Inspections, Surveys and Certificates

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16th May 2007

Germanischer Lloyd
Navigator

Module 1  Framework of Surveys and Certificates
Module 2  Class Surveys and Certificates
Module 3  Statutory Surveys and Certificates
Module 4  On-board surveys
Module 5  Other Types of Surveys
Module 6  Systems for surveillance of Surveys and Certificates
Navigator

Module 1 Framework of Surveys and Certificates
Module 2 Class Surveys and Certificates
Module 3 Statutory Surveys and Certificates
Module 4 On-board Surveys
Module 5 Other Types of Surveys
Module 6 Systems for surveillance of Surveys and Certificates
Module 1: Framework of Surveys and Certificates

- Reasons and Aims for Surveys
- Instruments to verify compliance
- Summary
Module 1: Framework of Surveys and Certificates

Reasons and Aims for Surveys

Answer: (examples)

- quality of the ship
- quality of the cargo hold
- safety of crew
- seaworthiness
- life extension planning
- corrosion trend analysis
- repair and maintenance requirements
- insurance

- sale and purchase
- working conditions
- after repair
- convention requirements (law, rules, regulations, …)
- design and structural details
- problem areas
- future inspection requirements
- agreements
- …
### Module 1: Framework of Surveys and Certificates

**Instruments to verify Compliance**

<table>
<thead>
<tr>
<th>Plan approval</th>
<th>Survey</th>
<th>Audit</th>
<th>Verification</th>
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<tr>
<td>Approval</td>
<td>Certificate</td>
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<tr>
<td>Example:</td>
<td>Example:</td>
<td>Example:</td>
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<tr>
<td>- Ship Security Plan (ISPS)</td>
<td>- Safety Construction Cert. (SOLAS II-1)</td>
<td>- Document of Compliance (ISM)</td>
<td>- International Ship Security Certificate (ISPS)</td>
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<tr>
<td>- Shipboard Oil Pollution Emergency Plan (MARPOL)</td>
<td>- Safety Equipment Cert. (SOLAS III, V)</td>
<td>- Safety Management Certificate (ISM)</td>
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<tr>
<td>- Plan Approval for New buildings</td>
<td>- Class Certificate</td>
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</table>
Module 1: Framework of Surveys and Certificates

Summary

Surveys

- Classification
  - Depends on Classification Rules
  - Class Certificate

- Statutory
  - Depends on Laws and Regulations
  - Statutory Certificates

- Others
  - Depends on Contracts and Agreements
  - Reports
## Navigator

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<th>Module</th>
<th>Description</th>
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</table>
Module 2: Class Surveys and Certificates

• Basics of Classification

• Surveys and Certificates
  • Newbuildings
  • Ships in Operation
  • Special Procedures
Module 2: Class Surveys and Certificates

The Classification Process: Rules

Ships are designed, constructed and maintained to meet the requirements of:

- Classification Rules
- IMO Conventions
- Relevant National Regulations
- Relevant Standards (ISO, DIN, etc.)
Module 2: Class Surveys and Certificates

Basics

Classification Rules - What is Classification?
Classification regards

• hull

• machinery / electrical installation and

• cargo refrigerating installation (if any)
Module 2: Class Surveys and Certificates

Sample of Character of Class
Module 2: Class Surveys and Certificates

Sample of Character of Class & Class Notations (hull)

- Built under supervision according to GL Rules
- Hull complies 100% with GL Rules
- Interval at class to be renewed in years
- Ship type: Container Ship
- Ship type: 100 A5 Container Ship
- Hull complies 100% with GL Rules

Built under supervision according to GL Rules
Module 2: Class Surveys and Certificates

Sample of Character of Class (machinery)

- Built under supervision according to GL Rules
- Machinery installation in compliance with GL Rules, components and material certified
- Machinery spaces equipped for unattended 24h operation

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Module 2: Class Surveys and Certificates

Sample of Character of Class & Class Notations

**Hull**  
100 A5 E, IW, SOLAS II-2 Reg. 19, Container ship

**Machinery**  
MC AUT
Module 2: Class Surveys and Certificates

Sample of Class Notations (additional)

E  Ice strengthening
SOLAS II-2, Reg.19  Carriage of dangerous cargo
COLL  Strengthening for collisions
IW  In-water survey
BWM  Ballast Water Management
NAV-O  Bridge design for 1 man watch keeping, while operating in ocean areas
Module 2: Class Surveys and Certificates

Sources to draw up Class Rules

Class Rules are in a constant state of evolution and development, reflecting:

- Technical Development
- Experience
- Research
- IACS Unified Requirements
- IMO Conventions / Resolutions
- International Standards
- National Requirements

Classification Rules
Module 2: Class Surveys and Certificates

Ship Life-cycle and Class Surveys

Newbuilding:
- supervision
- plan approval

Delivery

Ship in Service:
- Classification
- Safety surveys

0 5 10 15 20 25 Years
General Procedure for the Classification of Newbuildings

Shipowner - Client -

Building Contract

shipyard

Application for Classification

Drawing Approval

Surveys of Newbuilding Construction

Classification Society

Certificates of Class

National Statutory Certificates

Subsuppliers

Industry

Test Certificates

Supplies of Component

Orders

Testing of Components
Module 2: Class Surveys and Certificates

Newbuilding Procedure

- Contract
- Keel-laying
- Plan Approval
- Certification
- Survey at Yard
- Delivery
Module 2: Class Surveys and Certificates

Newbuilding Procedure

Plan Approval

- verify design for compliance of
  - Material
  - Hull, equipment, outfitting
  - Main machinery components and systems
  - Electrical systems
  - Instrumentation and automation systems
  - Life saving appliances

Certification

- verify relevant materials and components like
  - are designed and manufactured in compliance
    - with
      - Germanischer Lloyd Rules
      - International and national regulations
      - Recognized standards

and supplied to the yard with certificate
Module 2: Class Surveys and Certificates

Newbuilding Surveys

- Initial Hull Survey
  - Prior to commencement of inspections
  - Supervision during construction

- Initial Machinery Survey
Module 2: Class Surveys and Certificates

Newbuilding Initial Hull Survey – Prior to Commencement of Inspections

• Investigation whether
  • Yard is provided with suitable equipment and facilities
  • The yard has sufficiently qualified personnel
  • All approvals for welding are available
  • …

• Obtaining information
  • on the Yards Quality Management
  • …

• Examination
  • which Rules, regulations, guidelines are to be applied
  • whether all drawings and particulars for the supervision are available
  • …
Module 2: Statutory and Classificational Surveys and Certificates

Full term Class Certificates
Module 2: Class Surveys and Certificates

Ship Life-cycle and Class Surveys

Newbuilding:
- supervision
- plan approval

Ship in Service:
- Classification
- Safety surveys

Years:
- 0
- 5
- 10
- 15
- 20
- 25 Years
Surveys for Ships in Operation

• Periodical Surveys
  • Annual Survey
  • Intermediate Survey
  • Class Renewal Survey
  • Bottom Survey
  • Boiler Survey
  • Tailshaft Survey

• Non periodical Surveys
  • Damage and Repair Survey
  • Voyage Repairs
  • Conversion Surveys
  • Extraordinary Surveys

• Special cases
  • Change of Class
  • Condition Assessment Program
Module 2: Class Surveys and Certificates

Periodical Surveys for the Maintenance of Class:

- Annual Class Survey
- Intermediate Class Survey
- Class Renewal Survey
- Bottom Survey
- Boiler Survey
- Tailshaft Survey
Module 2: Class Surveys and Certificates

Surveys for Class Renewal

Newbuilding Survey → Issuing of Class Certificate → Annual Survey → Intermediate Survey → Annual Survey → Endorsement of existing Certificate

Intermediate Survey carried out on 2nd Anniversary Date?

Expiry Date

Annual Survey

max. allowed time windows

- month -

1st Year: - 3 +3
2nd Year: - 3 +3
3rd Year: - 3 +6
4th Year: - 3 +3
5th Year: - 3 +3

Class Renewal Survey
Module 2: Class Surveys and Certificates

Annual Class Survey

• Loadline items
• Hull items
• Machinery and electrical items
• Firefighting equipment

• Oil tanker additional items (Deck foam and inert gas systems; steering gear; hull, machinery and equipment)
• Chemical tanker additional items (Steering gear, structure, equipment, fittings, arrangements, and materials)
• Gas carrier additional items (Steering gear, structure, equipment, fittings, arrangements, and materials)
Module 2: Class Surveys and Certificates

Intermediate Class Survey

Annual Survey plus the following items:

- Ballast tanks and cargo spaces
- Oil tanker additional items (Piping systems and cargo tanks and electrical circuits in dangerous zones)
- Chemical tanker additional items (Steering gear, structure, equipment, fittings, arrangements, and materials)
- Gas carrier additional items (Steering gear, structure, equipment, fittings, arrangements, and materials)
Module 2: Class Surveys and Certificates

Class Renewal Surveys

- Class Renewal
- Partial Class Renewal
- Continuous Class Renewal
Module 2: Class Surveys and Certificates

Class Renewal

• detailed inspection of hull and machinery together with its installations and equipment for the purpose of assigning the ship to a new period of class

• the survey becomes due on expiry of the regular period of class

• the scope of the survey depends on the age and type of the ship

• the scope may be extended if this is considered necessary by the surveyor in view of his findings
Module 2: Class Surveys and Certificates

Ship life-cycle and Class surveys

Ship in Service:
- Classification
- Safety surveys

Newbuilding:
- supervision
- plan approval

Delivery

0  5  10  15  20  25 Years
Module 2: Class Surveys and Certificates

Non-periodical Surveys

- Damage and repair survey
- Voyage Repairs
- Conversion Surveys
- Extraordinary Surveys
Module 2: Class Surveys and Certificates

Damage Survey

It is the purpose of the damage survey to

• Determine the nature, location and extent of the damage

• Determine the necessary repairs with a view to the unrestricted conformation of class

or

• to determine the temporary repairs and/or other measures/conditions necessary to enable the ship to proceed to the repair harbour
Module 2: Class Surveys and Certificates

Damage of Stern Bottom of a Fast Container Ship

Flat Stern Bottom of a Modern Container Ship
If no spare anchor is available and/or if the remaining chain link cable is not adequate for anchoring, the following condition of class could be made:

“Class confirmed until …. on condition that main engine is to be kept stand-by whilst vessel at anchor. The assistance of sufficiently strong tug during estuary trading has to be applied for, if deemed necessary by the master”
Module 2: Class Surveys and Certificates

Damage Survey - Consequence of Fire
Module 2: Class Surveys and Certificates

Conveyance Certificate

- After respective survey, a Conveyance Certificate may be issued for a severely damaged ship enabling it to undertake the journey to the repair harbour subject to special conditions.

- Such conditions may stipulate increased freeboard, appropriate weather restrictions, assistance from tug, etc...
Module 2: Class Surveys and Certificates

Special Procedures

- Condition Assessment Program (CAP)
- Change of Class
Module 2: Class Surveys and Certificates

CAP Survey

- CAP = Condition Assessment Program
- Inspection of a vessel to determine its technical condition
- According to a specified rating system
Module 2: Class Surveys and Certificates

**CAP- Survey**

- CAP Surveys are not a classification requirement.
- Required by major oil companies.
- Tankers that are 15 years of age and older require a CAP (Condition Assessment Program) certificate.
- The CAP program can be effectively applied to any size, type or age of commercial ship.
Module 2: Class Surveys and Certificates

CAP- Survey

• A CAP survey covers:
  • hull structure assessment
  • machinery assessment
  • cargo systems assessment.

• Combining the GL’s CAP survey with the vessel’s structural survey provides minimal disruption to the operational schedule.
Ratings are computed for each of the program assessments, ranging from 1 (high) to 4 (low).
Navigator

Module 1  Framework of Surveys and Certificates
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Module 6  Systems for surveillance of Surveys and Certificates
Module 3: Statutory Surveys and Certificates

- Relationship Class – Statutory Surveys
- Legal Background
- Survey Types and Intervals
Module 3: Statutory Surveys and Certificates

Relation Class - Statutory

Classification

Rules for Classification & Construction
passed by Classification Society

Internal Rules

passed by GL
executed by GL

Statutory

IMO Conventions, Codes, Resolutions,
as far as ratified by the flag state

Additional National Requirements

External Rules

passed by Flag State
executed by Flag State or GL
(on its behalf, if authorized by Administration)
Module 3: Statutory Surveys and Certificates

Relation Class - Statutory

Classification

Authorize

Administration

Consult

National Law

Consult

Unified requirements recommendations etc

IACS

Surveys, Certificates

 IMO

Conventions, Codes, Resolutions

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Legal Background

Statutory Regulations - What means „statutory“?

• requirements by national (flag) administration

• international regulations are ratified by national administrations

• class may conduct surveys only on behalf of the flag administration
Legal Background

Statutory Regulations

Conventions, Codes and Resolutions
Legal Background

Statutory Regulations

- SOLAS
- MARPOL
- Load Line
- Tonnage Conv.

- IBC Code
- IGC Code
- HSC Code
Module 3: Statutory Surveys and Certificates

Periodical Surveys for the Maintenance of International Certificates:

- Load Line Surveys
- Safety Construction Surveys
- Safety Equipment Surveys
- Safety Radio Surveys
- MARPOL Surveys
Module 3: Statutory Surveys and Certificates

Special Cases

- Enhanced Survey Programme (ESP)
- Condition Assessment Scheme (CAS)
Module 3: Statutory Surveys and Certificates

ESP – Enhanced Survey Programme

- **Who**
  - Surveyor

- **Background (legal)**
  - more detailed hull survey for oil tankers, chemical tankers, bulk carriers
  - Res A744(18)

- **IACS Guidelines**
ESP – Enhanced Survey Programme

• **Aim**
  - survey items are more detailed than on periodical survey only

• **Consequences**
  - detailed survey of
    - hull structure within the cargo tank / hold length
    - ballast tanks
    - cargo and ballast piping systems
    - pump rooms, cofferdams, etc
In April 2001, MEPC 46 approved to accelerate the phasing-out of single hull oil tankers (entered into force in September 2002):

• phase-out began 2003;

• last single hull oil tanker of 5,000 tons deadweight and above but less than the tonnage specified for Category 1 and 2 tankers will be phased out by 2015 and hence will not be allowed to enter ports of EU member states;

• A Condition Assessment Scheme (CAS) will have to be applied to all Category 1 vessels continuing to trade after 2005 and all Category 2 vessels after 2010 in order to ensure permanent good maintenance. (Res. MEPC 94(46) Condition Assessment Scheme, amended by Res. MEPC 99(48) and Res. MEPC 112(50))
Module 3: Statutory Surveys and Certificates

Condition Assessment Scheme (CAS)

- The Scope includes the hull structure in way of
  - cargo tanks
  - pump rooms,
  - Cofferdams
  - Pipe tunnels
  - Void spaces

- After a successfully completed Survey a Statement of compliance will be issued by the Flag State Administration with a validity of 5 years
**Navigator**

**Module 1**  Framework of Surveys and Certificates

**Module 2**  Class Surveys and Certificates

**Module 3**  Statutory Surveys and Certificates

**Module 4**  On-board Surveys

**Module 5**  Other Types of Surveys

**Module 6**  Systems for surveillance of Surveys and Certificates
Module 4: On-board Surveys

- Authorization
- In service
  - Preparation of a Survey
  - Conducting
  - Reporting (follow-up)
  - Certification
Module 4: On-board Surveys

Authorization of GL

- Germanischer Lloyd is authorized to carry out statutory functions by most of the Flag States.
- These authorizations include attendance to matters stipulated by the most important conventions concerning ship safety and marine environmental protection, which are supplemented to a varying degree by national safety regulations.
Module 4: On-board Surveys

GL Tool - IMO Pilot

available on CD / via Internet

IMO Pilot
The periodical information on technical and operational IMO legislation

Results from IMO sessions MSC 80 and MEPC 53 included
**Module 4: On-board Surveys**

**Authorization List**

- Published in GL Directory and Internet

All full-term certificates are issued by Germanischer Lloyd Head Office exclusively, with the exception of Brazil. Here, the certificates are issued by Germanischer Lloyd do Brasil Ltda.

|--------------------|----------------|-------------------|------------------------------|-------------------|-------|-----------------------|----------|----------|---------------------------|------------------------------------------|---------------------------------------|-----------------------------|-------------------|-----------------|----------------|
Module 4: On-board Surveys

Preparing a Survey

A survey for a vessel in service can only be successful if the ship, the master and the crew are prepared.
Module 4: On-board Surveys
Preparing a Survey

The Surveyor will start to collect impressions from even before the time he takes his first step onto the gangway and will continue to do so until he takes the last step off the gangway.
Module 4: On-board Surveys
Preparation of a Survey
Module 4: On-board Surveys

Plan & Prepare

• planning ship’s schedule
• ensure suitable location
• request surveyor in a timely manner
• discuss surveys with surveyor in advance
• know scope of survey
Module 4: On-board Surveys

Plan & Prepare

• enough time for survey
• ensure crew may demonstrate operations if required
• plan before carrying out repairs
• advise class / discuss repair plan with class
• provide adequately certified spares
Module 4: On-board Surveys

Preparing

• Documentation ready

• Ensure machinery and spaces are prepared (e.g. cooled down, mountings open)

• Tanks open
Module 4: On-board Surveys

Conducting Surveys

The survey methods depend on the scope of the intended survey

Possible survey methods are:

- the Visual overall inspection
- the Visual close up examination
- an Audit of the maintenance history
- Witness testing,
  - function test,
  - tightness test
Module 4: On-board Surveys

Conducting Surveys

During the inspection

• Make sure that the surveyor is accompanied around the vessel during the inspection by either the Master or a senior officer
Module 4: On-board Surveys

Preparation for an In-Water Surveys

• Information Diver Company
• Ensure recognition
• Clarify permission (port authority)
• Check visibility (ask diver or GL Inspection office)
• Availability of IW-documentation and instructions (approved copy)
• Measuring tools for propeller shaft and rudder
• Availability of tools and equipment (cover for sea-chests, etc.)
Module 4: On-board Surveys

In-Water Surveys (with notation IW)

- For vessels maintaining the class notation IW
- Substitute for every second bottom survey in dry dock except class renewal
- Only with approved diver companies
**Module 4: On-board Surveys**

**In-Water Surveys (with notation IW)**
Module 4: On-board Surveys

Ballast Water Tank Survey

- Ventilation
- Access
- Gas concentration
- Cleanliness
- Illumination
- Security Equipment
- Personnel / Company whilst getting into the tank
- Communication (VHF)
- Safety Equipment (Breathing apparatus)
Module 4: On-board Surveys

Ballast Water Tank Survey
Module 4: On-board Surveys

Critical items

• Maintenance Safety Equipment
• Fire Fighting / Fire Flaps
• Hatch Covers
• Air / Sounding Pipes
**Survey Report**

**REPORT OF SHIP SAFETY EQUIPMENT SURVEY**

(INITIAL, ANNUAL, PERIODICAL, RENEWAL)

Under the Provisions of the INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974, as amended

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<th>GL Reg. No.</th>
<th>Name of Ship</th>
<th>Signal Letters</th>
<th>Nationality/ Port of Registry</th>
<th>Gross Tonnage</th>
<th>Date Keel Laid</th>
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<td>Complete annual / periodical / renewal / initial survey carried out covering all applicable items as listed in the Record of Approved Ship Safety Equipment</td>
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<td>List parts which remain to be examined under item 3</td>
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<td>1.4</td>
<td>General examination on account of</td>
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</table>
Module 4: On-board Surveys

Afterwards

If the ship has passed the survey successful:

• Certificate will be endorsed (annual/intermediate)
• Extension of certificates
• New certificate will be issued (renewal)
Navigator

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Module 5: Other Types of Surveys

- Flag State Inspection
- Port State Control
- Vetting Inspection
- Sale and purchase
- Inspection of the Ship
Module 5: Other Types of Surveys

Flag State Inspection

• Surveys carried out by nominated inspectors of the flag (i.e. no GL Surveyor)
• Check of technical and operational requirements
• Reporting to flag states
Module 5: Other Types of Surveys

Port State Control (PSC)

- Who
  - each coastal country / port state

- Background (Legal)
  - Resolution A 787(19), Resolution A 822(21), Memorandum of understanding
  - USCG also checks national regulations

- Aims
  - check for compliance with international convention regulations

- Report / Consequences
  - PSC report, handed over to the master
Module 5: Other Types of Surveys

Port State Control (PSC)

- **Scope of Inspection**
  - general inspection – impression of ship
  - more detailed inspection – clear grounds
  - expanded inspection
  - Concentrated inspection campaign (CIC)

- **Detention**
  - PSCO decides by his professional judgement

- **Deficiencies**
  - technical / operational / in the documentation
Module 5: Other Types of Surveys

Vetting Inspection

• **Who**
  • Surveyors, Inspectors

• **Background (legal)**
  • contracts, agreements
  • on behalf of owners or potential charterers
  • SIRE > oil tankers, follows OCIMF inspection criteria
    • SIRE = Ship Inspect. Report Exchange
    • OCIMF = Oil Companies Int. Marine Forum
    • questionnaire: VPQ and VIQ
  • CDI > chemical and gas carriers, follows CEFIC standard
    • CDI = Chemical Distribution Institute
    • CEFIC = Council of Europe Federation of Chem. Industry
Module 5: Other Types of Surveys

Vetting Inspection

• **Aim**
  • risk assessment survey

• **Consequences**
  • proforma inspection reports available
  • upon completion of survey
    • SIRE/C31 database uploaded with inspection results
    • results available to users of CDI/SIRE system
Module 5: Other Types of Surveys

Vetting

• Consequences
  • evaluation of inspection report allows interested parties assessment:
    • does specific ship comply with own standards
    • is it suitable for being chartered
    • is it suitable to load/discharge at own terminal
Sale and Purchase

• **Who**
  • Inspectors, Surveyors

• **Background**
  • agreement between owners and buyers about time and type of survey

• **Aims**
  • decision making for purchase and costs

• **Consequence**
  • contract for sale and purchase – or not
Module 5: Other Types of Surveys

Inspection of the Ship

Who

- Superintendents of the company

Background (Legal)

- internal rules, agreements, quality system

Aims

- e.g. maintenance planning, preparation for repair

Report / Consequences

- e.g. internal report, repair
Module 1  Framework of Surveys and Certificates
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Module 6: Systems for surveillance of surveys and certificates

Customer IT Solutions

- Poseidon
- Fleet online
- Register book online
- Rules and programs
Contact

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UE Square #13-05/06
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gl-singapore@gl-group.com

Contact Person : Low Tow Ling, Country Manager
Thank you for your attention!