Maritime and Coastguard Agency

MARINE GUIDANCE NOTE

MGN 322 (M+F)

Ship Survey Standards

Notice to all ship owners, managers, ship operators, masters, shipbuilders, ship repairers and classification societies.

This notice should be read in conjunction with MSN 1672

Summary

This notice effective from 1 July 2006 outlines the survey standards for hull construction, machinery, electrical and control systems to which vessels are expected to be built and maintained.

1 Introduction

1.1 The Maritime and Coastguard Agency (MCA) does not publish its own standards for hull, machinery, control or electrical installations, but in accordance with European Standards in Directive 94/57/EC and International Standards in SOLAS Ch. II-1, Part A-1, Reg. 3-1, recognises the rules of the United Kingdom (UK) authorised Classification Societies (See annex 1) as outlined in MSN 1672. Owners can chose any of these UK authorised Classification Societies in order to obtain the most cost effective survey regime for their vessels. If vessels are "classed" with one of these Classification Societies for the type of vessel and intended service the standards are deemed to have been met. Vessels which are not "classed" ("un-classed") must be constructed and maintained to equivalent standards.

1.2 The recognised standards are the authorised Classification Society rules. There can be no technical or commercial advantage for companies adopting a lesser standard. The appropriate regulations must be complied with whoever carries out the surveys.

1.3 The most effective method of ensuring consistency in applying the Classification Society rules is for vessels to be "classed", with Classification Society surveyors undertaking surveys.

2 Policy

2.1 This policy applies from 1 July 2006 to the following 'new-build' and 'new to the UK Shipping Register' vessel types which are required by International and National Legislation to be constructed and maintained to recognised standards:

- All Passenger vessels; Hull, Machinery, Electrical, and control systems.
- Cargo vessels of 500 GT and over: Hull, Machinery, Electrical, and control systems.
- Fishing vessels 24m Registered length and over: Hull, Machinery, Electrical, and control systems.

- All other commercial vessels 24m Registered length and over, up to 500 GT; Hull construction must be to recognised standards, machinery, electrical, and control systems shall comply as far as is reasonable and practical.

2.2 Owners of all 'new-build' and 'new to the UK Shipping Register' vessels will be required to arrange for surveys for statutory certificates to be carried out by an authorised Classification Society. In practice, this will mean that those UK vessels listed in paragraph 2.1 will have to be "classed'' and maintained within "Class". A vessel which fails to meet Classification Society standards will fail to meet the regulatory requirements and certificates will not be issued or will be cancelled as appropriate.

2.3 The MCA requires that any vessel not subject to full Classification Society survey shall be constructed to an equivalent "recognised standard". Owners, builders and managers of vessels of "non classed" vessels shall adopt authorised Classification Society standards for construction outfitting and maintenance whenever appropriate, or an equivalent standard acceptable to the MCA.

2.4 With "un-classed" vessels the MCA will require equivalent standards to be demonstrated. This will require submission of plans and full supporting calculations. Since this will not be a frequent occurrence, this may involve the use of other organisations to undertake work on behalf of the MCA. The customer (e.g. owner or builder) will be responsible for all costs associated with work undertaken to verify compliance with the relevant construction and outfitting standards.

2.5 The MCA will deal with exceptional cases where classification is not appropriate on a case by case basis. In order to ensure consistency such decisions will be made by an MCA review panel to ensure appropriate equivalent standards are applied.

2.6 Existing vessels which are "classed" will be required to be maintained to "Class" to ensure that these vessels maintain adequate standards. Those currently "un-classed" will continue to be surveyed, as at present, to an equivalent standard. Annex 3 contains details of the basic requirements for "un-classed" vessels, the precise requirements may vary from this list according to features of specific vessel types. Existing "un-classed" vessels shall comply with the survey requirements contained in annex 3 and wherever reasonable and practical with the other requirements. Classification Societies will notify the MCA of vessels which have been "de-classed" and any statutory certificates relating to approved standards of construction (See annex 2) will be deemed to be cancelled until such time as the vessel is "re-classed" by a UK authorised Classification Society.

2.7 Existing vessels which have been without MCA certification for more than five years will in general be treated as new vessels, as far as practicable. It will be necessary to confirm compliance with the applicable standards as set out in this MGN before these vessels can be re-certificated by the MCA.

More Information

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Annex 1– MGN 322 (M+F)

Classification Societies currently authorised by the UK

American Bureau of Shipping,
Bureau Veritas,
Det Norske Veritas,
Germanischer Lloyd,
Lloyds Register of Shipping,
Nippon Kaiji Kyokai,
Registro Italiano Navale.

Approval Standards for Electrical Installations

Institution of Electrical Engineers (IEE) for the Electrical and Electronic Equipment of Ships
International Electrotechnical Commission regulations

Annex 2 – MGN 322 (M+F)

Relevant Certification

Passenger Ship Safety Certificate
Passenger Certificate
Cargo Ship Safety Construction Certificate
Cargo Ship Safety Certificate
International Fishing Vessel Certificate
International Load-line Certificate
International Oil Pollution Prevention Certificate
High Speed Craft Safety Certificate
Dynamically Supported Craft Safety Certificate
International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk
International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk;
International Certificate of Fitness for the Carriage of INF Cargo,
International Noxious Liquids and Solids Certificate of Fitness
Certificate of Safety for submersible craft and their supporting equipment
Certificate of Compliance for a Large Charter Yacht
Any other certification issued as an equivalent to the above

Typical example of basic details required for Un-Classed Vessels:

Vessels must be examined in accordance with one of the recognised standards listed in MSN 1672.

1. Plans covering the following items:

Hull:
Mid-ship sections showing longitudinal and transverse material
Profile and Decks
Shell Expansion
Oil tight and watertight bulkheads
Propeller(s) and brackets
Double bottom construction
Pillars and girders
Aft end construction
Engine Room construction
Engine and thrust seatings
Fore end construction
Hatch cover construction
Deckhouses and superstructures
Stern-frame
Rudder, stock and tiller
Equipment (Anchor and chain cables)
Loading Manuals
Ice strengthening (as applicable)
Welding
Hull penetration plans
Support structure for masts, derricks or cranes
Bilge keel details and weld details
Corrosion control and paint specifications
Note: The above plans are to indicate thicknesses and grades of materials
and the following additional supporting documents:
General Arrangement
Capacity plan
Lines plan or equivalent
Dry-docking plan

Machinery:
Plans for all important units; such as main and auxiliary engines, including gearing, couplings, blowers and superchargers.
Shafting and bearings
Boilers for main and auxiliary services, and any other boiler with pressure exceeding 3.4 bar, including super-heaters, economisers etc.
Steering machinery
Athwart-ships thrusters
All pumps connected to the above.
All heat exchangers connected with above.
Air compressors, receivers and other pressure vessels with pressure exceeding 6.8 bar.
Fire, ballast and bilge pumps
Valves (sea valves and any associated with pressure systems exceeding 6.8 bar.
Piping diagrams

Electrical:
Cable wiring diagrams including, ratings of electrical machines, transformers, batteries and rectifiers
Feeders on main and emergency switchboards
Insulation type, size and current loadings of cables
Make, type and rating of circuit breakers and fuses
Generator circuits, including protection devices, short circuit/overload, reverse current
Instrumentation and synchronising
Preference trips
Remote stops
Earth fault indication & protection
Schedule of equipment including for that located in hazardous areas; type, protection rating, temperature class, certifying authority, certificates
Electrical equipment, and electrical propelling machinery

2. Calculations:
Supporting calculations are required, which should at least include (as applicable):
Calculation of Equipment Number
Hull Girder still water bending moment and shear force as applicable
Calculation of mid-ship section modulus
Preliminary freeboard calculation
Propeller, and shafting, strength calculations
Machinery strength calculations
Systems analysis, including; stress, torsional ,axial, and lateral vibration, and shaft alignments

2.1. Hull:
Assessment Sheets showing; Scantling item, rule reference, rule calculation, as fitted arrangements, assessment against rule requirement.
To cover, for example, keel, bottom and side shell plating thickness at different depths, and longitudinal position, deck, floors, framing, bulkheads (plating and stiffening), machinery crankshaft, propulsion shafting etc.

2.2. Electrical calculations:
- Electrical Load
- Short circuit currents for main and emergency switchboards and section boards (including those fed from transformers)
- Circuit breaker and fuse operating times and discrimination curves

3 Survey of non-classed vessels
Surveys equivalent to Class requirements will be required annually, and are to achieve an examination equivalent to a complete Class Special Survey at a maximum interval of 5 years. This 5 year cycle should include at least the following items;.

3.1. Structural Scantlings (New-build or new to flag): Owner/consultant should carry out thorough thickness checks of hull, deck, superstructures, frames and bulkheads. Detailed structural drawings should be available to MCA. **If not available**, owners will need to produce quality drawings (using consultants as necessary). On the basis of these drawings calculations should be made, preferably in tabular form, listing; item, rule reference, calculation (with maximum spans etc and location specified), required sizes, and in last column the actual scantlings. (Note; to be clear if actual is from original drawings, or “as measured” minimums).

3.2. An out of water survey for all vessels is required in accordance with relevant Class Rules to confirm reported thicknesses are correct. Check worst expected areas for corrosion etc. Specific areas to be targeted include those with difficult access i.e: behind linings and tanks, under engines, bilge areas, bulkheads in way of bilges, pipes, fittings etc where moisture may accumulate. Internal examination of integral water, fuel or ballast tanks.

Areas with cement coverings require sections of cement to be removed to surveyors satisfaction to examine plating, frames and connections (complete removal may not be required if sufficient samples found satisfactory). Thickness checks will be required in accordance with Class Rules.

3.3. Annual and mid-term (Intermediate) surveys for all vessels shall also be in accordance with Class Rules.

3.4. Survey of engine room piping, by combination of; thickness checks, hammer testing, removal of samples, pressure testing etc.

3.5. Deck, superstructure and all weather-tight closing appliances as normally expected for survey. Freeing port areas to comply with rules. Wheelhouse & deckhouse windows to be toughened safety glass, samples be checked, (if marked to BSMA 25 or if necessary by sample destructive testing).

3.6. Machinery: Complete survey of machinery, including opening up of units, pistons, linings, bearings top and bottom ends, timing gears, reduction gears. Removal of shaft, propeller, checking for wear (clearances to be recorded), corrosion and cracks in usual places, cone, threaded parts, keyways, bearing surfaces, flange radius etc. Also similar for essential auxiliary services (generators, air receivers etc if applicable). Opening up of all pumps and sea valves.

3.7. Rudder, bearings (clearances to be recorded), couplings, tiller and steering gear arrangements to be examined.

3.8. Full electrical survey in accordance with Class rules including: visual checks, insulation, securing etc. Carry out insulation and continuity checks (e.g. megger readings).
Emergency source of power and associated circuits to be tested
Fittings on main and emergency switchboards, section boards, and sub-distribution fuse boards to be examined and over-current protective devices and fuses inspected Generator circuit breakers to be tested to verify correct operation of protective devices, wherever practicable.
Generator prime movers to be surveyed and governors tested. Motors, switch, and control gear for essential services (including steering gear) to be examined and where practicable operated under working conditions.
Where appropriate Insulating oil test samples to be analysed.
Control Engineering installations; including; alarms, shut downs, safety systems etc.

3.9. All other items of equipment to be thoroughly examined and tested as appropriate.

3.10. A minimum of two bottom inspections are to be held in dry-dock or on a slipway in each five-year Survey period and the maximum interval between successive bottom inspections is not to exceed 36 months. In the case of passenger vessels annual bottom inspections are required unless alternative arrangements (See MGN 217) have been agreed.

3.11. Continuous survey arrangements may also be accepted which tie in with the planned maintenance systems of the vessel.

4. Previously Classed Vessels

Where vessels transfer from one Classification Society to another or in exceptional circumstances where a vessel is permitted to transfer surveys to MCA the requirements of Annex 13 to FSI 13/23; “Guidelines for administrations to apply to ensure adequacy of transfer of class related matters between recognized organizations” shall be applied. These were approved by IMO at MSC 80.

5. Certification

Vessels which fail to meet the recognised standards will not be issued with certificates, and certification in force will be deemed to be invalid.