



指导性文件
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海上拖航指南

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中国船级社

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GUIDELINES FOR TOWAGE AT SEA

(中英文合订本)

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CHAPTER 1 GENERAL REQUIREMENTS

Section 1 Objective and Application

1.1.1 To ensure the safety of towage at sea, the Guidelines for Towage at Sea (hereinafter referred to as the Guidelines) are prepared for the consultation of related parties.

1.1.2 If the applicant applies or the Administration authorizes China Classification Society (hereinafter referred to as CCS) for towage survey, CCS is to carry out the survey according to the Guidelines except otherwise specified by the competent authorities of flag state.

1.1.3 The Guidelines apply to towage operation at sea involving towed objects of following types but not including ships for normal towing transportation:

- (1) Ships (including barges and pontoons) and similar structures operating in various service areas;
- (2) Floating docks, floating installations and other above - water structures;
- (3) Mobile platform and other offshore installations.

Section 2 Application and Fee

1.2.1 Application for towage survey by CCS may be made by owner, master, underwriter, ship agency or other related parties of the towing vessel.

1.2.2 The applicants are to pay survey fee, transportation fee and other necessary fees according to the provisions by CCS.

Section 3 Definitions

1.3.1 "Towing length" means the horizontal distance measured from the bow of towing vessel to the aft end of the last towed vessel or towed object.

1.3.2 "Towing equipment" means equipment on the towing vessel and towed object for towing operation, which covers towing winch, towing hook, towing arch, towing line drum, towing flounder plate, towing post, towing bollard,

fairlead, main and spare towing lines, emergency towing line, pendant, bridge line, wire rope bridle/chain bridle, delta eye plate, shackle and towing ring etc.

1.3.3 "Safe working load" means the maximum permissible load which the towing equipment can withstand.

1.3.4 "Bollard pull" means the towing force provided under the rated power of the main engine of the towing vessel when the vessel's speed in calm water is equal to zero. It is equal to the total towage resistance.

1.3.5 "Bridge lines" means the towing lines connecting towed objects when several towed objects are in series during towage.

1.3.6 "Towing flounder plate" means the plate welded to the towed object for the special purpose of connecting towing line or wire rope bridle.

1.3.7 "Wire rope bridle/chain bridle" means the towing fittings connecting the towing force points arranged on both sides of the bow and the delta eye plate to maintain the steady course of the towed object.

1.3.8 "Pendant" means the cable connecting towing line and wire rope bridle/chain bridle.

1.3.9 "Recovering facilities" means the facilities to be used for recovering towing line of the towing vessel when emergency release of the towing line is made to protect itself under special environmental load, generally including winch and recovery rope.

1.3.10 "Environmental load" means the load caused by weather and sea conditions (such as wind, wave, ice, snow, etc.)

Section 4 Conditions for Towage at Sea

1.4.1 A towing plan and a towage and operation manual (if any) are to be prepared before towage, their copies are to be kept by the master of the towing vessel.

1.4.2 Before towage, survey is to be carried out by the surveyor of the Society according to the requirements of the Guidelines, for determining that all the requirements have been complied with in order to ensure the safe towing, and certificate of fitness for towage and survey report by CCS are obtained.

1.4.3 The crew of towing vessels and towed objects are to have qualification certificates.

Section 5 Documentation and Information

1.5.1 Before towage, the applicant is to submit a towage and operation manuals (if any) and a towing plan to the Society. The plan is generally to include the following:

- (1) The main dimensions of towing vessel and towed object and the bollard pull of the towing vessel;
- (2) According to the factors such as anticipated weather condition, tide and currents, the size, shape, windage area and displacement of the towed object and any navigational hazards to be avoided, etc., the pre-planned route, including towage sea area, towing route, the distance, speed and the estimated date of departure and arrival;
- (3) Arrangement of towing equipment and emergency plan facing bad weather, especially the arrangement of hove to condition and shelter. Where there are crew members remaining on board the towed object, both towing vessel and towed object are to be provided with emergency plans;
- (4) Possible ports of refuge or anchorage on the intended towing route, refueling program for the towing vessels, expected environmental conditions and towing plans including the plan for ports of departure, arrival and call en route.
- (5) Arrangement plan of towage operation, which is to include towing formation, recovering facilities and the connections of main and emergency towing lines. If more than one towing vessels are to be involved during the towage, the position of each towing vessel and the name of main towing vessel are to be included.

1.5.2 Valid certificates of towing vessel and towed object corresponding to the towage route are to be submitted before towage.

If the towed object is an idle vessel, disabled vessel, sea-damaged vessel or a vessel or a floating object whose repair or construction items have not been finished, some certificates may be exempted with the consent of the surveyor of the Society.

1.5.3 The following main information about towed objects, towing vessels and towing equipment is to be submitted before towage:

- (1) The information of towed object, including type, name, distinctive number or call sign of the vessel, port of registry, towing draught, information of intact stability under towing condition (information of subdivision and damaged stability may be required in special condition), as well as specification of anchoring and mooring equipment;

If the towed object is a disabled vessel, at least information on the type, name, port of registry, main dimensions and draught of the vessel, etc. is to be submitted; At the same time, towing stability is to be considered.

- (2) The information of towing vessel, including the name, distinctive number or call sign, port of registry and bollard pull of the vessel and calculation of towing resistance if required by the surveyor.

- (3) The information of towing equipment, including:

- ① Type of towing winch and rated towing force;
- ② The specification, length as well as breaking strength of main towing line and spare towing line;
- ③ Plans or information showing towing arrangement (including pendant, any fibre towing spring, wire rope bridle/chain bridle, delta eye plates, shackles and other connecting equipment);
- ④ Arrangement and strength calculations of towing flounder plate, bollards and fairleads used for emergency towing.

1.5.4 The following documents and information for the towed mobile platform and other offshore installation are to be submitted before towage: towing plans, operation manual, towage stability calculations, towing resistance calculations, information of strength of the towing point and certificates of towing equipment.

1.5.5 When the towed object is a floating dock or other ship of special construction, additional information that is considered necessary by the Society is to be submitted.

1.5.6 If heavy objects are carried on the towed object, information of supporting structures and fastenings or lashing arrangements, corresponding strength calculations as well as other relevant plans are to be submitted to the Society. For welded fastenings on exposed deck, weld leg dimensions and inspection report on welding quality are to be submitted, if necessary.

Section 6 Survey and Certification

1.6.1 Application

- (1) The master of towing vessel or agent (hereinafter referred to as the applicant) is to apply for towage survey to the unit of the Society conducting survey before towage.
- (2) The applicant is to submit the documents and information specified by the Guidelines and provide facilities and conditions for convenience of the survey.

1.6.2 The following inspections and tests are to be carried out for the towed object by the surveyor:

- (1) The validity of certificates and relevant documents of towed object are to be confirmed;
- (2) The structural strength and stability of towed object are to be confirmed to fit for the intended towage;
- (3) Temporary repair or strengthening project for towage is to be inspected and tested;
- (4) If objects are carried on the vessel, their load and securing are to be inspected and to meet the requirements of calculation of load and securing strength. Lashing and securing are to be reliable;
- (5) Safety measures against flooding, drainage appliances, anchoring and mooring equipment, rudder and propeller, navigation lights and shapes, means for boarding the towed vessel, fire protection and extinguishing appliances and the towing force point of towing equipment (such as towing flounder plates or towing bollards, etc.) are to be inspected and tested;
- (6) The towed object with riding crew on board is to be inspected and confirmed according to the requirements in Section 10 of Chapter 2;
- (7) The important installations to be possibly used during towage are to be subject to operation test;
- (8) The design of temporary towing bollards and towing flounder plates are to be reviewed according to the relevant specifications, and their construction quality is to be examined;
- (9) Inspection under water or in dock may be required if there is some

doubt about the construction below waterline of the towed object, which will affect the safety of towage;

- (10) For some towed objects of special lines, if the master of towing vessel doubts about the towing fitness and course stability and he has no information for check, it is suggested a test - towing run be arranged before towage and towage plan be adjusted according to the condition of test - towing run.

1.6.3 The following inspections and tests are to be carried out to the towing vessel by the surveyor:

- (1) To ensure the validity of certificates of towing vessel;
- (2) To ensure that the technical condition of towing vessel and the relevant documents and information and towing plan are fit for the intended towage;
- (3) To ensure that the towing equipment of towing vessel has valid certificates and is fit for the intended towage;
- (4) To inspect and test the control system, braking system and emergency release system of towing winch;
- (5) To inspect the technical conditions of towing line, wire rope bridle/chain bridle, shackle, delta eye plate, towing arch and fairlead and make sure they meet the requirements of the relevant specifications. Damage protection is to be inspected for the abrasive parts of towing line.
- (6) To inspect the towing hook installation according to the relevant specifications when towing hook is used.

1.6.4 Upon satisfactory survey on the towed vessel and towed object according to the Guidelines, Certificate of Fitness for Towage will be issued by CCS together with relevant survey reports.

1.6.5 The validity period of certificate is generally from the departure port to the final destination port of the towage.

If the checked technical condition and preparation condition of towage have been changed or altered without consent of the Society, the certificate is to be deemed invalid automatically.

Section 7 Management of Towing Operation

1.7.1 During the whole period of towage, the master of towing vessel is to take measures to ensure that the towed object meets the requirements for safety towing operation.

1.7.2 If special circumstance is met on voyage and the stipulated requirements of towage can no longer be followed, the master of towing vessel is to take some measures corresponding to special circumstance based upon his navigation experiences.

1.7.3 On choosing course and route near seashore or shallow waters, master is to make the towing vessel and towed object enter safe waters at suitable speed, or keep away from seashore or shallow waters under the condition of expectable tidal current and weather.

1.7.4 For the towed object without riding crew during towage, towing vessel is to have someone get aboard for repeated examinations under suitable weather condition. The condition of examination is to be recorded correspondingly.

1.7.5 The master of towing vessel is to be fully responsible for the towing vessel, towing equipment, towed object and the implementation of towing operation and for the change of route and speed under bad weather condition or for going to sheltered area if possible. If there are two or more towing vessels, the master of main towing vessel is to be responsible for the above - mentioned requirements.

1.7.6 If the towed object presents a direct damage to navigation, offshore structure or coastline through breaking adrift or for some other cause, the master of towing vessel is bound SOLAS V/2 to communicate the information by all the means at his disposal to ships in the vicinity, and also to the competent authorities at the first point on the coast with which he can communicate.

1.7.7 The arrangements for recovering the towed object, if it breaks adrift, are to be made according to good seamanship, bearing in mind the seasonal weather conditions and area of operation.

Section 8 Weather and Sea Wave Forecast

1.8.1 Where possible a weather forecasting facility is to be available on a 24

- hour basis for the whole towing operation.

1.8.2 Weather and sea wave forecasts for the departure area are to be commenced at least 24 hours prior to the anticipated departure time.

1.8.3 Weather and sea wave forecast is at least to include following information:

- (1) synopsis of the area;
- (2) wind speed and direction;
- (3) wave height and period;
- (4) swell height and period;
- (5) outlook for 48 hours.

1.8.4 If possible, a second weather forecast is to be from a different source to confirm a good departure forecast.

1.8.5 Weather forecasts are to be received on the towing vessel (and on the towed object if manned) at least every 12 hours during the towage. Where there are specific limitations imposed, then more frequent forecasts may be appropriate, and/or direct communication with the weather forecasting unit if significant changes could be expected.

CHAPTER 2 TOWED VESSEL

Section 1 General

2.1.1 For vessels and other similar structures designed according to the recognized rules for the classification and construction of sea - going steel ships, their technical status is to be in a seaworthy condition.

2.1.2 For the towage of vessels not seaworthy such as floating dock, river boat and vessels carrying special cargoes (such as lifting appliances, etc.) sensitive to sea condition according to the characteristic of towed vessel, the route of the voyage and weather condition, special requirements for structural strengthening, lashing and securing will be put forward and suitable limitations for the towage be set up by the Society.

2.1.3 Towed vessel sustained sea damage or engine damage is to be surveyed by surveyor before the towage for determining that all the items of temporary repair have been finished in order to ensure the safe towing, and the survey report is to be obtained.

2.1.4 The most severe load in the design environmental load during the towage is generally to be taken into consideration, the relevant calculation method of strength and stress standard are to be approved by CCS.

2.1.5 For surface structure or other floating body not included in ship's type, in addition to complying with the requirements in sections 2, 3, 4, 8, 11 and 13 of this Chapter, the requirements of remaining items are to be subjected to special consideration by the Society.

Section 2 Structural Strength of Hull

2.2.1 When the structural strength of hull of towed vessel is satisfactory to relevant CCS rules or other standards recognized and its towing route is within any service restriction given by the class notations or assigned navigation area, the structural strength is to be considered adequate.

When the towed vessel is a ship sustained sea damage, the damaged part is to be repaired permanently or temporarily to restore strength and watertightness in order to ensure that the towed vessel has adequate strength and watertightness

for the towage.

2.2.2 When the towed vessel is a non - classed vessel, or a classed vessel whose towage route is beyond its restriction given by the class notations, strengthening measurements or limitation of towage condition is to be determined according to the expected sea condition.

For floating dock, total twisting stress is to be examined with special attention.

2.2.3 If heavy objects are carried on the towed vessel, the strength calculations of the supporting structures and the fastening devices are to be checked as to ascertain that they have adequate strength. For the load calculation acting on supporting members and lashing fittings and their strength standard, refer to Appendix 1.

The size of barges for carrying jackets or other large installations are to be suitable for those of the jackets. For non - special purpose barges, their deck structure is to be suitably strengthened as to have sufficient strength.

2.2.4 The hull structure in way of towing flounder plates, towing bollards, towing posts, fairlead etc. is to have adequate strength.

Section 3 Intact Stability, Damaged Stability and Floating Condition

2.3.1 Intact stability in departure and arrival conditions for towage is to be checked for towed vessel, and its intact stability taking into account the correction for the free surface effect of liquid is generally to satisfy the requirements of the competent authorities of flag state.

2.3.2 In checking the intact stability, damage stability and floating condition of barges carrying jackets or other large installations, the stowage and arrangement of the jackets are to be taken into account.

2.3.3 For the towed object carrying more than 12 passengers or the vessel whose damaged stability is to be checked by the stipulation of Administration of flag state, if one tank is flooded by damage during towage, its damaged stability and floating condition are to satisfy the requirements of corresponding towed object by the competent authorities.

2.3.4 Adequate draft and a certain trim by the stern are to be noticed in order to decrease the effect of slamming at towage for the towed vessel. Loading, draft and trim of towed vessel are to meet the requirements of

approved towage stability calculation.

2.3.5 The fore draft and difference between fore and aft drafts of towed vessel at sea are recommended not less than the value in Table 2.3.5:

Table 2.3.5

Length of the towed vessel (m)	Fore draft (m)	Difference between fore & aft drafts (m)
30	0.90	0.30
60	1.80	0.54
90	2.50	0.80
120	3.00	0.95
150	3.60	1.05
180	4.20	1.20
210	4.80	1.35

2.3.6 The trim by stern of the barges for carrying jackets or other large installations is to comply with the requirements for the stowage and sea installation procedure of the barges.

Section 4 Safety Measures Against Entry of Water

2.4.1 Drainage facilities on exposed freeboard deck and superstructure deck are to comply with the relevant requirements of The International Convention on Load Lines, 1966 or of the competent authorities of flag state.

2.4.2 Jamming of the shutters of freeing ports of the bulwarks on weather freeboard deck is to be prevented. Scuppers and discharges in decks are to be unblocked.

2.4.3 Closing appliances of various openings on exposed freeboard deck and superstructure deck are to comply with the relevant requirements of The International Convention on Load Lines, 1966 or of the competent authorities of flag state.

2.4.4 Requirements for closing appliances:

(1) Requirements for various types of sea - going ships:

- ① Hatchways, ventilators, airpipes, doors, windows and other openings which may let sea water enter the vessel and affect its stability are to be closed weathertight. Sidescuttles are to be closed with deadlights and fixed firmly. Any watertight doors or other closing appliances in the hull are to be closed.
- ② Sea valves and overboard discharge valves not in use during the voyage are to be closed. The closing devices of sanitary discharge are to be fixed as practicable.

(2) Requirements for other towed object:

- ① Applicable measures are to be taken to satisfy the requirements of (1) above.
- ② Where there is no crew on board the towed object, the sidescuttles of cabins below the freeboard deck, the superstructures or deckhouses on the first tier above the freeboard deck are to be closed with deadlights and fixed firmly if the sidescuttles have deadlights; if the sidescuttles have no deadlights, their outsides are to be protected by steel plate or other effective means.
- ③ For the towed object with crew on watch, all openings that may let sea water enter the vessel except the openings used by crew are to be closed weathertight.

2.4.5 Means for detecting leakage and leak stopper:

- (1) All bilges and wells in holds, double - bottom tanks, void spaces, cofferdams, oil tanks and water tanks are to be fitted with sounding facilities. Watertightness of covers of sounding pipes of all oil tanks and water tanks on exposed deck are to be ensured.
- (2) The towed vessels are to be equipped with adequate amounts of leak stopper.

2.4.6 A horizontal line not less than 50cm × 20 cm is normally to be painted both at bow and stern at proper position above the departure fore and aft draughts for the unmanned towed vessels in order to discern whether abnormal change exist on the fore and aft draughts by lookout on the towing vessel.