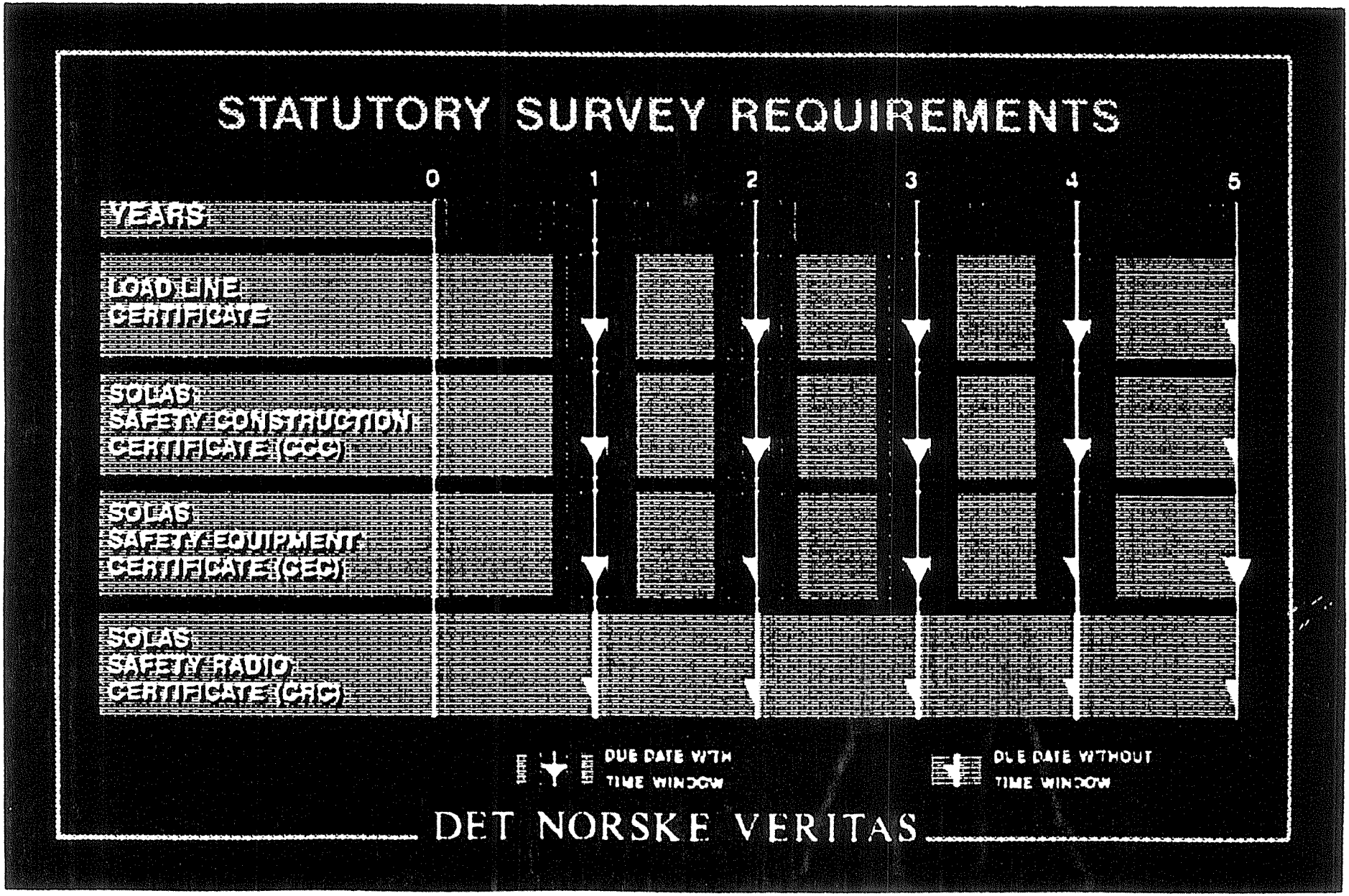
RETENTION OF CLASS

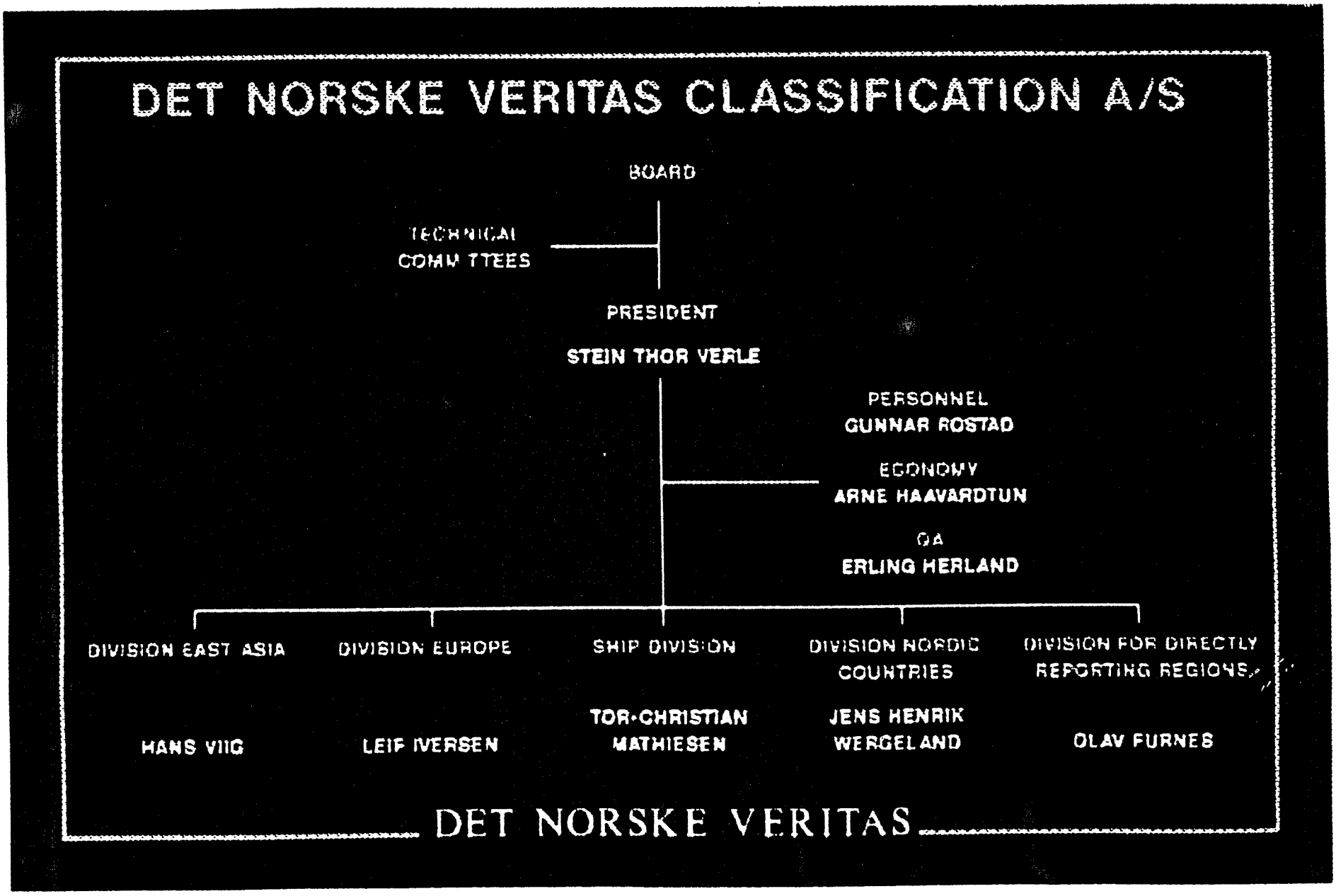
OWNER'S OBLIGATIONS

- SUBMIT COMPLETE AND CORRECT INFORMATION ON CONDITIONS CONCERNING THE VESSEL AND ITS USE, WHICH THEY SHOULD REALIZE WOULD BE OF SIGNIFICANCE TO THE SOCIETY FOR AN ASSESSMENT OF THE VESSEL AND CLASS RETENTION.
- SUBJECT THE VESSEL TO THE PRESCRIBED PERIODICAL SURVEYS, DAMAGE SURVEYS, REPAIRS, CONVERSIONS AND ALTERATIONS.
- CARRY OUT SPECIFIC RECOMMENDATIONS ISSUED BY THE THE SOCIETY IN ACCORDANCE WITH THE RULE REQUIREMENTS WITHIN THE SPECIFIED TIME.

DET NORSKE VERITAS


CLASS SURVEY REQUIREMENTS
0
1
2
3
4
5
YEARS
SPECIAL PERIODICAL SURVEY HULL AND EQUIPMENT
SPECIAL PERIODICAL SURVEY MACHINERY
BOTTOM SURVEY
TAILSHAFT SURVEY
AUXILIARY BOILER SURVEY
ANNUAL GENERAL SURVEY
TIME PERIOD FOR COMMENCEMENT OF SPS
DUE DATE WITH TIME WINDOW
DUE DATE WITHOUT TIME WINDOW
DET NORSKE VERITAS

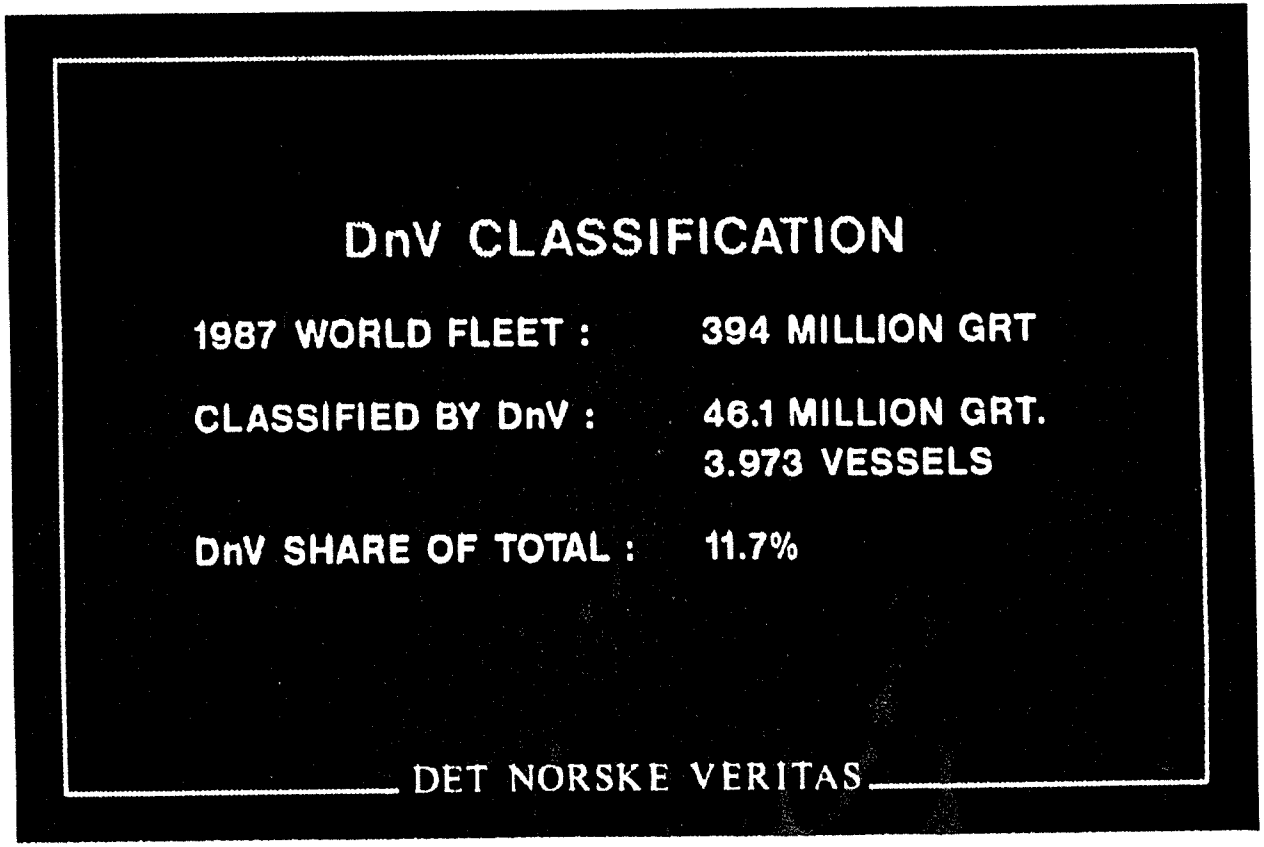

STATUTORY SURVEY REQUIREMENTS
0
1
2
3
4
5
YEARS
LOAD LINE CERTIFICATE
SOLAS SAFETY CONSTRUCTION CERTIFICATE (CCC)
SOLAS SAFETY EQUIPMENT CERTIFICATE (CEC)
SOLAS SAFETY RADIO CERTIFICATE (CRC)
DUE DATE WITH TIME WINDOW
DUE DATE WITHOUT TIME WINDOW
DET NORSKE VERITAS

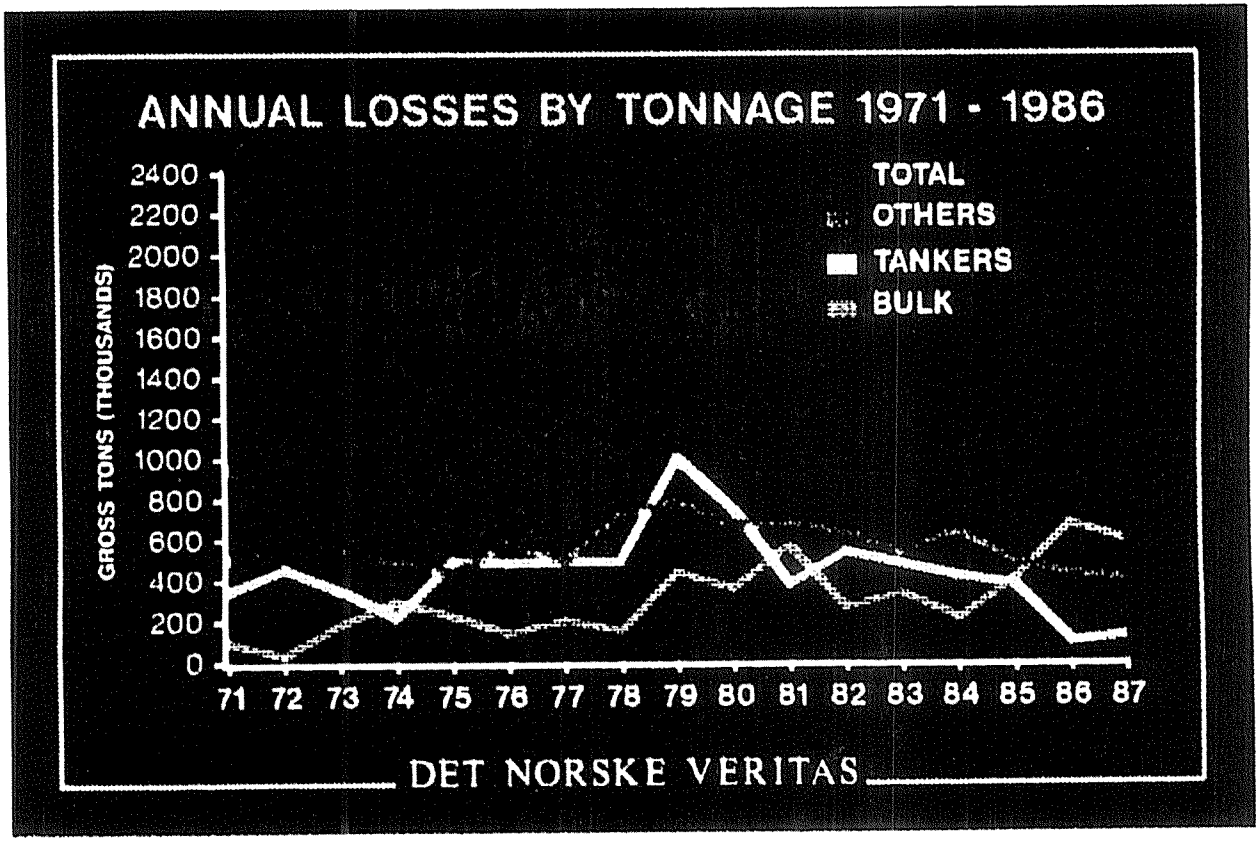

DET NORSKE VERITAS CLASSIFICATION A/S
BOARD
TECHNICAL COMMITTEES
PRESIDENT
STEIN THOR VERLE
PERSONNEL
GUNNAR ROSTAD
ECONOMY
ARNE HAAVARDTUN
QA
ERLING HERLAND
DIVISION EAST ASIA
HANS VIIG
DIVISION EUROPE
LEIF IVERSEN
SHIP DIVISION
TOR-CHRISTIAN MATHIESEN
DIVISION NORDIC COUNTRIES
JENS HENRIK WERGELAND
DIVISION FOR DIRECTLY REPORTING REGIONS
OLAV FURNES
DET NORSKE VERITAS

DnV CLASSIFICATION

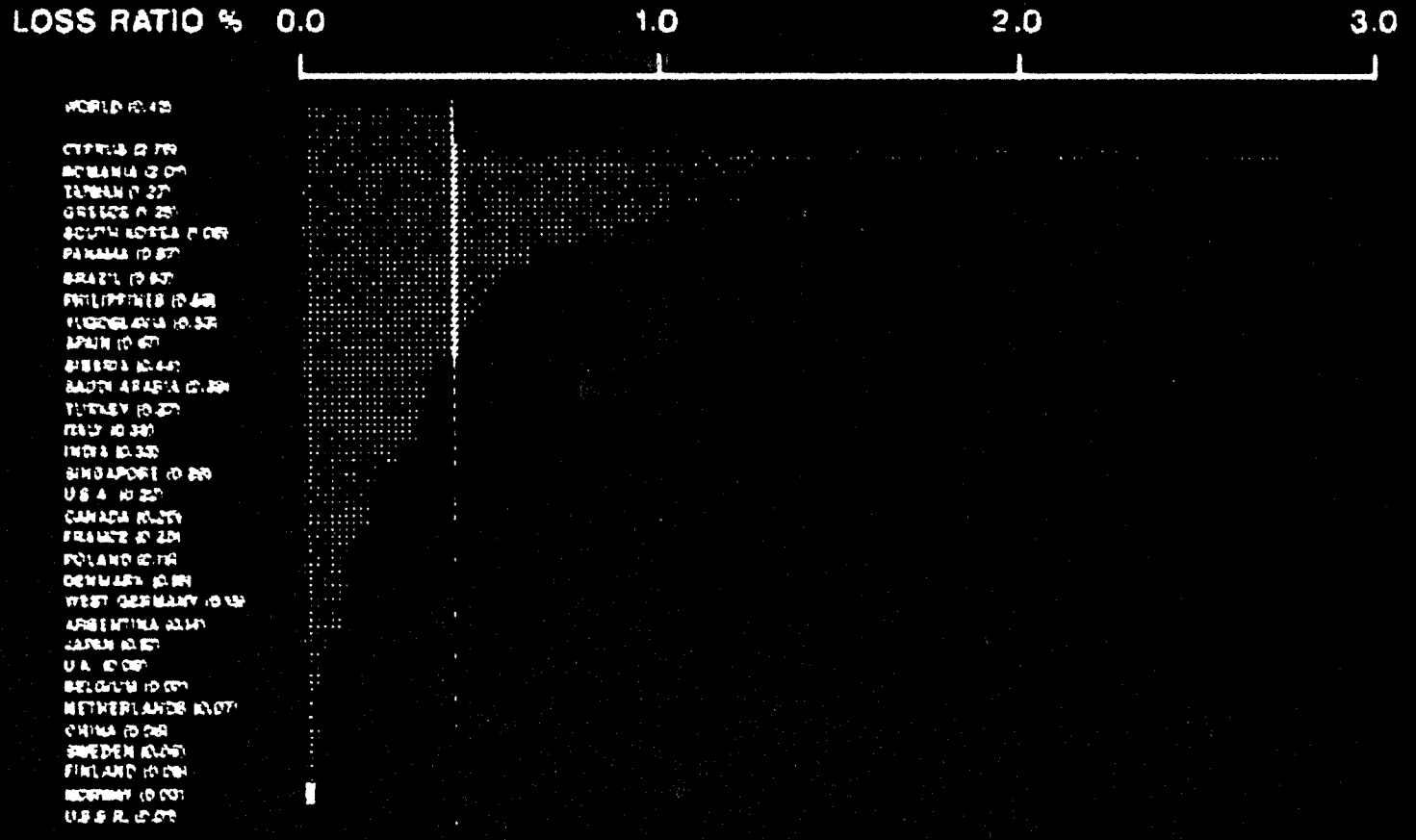
MOBILE OFFSHORE UNITS :	20%
EUROPEAN OWNED MOU'S :	53%
SEMISUB'S WORLDWIDE :	50%
EUROPEAN OWNED SEMISUB'S :	76%

DET NORSKE VERITAS


DnV CLASSIFICATION
1987 WORLD FLEET : 394 MILLION GRT
CLASSIFIED BY DnV : 46.1 MILLION GRT.
3.973 VESSELS
DnV SHARE OF TOTAL : 11.7%
DET NORSKE VERITAS

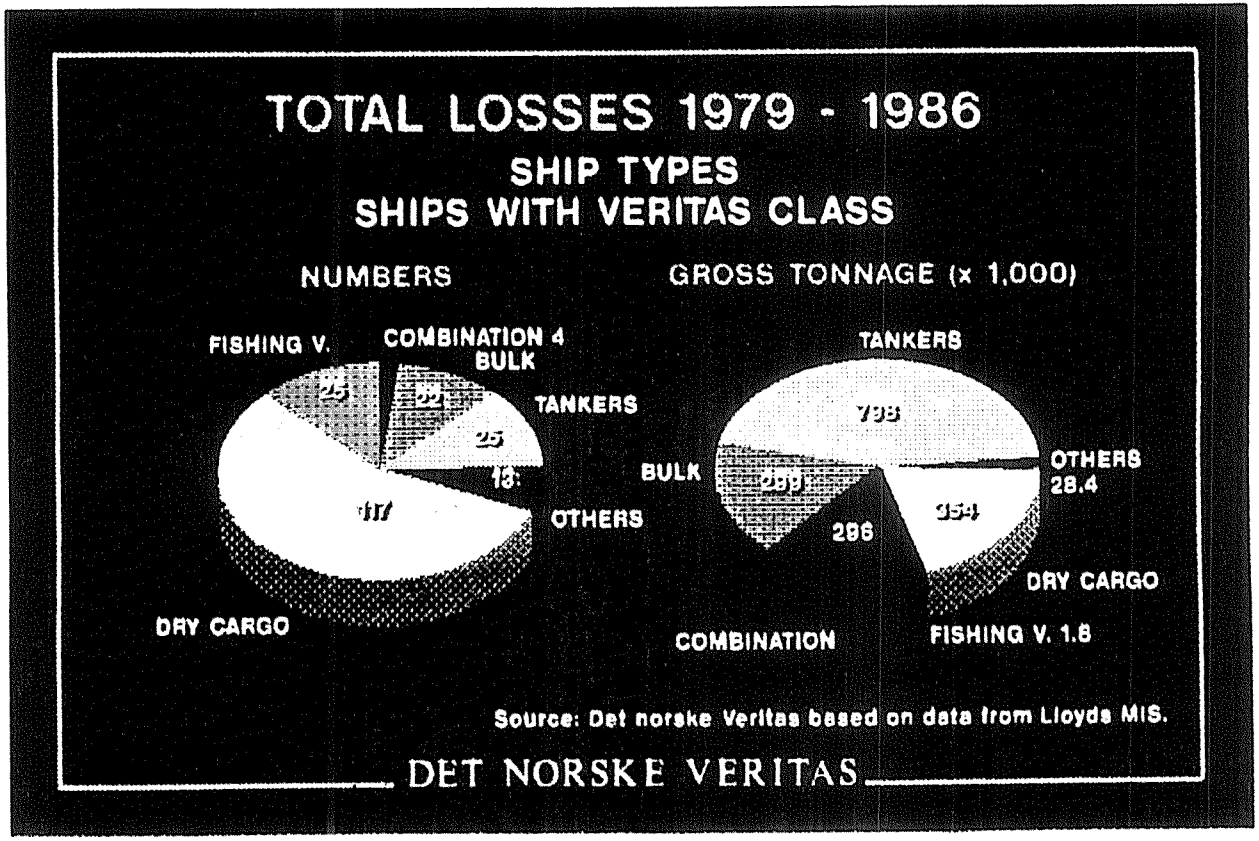

ANNUAL LOSSES BY TONNAGE 1971 - 1986
GROSS TONS (THOUSANDS)
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87
TOTAL
OTHERS
TANKERS
BULK
DET NORSKE VERITAS

AVERAGE LOSS RATIOS 1978 - 1982



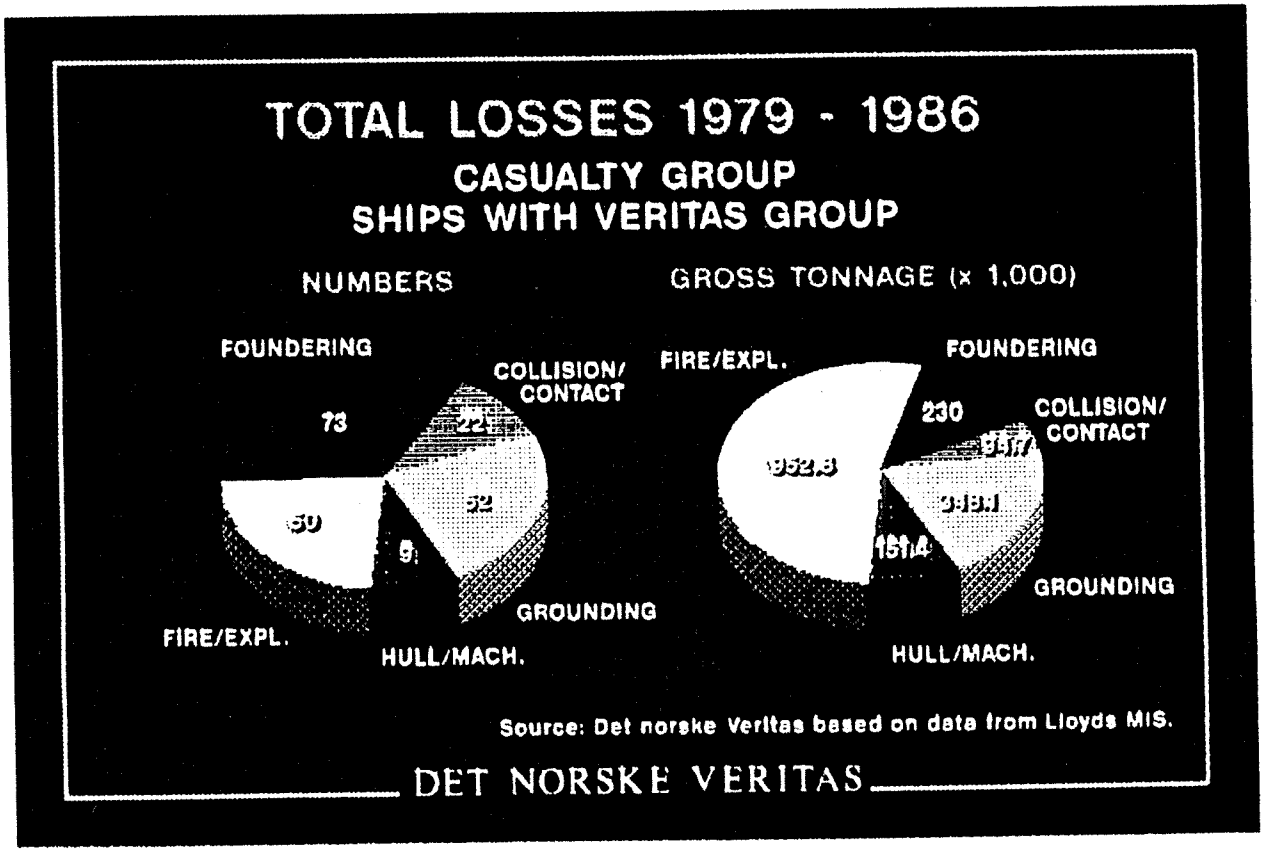
SOURCE: LIVERPOOL UNDERWRITERS

DET NORSKE VERITAS


TOTAL LOSSES 1979 - 1986
SHIP TYPES
SHIPS WITH VERITAS CLASS
NUMBERS
GROSS TONNAGE (x 1,000)
FISHING V.
COMBINATION
BULK
TANKERS
OTHERS
DRY CARGO
TANKERS
BULK
OTHERS
28.4
DRY CARGO
COMBINATION
FISHING V. 1.8
Source: Det norske Veritas based on data from Lloyds MIS.
DET NORSKE VERITAS

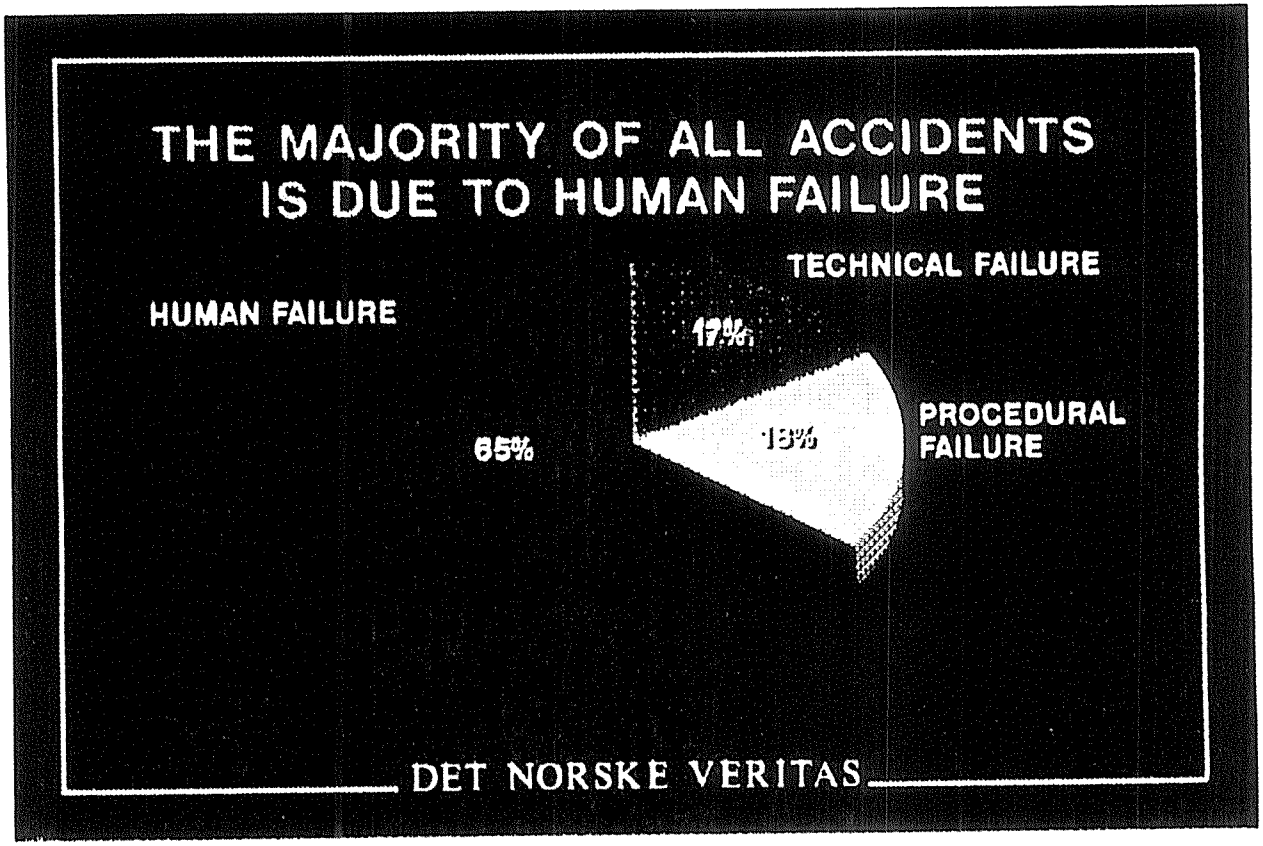
TOTAL LOSSES 1979 - 1986

CASUALTY GROUP
SHIPS WITH VERITAS GROUP



Source: Det norske Veritas based on data from Lloyds MIS.

DET NORSKE VERITAS


THE MAJORITY OF ALL ACCIDENTS
IS DUE TO HUMAN FAILURE
TECHNICAL FAILURE
HUMAN FAILURE
17%
PROCEDURAL
FAILURE
18%
65%
DET NORSKE VERITAS