

**CERTIFICATION REQUIREMENTS FOR MATERIALS,
COMPONENTS, EQUIPMENT AND MACHINERY
INTENDED TO BE INSTALLED ONBOARD A NEW SHIP
as per the Lloyd's Register Rules for ships**

<i>Description</i>	<i>LR Certificate Required</i>
A. HULL	
1. Materials used in the construction of the ship. i.e. plates, sections, bars, stern frames rudder, rudder stocks, propeller shaft brackets and other structure items	Yes To comply with Part 2
2. Prefabrication primers on weld edge preparation area of steel	Tests in the presence of a surveyor of LR to Part 3 Chap 2, Sec 3 is required
3. Loading instrument to be provided where L is greater than 65m and approved for non-uniform loading distribution	An approved type which certified per LR's procedure for multi-point loading instrument is required.
4. Masts, derrick posts, crane pedestals and similar supporting structures	Yes, if fabricated outside newbuildings yard.
5. Welding consumable	Yes, type approval cert.
6. Welding procedures	Tests in the presence of LR surveyor and documentation is required
7. Welding operators qualification	WPQ records to a national standard
8. Hatch covers, if fabricated by a shipyard's subcontractor outside newbuilding yard	Yes

9. Side scuttles and windows with glasses and deadlights	Design is to be approved by LR, or to a recognized National or international standard with LR product cert or ZC type approval
10. Small hatchways	Yes, the thickness of cover and dia. and spacing of toggles (if fit) shall be to LR Rules and ISO standard with design being approved by LR
11. Side door, watertight doors, stern doors ramp doors	Yes, the designs also shall be approved by LR
12. Ventilators with coamings	No. but design shall be approved by LR
13. Air and sounding pipes with closing appliances	Yes, design also shall be approved by LR
14. All shell fittings and sea connection valves	Yes
15. Rudder, rudder castings	Yes
16. Rudder pintle, rudder stock, gudgeon sleeve, pintle & rudder stock liners	Yes
17. Rudder bearings-synthetic	Yes, type approval cert.
18. Fixed and steering nozzles	Yes
19. Bow and stern thrust unit tunnels	Yes
20. Anchors and chain cables	Yes
21. Towing wire and mooring ropes	Manufacturers certificate is acceptable, steel wire shall be made by a LR approved works

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| 22. Mooring arrangements for SPM notation | No, but design shall be approved by LR and components are supplied with Maker's proof load test and material cert, |
| 23. Emergency towing arrangements-tankers | Yes, type approval cert. Design shall be approved by LR |
| 24. Windlass with power unit | Yes, LR type approval cert. or production cert.with design being approved by LR or production cert.with a satisfactory shop test. |
| 25. Freight container securing arrangements
1. steel for fixed fittings and cell guides
2. loose fittings | (optional)
Yes
Yes, general approval cert. granted after a satisfactory prototype test, and maker's production sample test certificates. |
| 26. All structure such as blocks which are fabricated outside of the shipyard, by their subcontractors | Yes |

B.MACHINERY

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| 1. Azimuth thrusters | Yes |
| 2. Steering gear including all components, ram cylinders, pressure housings of rotary vane type actuators, hydraulic power piping, valves, flanges, tillers, quadrants, keys.
2.1 new type of power unit pump | Yes

Yes, in addition to the regular certificates, a cert covering a satisfactory type test is required. |
| 3. Forgings and castings for Class 1 & 2 pipe fittings and valves
3.1. for working temp < 300, DN < 50, (or Pw x DN < 2500) for steel or working temp < 200, DN < 50, (or Pw x DN < 1500) for copper alloy
* Temp in Deg.C, Pw in bar, DN in mm
3.2. valves and other components intended for installation in pressure piping system having working pressure > 7 bar | Yes.

No. makers' certificates are acceptable but works must be approved by LR.

Yes |
| 4. Class 1 and class 2 piping system including pipes | Yes |
| 5. Class 3 piping systems (steel & copper)

5.1 Class 3 plastic piping systems | No. but maker's certificates to an acceptance standard are required
Yes, LR type approval cert. |
| 6. Valve on the collision bulkhead & ship side valves | Yes |
| 7. Flexible hoses | Yes. design also shall be approved by LR with prototype bursting pressure test certificate available. |

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| 8. Expansion pieces of piping systems | Yes, for class 1/ class 2 also the design shall be approved by LR |
| 9. Short sounding pipes in engine room | No. but design shall be approved by LR |
| 10. Non-sparking fans for hazardous area | Type test certificate is required. |
| 11. Inert gas systems (ship with IGS notation) | Yes |
| 12. Main air receivers for starting, aux air receivers for G.S or aux engine starting, control air receivers for control air, emergency air receivers for emergency starting together with all their mountings | Yes |
| 13. Main air compressors, control air compressors, topping up air compressor and aux compressors and first start emergency air compressor and essential G.S.comprssors | Yes, to Part.5. Chap 2 Sect 8 requirements |
| 14. Main steam boilers, aux steam boilers (o.f.), aux composite boilers, aux boiler (ex.g),Thermal oil heaters and hot water units for essential services, steam receivers, steam heated steam generator, steam boiler used exclusively for non-essential services with a w.p. over 3.4 bar and a heating surface over 4.65 sq.meter together with their mountings | Yes |
| 15. Propellers | Yes |
| 16. Main propulsion shafting includes screw shaft, propeller nut, propeller key, intermediate shafts, thrust shaft reduction gears(over 220kw), flexible coupling, clutch, muff coupling, shaft flange bolts | Yes |

17. Aft stern tube oil glands	Yes
17.1 forward stern tube oil gland	No
18. Gas turbines for essential machinery including compressor casing, power turbine casing, rotors, blades, reduction gears(exceed 110kw) , combustor casing, with attached accessories.	Yes
19. Steam turbines for essential machinery including casing, rotors, blades, reduction gears(exceed 110kw) and attached accessories.	Yes
20. Oil engines including crankshafts, piston rods, crankshaft coupling flange with bolts, piston crowns, connecting rods with bearing caps, crossheads, cylinder covers, cylinder liners, castings and forgings for engine bed plates, steel plates for engine bedplates/ frames/crankcases and entablatures, tie rods, turbocharger rotor and shaft, bolts and studs for cylinder covers/crossheads/main bearings/connecting rod bearings,gear wheels for camshaft drives, fuel injection pumps, cylinder jackets, exhaust valves, turbo-charger casings, air coolers, attached pumps (if fitted) and crank case with scavenging space explosion relief devices	Yes
21. Resin chocks and resilient mountings	LR type approval cert. is required.
22. All heat exchangers for essential services such as lub oil coolers, stern tube lub oil coolers, M/E camshaft lub oil coolers, aux engine lub oil coolers,M/E fresh water coolers, Aux engine fresh water coolers, M/E fuel oil heaters, fuel oil purifier heaters, lub oil purifier heaters, feed water heaters, atmosphere condenser, boiler fuel oil heaters	Yes boiler fuel oil.heaters,

essential evaporators/condensers/ fresh water genererators	
23. All boiler burner unit and draught fans	Yes
24. All essential pumps including fire pumps, L.O.pumps, bilge pumps, sea water cooling pumps, fresh water pumps, Fuel oil booster /circulating/ transfer pumps, condensate pumps, oil engine camshaft lub oil pumps and fuel valve cooling pumps, reduction gear lub oil pumps,central priming pumps, ballast pumps, propulsion propeller CPP hydraulic oil pumps, stern tube lub oil pumps, boiler feed pumps and circulating pumps with air ejectors, all essential eductors,	Yes
25. IGS Generator(if fitted), gas scrubbers, deck seal unit, deck seal pumps, scrubber s.w.pumps and blowers	Yes
26. Fuel oil independent tanks(if it is fabricated out side the shipyard) by their subcontractor	Yes
27. Stern tube bushes	Yes
28. Glass gauge	Yes, LR type approval certificate is required
29. Butterfly valves, ball valves (having resilient seats)	Yes, LR type approval certificate is required

C. ELECTRICAL, CONTROL ENGINEERING SYSTEMS

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| 1. All generators, motors and transformers of 100 kw or over. | Yes, with Makers' certificates and test reports to IEC |
| 2. All generators, motors and transformers less than 100 kw | No, but makers' certificates and test reports to IEC are required |
| 3. Electrical equipment, whenever practicable is to be selected from LR Type Approved equipment List | Yes, if practicable. however all construction shall be in compliance with LR Rules and IEC |
| 4. Main switch board, group panels, motor stators, distribution panels | No, but the manufacturers' certificates with test reports as required per the Rules Pt 6, Chap 2, Sect 7.18 and IEC must be submitted. |
| 5. Electric Cables (fire retardant) | No, but makers cert. and routine test reports to IEC shall be submitted. LR type approved cables preferred. |
| 6. Electrical equipment for use in hazardous area | No. but certificates issued by a competent authority are required, such as CESI BASEEFA,PTB |
| 7. Major units of equipment associated with control,alarm and safety systems | Yes |
| 8. Fire detection control unit,indicating panels ,detector heads, manual call points and short circuit isolation units | LR type approval Cert. is required. |
| 9. Programmable electronic systems-hardware | LR type approval Cert. is required |

10. Programmable electronic systems-software No. but certificate of the software quality procedures by a recognized authority is required or the Quality Plan is to be submitted to LR for approval.
11. Equipment used for control,alarm and safety systems If practicable to be selected from the LR type approved products.

CERTIFICATES REQUIRED FOR EQUIPMENT
APPLIANCES AS PER SOLAS 73/78 AS AMENDED
1972 COLLISION REGULATIONS
MARPOL 73/78 ANNEX I

the type of certificates as indicated below will be subject to
the agreement of the Flag State

<u>Description</u>	<u>LR or ZC or other Admin. type approval certificate</u>
1. Shipborne navigation equipment,Ch V/12	yes
2. Pilot ladders	no, but must meet SOLAS
3. Mechanical pilot hoists	yes
4. Daylight signaling lamps	no
5. F'cle bell ,gong, ship's whistle	yes
6. Black ball/diamond/cylinder shapes	no
7. Navigation lights	yes
8. All life-saving appliances including distress signals, line throwing appliances, two way radiotelephones, radar transponders, liferafts/lifeboats/rescue boats with launching and release hook devices, TPA, immersion suits, lifejackets, lifebuoys,life jacket lights, liferaft hydrostatic release devices,lifebuoy self-igniting lights and smoke signals, lifeboat first-aid outfits/ food ration	yes
9. Fire hoses, fire hydrant valves,fire hose nozzles.	yes

10. Fixed gas fire extinguishing systems	yes, design must be approved by LR
10.1. containers for storage of medium with associated pressure parts	yes
11. Fire extinguishers	yes
12. Fixed foam fire-extinguishing system	yes, design must be approved by LR.
13. Fixed fire detection and fire alarm systems and sample extraction smoke detection	yes, design must be approved LR
14. The safety lamps, axes, and breathing apparatus of fireman's outfits	yes
15. Low lighting for passenger ship	yes
16. IGS	yes
17. Fire protection materials including deck/bulkhead fire insulation, B class/ A class corridor panels, A/B class penetration stuffing boxes, fire doors, watertight doors, fire shuttles, fire damper	yes
18. Accommodation ladder	No, but shall meet ISO, design to be approved by LR when used in association with pilot ladder
19. <u>ALL safety radio equipment</u>	<u>yes</u>
20. Oily water separator & filtering system, 15 ppm alarm and automatic shut down valve, oil discharge monitoring and control system, oil/water interface detectors,	yes

**CERTIFICATION REQUIREMENTS FOR LIFTING
APPLIANCES, SUCH AS CRANES AND DERRICK
SYSTEMS AS PER LR CODE FOR LIFTING
APPLIANCES IN A MARINE ENVIRONMENT**

*It is the responsibility of the owner or operator or shipyard
to ensure that they comply with statutory requirements*

<i>Description</i>	<i>LR Certificate required</i>
If the society is required to issue "Register of ships cargo gear and lifting appliances"	
1. Steel for bearing brackets and other items welded to the ships structure including the masts and derrick posts	Yes, manufactured to LR Rules at a LR approved works
2. Steel for other items such as derrick booms with associated fittings and crane jibs	No, but material shall comply with LR Rules for hull structure steel or with as appropriate national standard approved by LR . manufacturer's certificates are required
3. Survey during construction of lifting appliances	Yes
4. Steel wire ropes	No, but must be manufactured by a LR approved works. proposals to use steel wire rope manufactured elsewhere will be especially considered. manufacturers' certificates are required

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| 5. All other loose gears | No, but manufacturer's certificates and markings on each individual loose gear shall be provided in accordance with the above LR Code. |
| 6. Proof load test after installation | Yes |

**SUBCONTRACTORS APPROVED FOR THICKNESS
MEASUREMENT OF HULL STRUCTURE**

Name, Addree, Tel/Fax No.	Approved grade	Certificate No.& Expirydate
Bright Sea NDT Centre(Shanhaiguan T.M. Centre) Shan Hai Guan Shipyard Qinhuandao City, Herbei Tel. 0335-5081131x8928 Fax. 0335-5081140	One	NDE/1999/406 due 21.01 2002
CITS Inspection Co., Ltd Dalian Economic Zone, Dalian, China Tel: 0411-7620702 Fax: 0411-7623976	Two	NDE/1999/490 due 20.06.2002
Dalian Marine Safety & Technical Service Company Foreign Affairs District, Da Yao Bay, Dalian, China Tel: 0411-7598539 Fax: 0411-2630848	One	NDE/1999/505 due 13.07.2002
Guangzhou Wen Chong Shipyard Hai Xiang Gauging Co. Huang Pu Guangzhon Tel. 020-82389933 x579 Fax. 020-82397534 (c/o)	One	NDE/98/299 due 27.11.2001
Hailong Thickness Measurement Center Boluomiao, Huangpu, Guangzhou Tel. 020-82219035 x289 Fax. 020=82220087	Two	NDE/96/380 due 01.02.2003
Jiangyin Marine Technical Meaurement Centre. Chengxi, Xin Cun, Chengxi Shipyard Jianyin, Jiangu, 214433 Tel. 0510-6109228 Fax. 0510-6109711	One	NDE /97/215 due 20.07,2000
Min Nan Shipyard Xidu Fengxian, Shanghai Tel: 021 64503658 Fax: 021 64503978	Two	NDE/1999/429 due 23.02.2002

Nantong Ocean Ship Engineering Co,Ltd South of Rengang, Nantong, 226005 Tel. 0513-3516186 Fax.0513-3517539	One	MNDE/1999/545 due 05.09.2002
Qingdao Beihai Comprehensive Techniques Inspection Measuement Co. Beihai Shipyard 1, Yan Er Dao Rd, Shinan District, Qingdao Tel. 0532-5710512 Fax. 0532-5814466	One	NDE/1999/407 due 24.01.2002
Qingdao North Ship & Ocean Engineering Corp. Jiangxi Road (Xiao Yao Village) Qingdao. Tel. 0532-5720407 Fax. 0532-5736265	One	NDE/98/219 due 26.02.2001
Qingdao Xing Yuan Marine Engineering Co,Ltd. 143 Guan Xian Rd., Qingdao. 266011 Tel. 0532-2834805 Fax. 0532-2822473	One	NDE/1999/465 due 13.04.2002
Senda Steel Plate Thickness Measurement Co.Ltd. Room 301 ,Jinxing Commercial Club, 943 Zhongshan Rd.(S), Shanghai Tel. 021-63783979 Fax. 021-63783980	One	NDE/1999/451 due 10.03.2002
Shenzhen Hai On Thickness Measurement Co. Guang Wan Third Rd., Shekou, Shenzhen Tel. 0755-6691523 Fax. 0755-6696167	Two	NDE/1999/478 due 17.5.2002
Shanghai Haixin Shiprepairing Co., Ltd RM22D Liangfeng Mansion No.8, Dongfang Rd Shanghai Tel: 021 58887543 Fax: 021 68600088	One	MNDE/2000/663 due 16.04.03
Shanghai Soundway Ultrasonic Tech. Services Co., Ltd Rm. 702 No. 4 Lane 571 Laoshan Rd. E. Shanghai Tel: 021 58358976 Fax: 021 58350526	Two	NDE/1999/512 due 13.07.2002

<p>Yuanda Technical Co-operation Service Co., Ltd Guangjiang Rd, Huangpu, Guangzhou 510725 Tel: 020 82399432x3261 Fax: 020 82386557</p>	<p>Two</p>	<p>NDE/40867/ due 28.07.2002</p>
<p>Yiu Lian Dockyards (Shekou) Thickness Measurement Co. Lian Yang Rd, Shekou Shenzhen, GD Tel: 0755-6684165 Fax: 0755-6851703</p>	<p>One</p>	<p>NDE/98/313 due 12.10.2001</p>
<p>Lief Marine Consultant & Trading Co., Ltd #2-1304 Kai Yang Mansion Lane 888, Mei Zhou Rd Shanghai, China</p>	<p>Two</p>	<p>MNDE/2000/882 due 05.07.2003</p>