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TZHS4009-100-02SM

5000DWT散货船
5000DWT BULK CARRIER

技术设计
TECHNICAL DESIGN

船体说明书
HULL SPECIFICATION

SHIP'S NO.
DRAWING NO.
TZHS4009-100-02SM
页数 PAGE 重量 WEIGHT 比例 SCALE
1 / 13 (Kg)
台州市海顺船舶设计有限公司
TAIZHOU HAISHUN SHIP DESIGN CO.,LTD.

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图纸面积(AREA): 0.06m²

I. 总体性能 GENERAL

1. 船型 SHIP'S TYPE

本船为钢质、单甲板、单机单桨、柴油机驱动的尾机型散装货船，全船设有二个货舱。本船设有首楼，尾部主甲板上设四层甲板室。

Single deck, single M.E. with single-screw to be applied to this steel vessel. The bulk carrier is aft engine type, equipped with a diesel engine. Two (2) cargo holds are to be fitted on board. The vessel is fitted with forecastle and four(4) tiers deckhouse are to be fitted on aft body of main deck.

2. 航区及用途 RANGE AND INTEND

本船主要航行近海航区，用于装载散装货物（危险货物和重货等除外），装载时应均匀装载。

船体结构和稳性满足近海航区规范的要求。

本船对船体结构作“B”级冰区加强。

This vessel mainly serviced for offshore range, shall be used for uniformly loading bulk cargo(exclude dangerous cargo and heavy cargo).

The hull structure and stability shall meet the rules requirements on ships in offshore area.

“Class B” Ice strengthening to be done to the hull structure in this vessel.

3. 主尺度 PRINCIPAL DIMENSIONS

总长	LENGTH (O.A.)	L_{OA}	96.90m
水线长	LENGTH (DESIGNED W.L.)	L_{WL}	92.62m
垂线间长	LENGTH (P.P.)	L_{PP}	89.80m
型宽	BREADTH (MLD)	B	15.80m
型深	DEEPTH (MLD)	D	7.40m
吃水	DRAFT	d	5.85m
排水量	DISPLACEMENT	Δ	6705.2t
载重量	DEADWEIGHT		5286.2 t
定员人数	COMPLEMENT		14P
甲板间高 Tweendeck height:			
主甲板至首楼甲板	Main deck to f' cle deck		2.40m
主甲板至救生甲板	Main deck to lifesaving deck		2.60m
救生甲板至起居甲板	Lifesaving deck to accomm.deck		2.60m
起居甲板至驾驶甲板	Accomm.deck to naviagation deck		2.60m
驾驶甲板至罗径甲板	Navigation deck to compass deck		2.50m

4.总布置概况 GENERAL ARRANGEMENT

本船主甲板以下设六道水密舱壁,自尾至首分隔成淡水舱2(左,右)、淡水舱1(左,右)、机舱、第二货舱、第一货舱、艏压载水舱(左,右)、艏尖舱兼压载水舱。

The hull below main deck to be divided from aft to fore by 6 watertight bulkhead into: NO2.fresh water tank(P&S), NO1.fresh water tank(P&S),engine room, NO.2 cargo hold, NO.1 cargo hold,fore water ballast tank(P&S),fore peak water ballast tank.

首楼内设有油漆间、杂物间、锚链舱及索具舱。

Paint store,misce.room,chian locker and rope store are arranged in forecastle.

尾部主甲板室内设有厨房、餐厅、粮食间、浴室、厕所、机舱入口、二氧化碳室及单人船员室五间。

Galley,messroom,provision room,bathroom,toilet, entrance of engine room,CO2 room,five(5)single crew room are arranged on aft body of main deck.

救生甲板室内设单人船员室五间,储物间。

Five(5)single crew room, and store room are arranged on lifesaving deck.

起居甲板室内设船长室和轮机长室及两间单人船员室及电瓶间和配电间。

Each one(1) bathroom, mise.room and toilet shall be fitted for captain room, chief engineer's room, and two one-man rooms as well as battery room and switch room on accomm.deck.

本船所有船员室内均配有独立的卫生间。

The independent toilet to be provided for all crew rooms on board.

驾驶甲板室内设驾驶室、海图区、报务区等。

Wheelhouse, chart space and radio space are arranged on navigation deck.

罗径甲板设信号灯桅一根,主磁罗径一只;首楼甲板后设桅一根,烟囱设于起居甲板#9—#15肋位处的机舱棚上。

One (1) signal light mast, one (1) main magnetic compass are arranged on compass deck.

The mast is arranged on forecastle deck aft and the funnel is arranged #9—#15 above the engine casing on accomm.deck.

货舱区域舦部舱口围板高 1.44 米,其上设单拉式钢质风雨密舱口盖。

The height of hatch coaming amidship in way of cargo area to be 1.44m,with single pull type steel weathertight hatchcover on top of it.

5.载重量、载货量及吨位 DEADWEIGHT, CARGOWEIGHT AND TONNAGE

在设计吃水 5.85m 时,载重量为 5286.2 吨,载货量为 4995.7 吨。

The deadweight is 5295.2t and the cargo weight is 5004.7t at the designed draft 5.85m.

载重量是指在指定吃水时船舶排水量和空船重量的差值。指定吃水时的排水量由静水力曲线表查得。

Deadweight is the difference in tones between the displacement of a ship at a specific draught and the lightweight of the ship. The displacement of a ship at a specific draught to be obtained from hydrostatic curve.

载货量是指在指定吃水时的排水量减除空船重量、油、水、压载、人员、食品及规范要求以外的备品、备件的差值。

Cargoweight is the difference in tones of the displacement of a ship at a specific draught deducting the lightweight of the ship, oil, water, ballast, personal, food and spare parts beyond the rules requirements.

吨位根据中华人民共和国海事局《船舶与海上设施法定检验规则》（国内航行海船法定检验技术规则）（2004）与（2006年修改通报）第2篇要求计算。

The tonnage is calculated according to the requirements of Part 2 of "Statutory Survey for ship and establishment on sea" (Regulation of Statutory Survey for International Ships on sea in 2004) and amended by 2006 published by Maritime Safety Administration People's Republic of CHINA (CHINA MSA).

总吨位 Gross tonnage:GT=3033,

净吨位 Net tonnage:NT=1699

6.干舷及稳性 STABILITY AND FREEBOARD

本船在设计吃水 5.85m 时的干舷为 1564mm，满足中华人民共和国海事局《船舶与海上设施法定检验规则》（国内航行海船法定检验技术规则）（2004）与（2006年修改通报）第3篇对“B”型船舶要求所核算的最小干舷。

The freeboard of this vessel is 1564mm at the designed draft 5.85m, which met the requirement of Part 3 of the international B-TYPE ships of "Regulation of Statutory Survey for ship and establishment on sea (Regulation of Statutory Survey for International Ships on sea in 2004) and amended by 2006 published by Maritime Safety Administration People's Republic Of CHINA (CHINA MSA).

各种装载情况时的稳性满足中华人民共和国海事局《船舶与海上设施法定检验规则》（国内航行海船法定检验技术规则）（2004）与（2006年修改通报）第4篇对航行于近海航区散货船要求。

The stability of different loading cases met the requirement of Part 4 of the offshore bulk carrier of "Regulation of Statutory Survey for ship and establishment on sea (Regulation of Statutory Survey for International Ships on sea in 2004) and amended by 2006 published by Maritime Safety Administration People's Republic of CHINA (CHINA MSA).

7. 主机航速及续航力 MAIN ENGINE SPEED AND ENDURANCE

(1) 主机采用 Main engine type G8300ZC16B(无锡 Wuxi diesel engine factory)

额定功率 Rated power: 1765KW

额定转速 Rated speed: 525r/min

(2) 齿轮箱采用 Gearbox GWC49.54(杭齿 Hangzhou advance gearbox)

减速比 Gear ratio 3 : 1 (2.9172 : 1)

主发电机组: 机组型号: CCFJ120J-Y 2台

Main diesel generating set: Type: CCFJ120J-Y 2 sets

柴油机(Diesel engine): 型号(type) 6135AZCaf

额定功率(rated power): 138KW × 2台 额定转速(rated speed): 1500r/min

发电机(Generator): 型号(type) TFXW-280L4-H

额定功率(rated power): 120KW × 2台 额定转速(rated speed): 1500r/min

停泊柴油发电机组: 机组型号: CCFJ50J-Y

Harbor diesel generator set: type: CCFJ50J-Y

柴油机(Diesel engine): 型号(type) 4135ACaf

额定功率(rated power): 63KW 额定转速(rated speed): 1500r/min

发电机(Generator): 型号(type) TFXW-225L4-H

额定功率(rated power): 50KW 额定转速(rated speed): 1500r/min

(3) 航速 Speed

本船在设计吃水 5.85m, 深水平潮, 船壳清洁无污底, 风力不超过蒲氏 3 级时, 其试航速率不小于 11.60 节。

本船燃油舱可储备燃油 96.30 吨, 柴油 21.40 吨 (各油舱均满舱时), 可供服务航速航行时间约 192 小时之需。

The endurance at the design draught of 5.85m, deep and slack sea, shell clean without fouling, the wind power not great than class 3, service speed not less than 11.60 knots.

The fuel oil tank can load fuel oil 96.30t, diesel oil tank can load diesel oil 21.40 t(full loaded), can navigate for approximately 192 hours.

8. 舱容 CAPACITY

(1) 货舱舱容 Cargo hold capacity

第一货舱 NO.1 cargo hold (#80-#131) 3177.79m³

第二货舱 NO.2 cargo hold (#28-#80) 3269.11m³

合计 Total 6446.90 m³

(2)淡水舱舱容 Fresh water tank capacity

淡水舱 1 No.1 F.W.TK(左/P)(#4-#7)	23.96m ³
淡水舱 1 No.1 F.W.TK (右/S)(#4-#7)	23.96m ³
淡水舱 2 No.2 F.W.TK (左/P)(艏/aft-#4)	28.54m ³
淡水舱 2 No.2 F.W.TK (右/S)(艏/aft-#4)	28.54m ³
合计 Total	105.0m ³

(3)油舱舱容 Oil tank capacity

油污水舱 Dirty oily water tank(#10-#13)	4.35m ³
柴油舱 1 NO.1 D.O.TK(#21-#27)	10.21m ³
柴油舱 2 NO.2 D.O.TK (#21-#27)	14.09m ³
柴油日用舱 1 NO.1 D.O.service tk(#17-#18)	3.35m ³
柴油日用舱 2 NO.2 D.O.service tk (#16-#17)	3.16m ³
燃油舱 1 NO.1 F.O.TK(#22-#28)	45.69m ³
燃油舱 2 NO.2 F.O.TK (#20-#28)	57.80m ³
燃油日用舱 F.O.service tk(#18-#20)	7.26m ³
燃油沉淀舱 F.O.settle tk(#20-#22)	8.05m ³
渣油舱 Sludge tk (#19-#21)	2.54m ³
溢油舱 Oil overflow tk(#19-#21)	3.83m ³
滑油循环舱 L.O.sump tk(#13-#18)	3.93m ³
滑油舱 Lub.O.tk(#16-#19)	7.55m ³
导热油舱 Thermal oil tk(#7-#10)	2.66m ³
污滑油舱 Lub.O.drain tk(#13-#18)	7.17m ³
合计 Total	181.64m ³

(4)压载水舱舱容 Water ballast tank capacity

第一底压载水舱 NO.1 B.W.B.TK(左/P)(#80-#131)	246.00m ³
第一底压载水舱 NO.1 B.W.B.TK (右/S)(#80-#131)	246.00m ³
第二底压载水舱 NO.2 B.W.B.TK (左/P)(#28-#80)	247.68m ³
第二底压载水舱 NO.2 B.W.B.TK (右/S)(#28-#80)	247.68m ³
第一顶压载水舱 NO.1 T.W.B.TK (左/P)(#80-#131)	118.03m ³
第一顶压载水舱 NO.1 T.W.B.TK (右/S)(#80-#131)	118.03m ³

第二顶压载水舱 NO.2 T.W.B.TK (左/P)(#28—#80)	127.58m ³
第二顶压载水舱 NO.2 T.W.B.TK (右/S)(#28—#80)	127.58m ³
艏尖舱兼压载水舱 F.P.W.B.TK(#136—#148)	107.26m ³
艏压载水舱 F.W.B.TK(左/P) (#131—#136)	54.39m ³
艏压载水舱 F.W.B.TK (右/S) (#131—#136)	54.39m ³
合 计 Total	1694.62m ³

(5)其他舱舱容 Other tank capacity

冷却水舱 Cooling water tank(#4—#7)	11.72 m ³
合 计 Total	11.72 m ³

9. 备品和属具 SPARE AND FITTING

配齐规范规定的备品和属具，超过规范要求的机电产品随机备件和业主指定的备件由船厂安放在适当位置。

Spare and fittings shall be provided in accordance with the rules requirements, Which of the machinery and electrical equipments beyond rules specified shall be arranged on the suitable position by yard.

II. 结构概述 STRUCTURE OUTLINE

本船为近海航区的船舶，为单甲板、单壳、单机、尾机型，具有艏楼的钢质全焊接结构散货船。全船采用混合骨架形式。结构对 B 级冰区进行加强。

The vessel to be aft-engine type bulk carrier, of fully welded construction, single deck, single shell, single engine and with forecastle fitted .She is served for offshore range .The hull structure is combined framing. Class-B ice strengthening to be done to the hull structure.

船体主要构件按照中国船级社《国内航行海船建造规范》（2006）第 2 篇对近海航区的要求进行设计。

The primary members must meet the requirement of ch.2 of offshore area in “Rules For Construction Of sea-going Ships engaged on domestic voyages” (2006) of China Classification Society (CCS)

本船的肋骨间距：货舱 640mm，其它区域为 600mm。

The frame space of this vessel: cargo hold: 640mm, other area: 600mm

全船按总布置要求，设置贯通左右舷的水油密横舱壁六道，舱壁均以垂直扶强材扶强，此外，根据布置需要设置局部纵、横舱壁数道。

Six(6) water and oil tight transverse bulkheads to be arranged throughout port and starboard as shown in "GENERAL ARRANGMENT". All the bulkhead shall be supported by vertical stiffener. Local longitudinal and transverse bulkhead to be fitted as required by the practice.

全船材料采用满足 CCS (2006 年) 规范要求的 CCS 级钢, 艏、艉柱采用钢板焊接。

All the material made of CCS-class steel met the requirement of CCS (2006). Stem and stern post shall be welded by steel plate.

船体结构焊接要求按“船体结构焊接规格表”进行, 船厂应编制合理的焊接工艺, 以尽量减少焊接引起的变形, 焊接船体结构的焊接材料应符合 CCS《材料与焊接规范》(2006) 的规范要求。

Welding to be used in hull structure is carried out in accordance with "WELDING SPECIFICATION". This ship yard shall draw up a reasonable procedure, in order to reduce distortion induced. The welding materials shall subject to CCS <MATERIAL AND WELDINGS RUELS> (2006).

建造厂可根据其实际情况(船厂施工场地、起重能力、施工工艺等)对船体结构进行划分, 船厂应根据本船的结构特点预先制定合理的施工工艺。

Refer to the actual condition (such as position, loading capacity, technics and etc.), the shipyard divided the hull structure and made suitable welding methods.

船上所有液体舱柜内, 在其上下构件上均应开有流水(油)孔、透气孔。

The drain(oil) holes and air holes to be arranged in the ups and downs members in all the liquid tanks.

凡在建造中临时所开的出入口、通风孔(工艺孔)在完工后均应予封没, 且保证强度和 watertight 要求, 在施工中的临时支撑和各种眼板在完工后全部拆除, 所有焊疤应批平磨光。

All access door and ventilation hole used during construction shall be enveloped in order to ensure the requirement of strength and watertight and oil tight.

All support block and eye plate will be removed after the completion of the vessel.

All burr will be flat and burnished.

为了减少可能发生的振动, 船体结构上采取了如下措施:

In order to reduce the vibration, the following measure to be adopted:

(1) 上层建筑及甲板室端壁对准, 而因布置要求不能对准主体横舱壁, 则在 #26 采用强框结构形式;

The superstructure shall be in align with deckhouse bulkhead.

Some structure, not level with main hull transverse bulkhead, shall be of web frame construction at Fr. #26.

(2) 所有的纵向构件具有良好的连续性;

All longitudinal members are of good continuity;

(3)主机基座延伸至前后舱壁,并有效过渡;

Main engine foundation shall be extend to forward and aft bulkhead, with effective transition.

(4)机舱内设置间距不大于4档肋距的强肋骨、强横梁,它们与肋板连成一牢固的横向强框架;

Web frame and web beam spacing not greater than four frames shall be fitted in engine room, which together with floor to form a firm transverse frames.

(5)上层建筑及甲板室的甲板纵桁设置间距不大于2.0m,以利增加甲板板架的刚性。

The deck girder of superstructure and deckhouse shall be so fitted for spacing not great than 2.0m as to increase the rigidity of deck grillage.

此外在布置绞盘机、锚机、艇架、桅、烟囱等处应作局部加强。

In addition, the structure under the winch, windlass, davits, mast and funnel shall be reinforced locally.

2.主要构件汇总 PRIMARY MEMBER SUMMARY

2.1 外板 SHELL

本船平板龙骨为 12×1800 (mm),船底板10mm,舷侧外板为10mm,舷顶列板在船中0.4L范围内为12mm,板宽为2000mm。

The flat keel to be 12×1800 (mm),bottom plate is 10mm,side shell is 10mm,sheer strake is 12mm in the area of 0.4L off midship,width: 2000mm.

舷顶列板与强力甲板采用角接形式,在船中0.5L区域内的强力甲板边缘必须开坡口,并保证完全焊透。

The sheer strake connect to strength deck by angle joint and groove to be done round the edge of strength deck 0.5L area off midship.it can be Ensured full penetration of weld.

2.2 甲板 DECK

本船在船中0.4L范围内开口线外主甲板厚度取14mm,甲板边板14mm,在开口线以内及0.075L区域内的主甲板板厚为10mm。

Around 0.4L area off midship outside opening line, The thickness of main deck plate is 14mm, deck stringer 14mm.Around 0.075L area off midship inside opening line,The thickness of main deck plate is 10mm.

货舱开口角隅采用抛物线形式。

The hatch corn to be parabola form.

2.3 船底结构 BOTTOM STRUCTURE

本船货舱区域船底为纵骨架式双层底结构，每四道肋位设置实肋板，在中桁两侧设置旁桁材，其间设上、下底纵骨。整个货舱区域铺板厚为 12mm、14mm 的内底板。

本船船底纵向构件有良好的连续性。

The structure of cargo space is longitudinal framing with double bottom. Plate floor to be arranged at every four (4) frame. The side girder is arranged with the inner bottom and bottom longitudinal on both sides of centre girder. The Inner bottom plate of 12mm、14mm thick shall be arranged in the whole cargo area.

The bottom longitudinal members have good continuity.

2.4 舷侧骨架 SIDE STRUCTURE

本船舷侧为横骨架式结构，货舱区域舷侧骨架为主肋骨形式，肋骨上下端用梁肘板及舳肘板与顶边舱及底边舱连接。

The side structure are transverse framing, which in cargo area to be considered as main frame .

The upper and lower edge of frame shall be connected to top side tank and hopper tank by use of Beam keel and bilge bracket.

机舱内设置间距不大于 $4 \times 600\text{mm}$ 的强肋骨，并于相应位置设强横梁，机舱普通肋骨上下端设置梁肘板及舳肘板与横梁及肋板相连。

Web frames spacing not greater than $4 \times 600\text{mm}$ to be fitted in engine room, and web beam also fitted at the corresponding position. The upper and lower edge of ordinary frame in engine room shall be connected to beam and floor by use of Beam keel and bilge bracket.

其余区域均为横骨架式，在艏部按船端加强要求予以加强，本船在艏部距基线 5100mm 处设置艏平台。

Other structures remaining shall be transverse framing. The fore body shall be reinforced according to the strengthening requirements of the ship ends and for platform to be fitted at the position of 5100mm off baseline.

2.5 甲板骨架 DECK FRAME

本船甲板横梁在通过纵桁处与纵桁腹板直接焊接，横梁端部用肘板与肋骨连接；货舱区域开口线外主甲板横梁端部设置肘板与舱口纵桁及肋骨相连。

Deck beam shall be directly welded onto the girder web in way of girder and the ends to be connected to the frames by use of bracket; outside opening line in cargo area, beam ends shall be fitted with bracket for connecting with hatch side girder and frames.

2.6 舱壁 BULKHEAD

全船共设置贯通左右舷的水密横舱壁六道，位于#4、#7、#28、#80、#131、#136肋位，此外还设置局部纵横舱壁，舱壁均以垂直扶强材扶强。

The main hull to be divided from port to starboard by 6 watertight bulkheads, sperated arranged on FR 4、FR 7、FR 28、FR 80、FR 131、FR 136. In addition local longitudinal and transverse bulkhead to be fitted and be rainforced by vertical stiffeners.

2.7 上层建筑和甲板室 SUPERSTRUCTURE AND DECK HOUSE

本船在#131前设置艏楼，在#4—#26肋位设主甲板室，以上设四层甲板室，均为横骨架式结构。

The forecastle is arranged before Fr 131. Main deckhouse to be arranged between FR 4—FR 26, four(4) tie deckhouse shall be arranged above it, The above structure of this vessel is transverse framing.

2.8 货舱口围板 HATCH COAMING

货舱口围板在船纵舳剖面处的高度为1440mm，围板厚14mm，上缘设面板作舱盖板滑轮走道，围板用水平扶强材扶强，此外尚设置间距为1280mm的竖向肘板。

The height of hatch coaming is 1440mm and thickness is 14 mm, with face plate as cargo block walkway for hatchcover plate. The coaming is strengthened by Horizontal stiffeners and vertical bracket with space 1280mm fitted on it.

其余详见“船体结构计算书”

Others see “STRUCTURE STRENGTH CALCULATION”.

2.9 其它 Others

尾部主甲板上设置高度为1000mm的舷墙板，其板厚为6mm，隔档设置 $L \frac{6 \times 300}{60}$ 的竖向肘板。货舱区域设置1000mm高的栏杆。

Bulwark plate with the height of 1000mm shall be arranged above the aft body of main deck, the thickness of the plate to be 6mm, $L \frac{6 \times 300}{60}$ vertical bracket to be fitted every frame. Railing with 1000mm to be adopted in cargo hold area.

本船艉柱为钢板焊接，其与船体外板及骨架的结构连接必须牢固，船厂必须采取合理的工艺及检验措施确保装配及焊接质量。

The stern post shall be welded by steel plate, and connected to the structure of the shell and frame. The shipyard must draw up a reasonable techniques and inspection measurements in order to ensure the assembling and welding quality.

III. 甲板舾装部分 DECK OUTFITTING

本船舾装数为 738, 按中国船级社《国内航行海船建造规范》(2006) 规定配备锚泊及系泊设备

The ships with EN to be 738, the anchor and mooring equipment met the requirement of Rules For Construction of sea-going Ships engaged on domestic voyages" 2006 published by CHINA CLASSIFICATION SOCIETY (CCS)

1. 锚设置 ANCHOR EQUIPMENT

(1) 锚: 艏锚 2 头, 每头锚重 2280Kg, 备用锚 1 头, 锚重 2280kg;

two (2) Bow anchors per weight: 2280Kg;

One (1) spare anchor per weight: 2460kg

(2) 锚链: AM₂ 级-Φ42, 锚链总长度 467.5m, 左链 220m, 右链 247.5m;

Chain cables: Type: AM₂-Φ42, Length is 467.5m(left is 220m, right is 247.5m)

(3) 锚机: YMFJ₁-42 液压单侧起锚机 (单卷筒) 两台, 配闸刀式掣链器及锚链滚轮各二只。

Windlass: Two (2) sets of hydraulic single windlass(single drum)

Type: YMFJ₁-42

provided with two (2) guillotine-type chain stoppers and idler wheels.

2. 拖带系泊设备 TOWLINE AND MOORING EQUIPMENT

(1) 拖索一根, 索长 190 米, 6×24-140-φ32, 破断力大于 441.3KN;

One(1) towline with length 190m, 6×24-140-φ32, the breaking load is greater than 441.3KN.

(2) 系泊索四根, 每根索长 170 米, 8×45 丙纶缆绳, 破断力大于 172KN;

Four(4) mooring lines, length of each line is 170m, 8×45 polypropylene rope, the breaking load is greater than 172KN.

(3) 系泊绞车 Mooring winch

YMZJ42 液压组合式系泊绞车三卷筒一台。

One(1) YMZJ42 hydraulic composite mooring winch(three drums) to be adopted.

3. 舵及舵机 RUDDER AND STEERING GEAR

(1) 舵 Rudder

本船采用有舵托支承的双支点流线型平衡舵。

One double-fulcrum balanced rudder to be supplied .

舵叶面积 Rudder area	A	9.547m ²
舵数目 Rubber number		1
展舷比 Aspect ratio	λ	1.3908
平衡比 Balance ratio	β	0.2493
面积比 Area ratio	μ	1.762%

(2)舵机 Steering gear

本船选用 100KN-m 往复式电动液压舵机一台；

One(1) 100KN-m reciprocating electrical hydraulic steering gear to be adopted.

(3)舵杆 Rudder stock

本船舵杆直径为 220mm, 选用船用#20 锻钢。

The diameter of rudder stock is 220 mm, which made out of forged steel #20 .

4.救生设备 LIFESAVING EQUIPMENT

救生设备按中华人民共和国海事局《船舶与海上设施法定检验规则》（国内航行海船法定检验技术规则）（2004）与（2006 年修改通报）对近海航区船舶的要求配备。

The lifesaving equipment is equipped as the requirement of the offshore area ships of "Regulation of Statutory Survey for ship and establishment on sea (Regulation of Statutory Survey for International Ships on sea in 2004) and amended by 2006 published by Maritime Safety Administration People' s Republic Of CHINA (CHINA MSA).

(1)救生艇及救生筏 Life Boat and life rafts

本船救生艇甲板左右舷设有 12 人机动开敞式救生艇各一艘，船上总定员 15 人。

The complement of this vessel are 15 persons, Each one (1) lifeboat of open type (each for 12 persons) been installed on both side of lifesaving deck;

(2)救生衣和救生圈 LIFEJACKET AND LIFE BUOY

全船配备 19 件救生衣，其中驾驶室 2 件，机舱 2 件，其它按人员住所分配。

19 lifejackets stowed in the ships for personnel. there are two (2) lifejackets in wheelhouse, two (2) lifejackets in engine room and others distribution according to the person and room.

全船配置救生圈 8 只，分别布置在：驾驶甲板左、右舷各一只，起居甲板左右舷栏杆各一只，救生甲板后端栏杆 2 只，艏楼栏杆 2 只；其中带自亮灯 4 只，带救生浮索及烟雾信号每舷各 1 只，其它 2 只。

There are total eight(8) buoys to be stowed in this ship, herein One(1) set at each side of navigation deck, two (2) sets at port&stb handrail of accommodation deck, two (2) sets on aft handrail of lifesaving deck, two (2) sets on forecastle deck handrail, and at least four(4) of the buoys with self-igniting lights, one(1) of buoy with floating lines and smoke signals on each side, two(2) sets of other types.

(3) 抛绳设备 LINE-THROWING APPARATUS

全船配置手提式抛绳器 4 具。

Four (4) sets of portable line-throwing apparatus to be delivered.

烟火信号设备 pyrotechnic signal equipment

全船配置 12 枚经认可的火箭降落伞火焰信号。

12 Rocket parachute flares approved have been carried.

(4) 全船配置紧急呼吸装置 (EEBD) 7 套。

Seven(7) sets of General emergency alarm system (EEBD) to be provided.

5. 消防设备 FIRE FIGHTING EQUIPMENT

全船配有水灭火系统, 及二氧化碳系统。消防设备按中华人民共和国海事局《船舶与海上设施法定检验规则》(国内航行海船法定检验技术规则) (2004) 与 (2006 年修改通报) 的要求配备。详见防火控制图 (TZHS4009-103-01)

Water - mist fire extinguishing system and CO₂ system to be provided on board.

All fire fighting equipment to be in appliance with the requirement of Regulation of Statutory Survey for ship and establishment on sea (Regulation of Statutory Survey for International Ships on sea in 2004) and amended by 2006 published by Maritime Safety Administration People's Republic Of CHINA (CHINA MSA). For details, please see FIRE CONTROL PLAN (TZHS4009-103-01).

6. 金属门、窗 METAL DOORS AND WINDOWS

(1) 金属门 METAL DOORS

露天主甲板进入艏楼、艉部甲板室的门, 均为单扇钢质风雨密门, 门槛高度为 600mm, 进入其他甲板室的门槛高度为 380mm。详见“全船门、窗布置图” (TZHS4009-260-01)

Single type steel weather tight door to be used on weather main deck accessing to forecastle, aft deckhouse, with doorsill height of 600 mm, and the doorsill of the door of the entrance to other deckhouse to be 380mm. For details, please see “SHIPS DOORS, WINDOWS ARRANGEMENT” (TZHS4009-260-01)

(2) 货舱盖 HATCHCOVER

本船采用单拉式钢质风雨密舱口盖。

Single pull-type weathertight steel hatchcover to be adopted in this ship.

7. 扶梯、栏杆、扶手 STAIRCASE, RAILING AND HANDRAIL

(1) 扶梯 STAIRCASE

详见全船小舱盖及直梯布置图 (TZHS4009-265-01) 及全船栏杆、扶手、扶梯布置图 (TZHS4009-267-01)

Please see "SHIPS SMALL HATCHCOVER AND VERTICAL LADDAR ARRANGEMENT" (TZHS4009-265-01) and "LAYOUT OF SHIP 'S RAILINGS HANDRAILS AND STAIRCASE" (TZHS4009-267-01)

(2) 舷梯 ACCOMMODATION LADDER

在主甲板室两舷各设舷梯一架，由电动舷梯绞车进行收放、自动翻梯。

One(1) accommodation ladder are provided on main deckhouse port and starboard. It is to be folded and released by electrical accommodation ladder winch and auto turned.

(3) 栏杆 Railing

救生甲板、起居甲板及驾驶甲板四周均设高度为 1000mm 的栏杆，扁钢支柱，园钢扶手。

Railing height of 1000mm shall be arranged on lifesaving deck, accommodation deck and navigation deck with flat bar stanchions and round steel handrail.

(4) 扶手 HANDRAIL

全船内外走道均设钢管防浪扶手。

The billow defend steel handrail all arranged inside and outside of walkway.

8. 航行及信号设备 NAVIGATION AND SIGNAL EQUIPMENT

本船驾驶室内设标准磁罗径一只，操舵磁罗径一台，舵角指示器一只，推进器转速指示器一只，雷达一台，电子定位设备一套，回声测深仪一只，自动识别系统一只，其它航行及信号设备按中华人民共和国海事局《船舶与海上设施法定检验规则》（国内航行海船法定检验技术规则）（2004）与（2006年修改通报）对近海航区船舶要求配备。

One(1) standard magnetic compass, One(1) steering magnetic compass, One(1) rudder angle indicator, One(1) thruster speed indicator, One(1) radar, One(1) electronic positioner, One(1) echo-sounding device, One(1) automatic identification system, to be arranged on wheelhouse.

Other equipments to be provided according to requirement of offshore area cargo ships in

Regulation of Statutory Survey for ship and establishment on sea (Regulation of Statutory Survey for International Ships on sea in 2004) and amended by 2006 published by Maritime Safety Administration People's Republic Of CHINA (CHINA MSA).

(1) 雷达桅 RADAR MAST

驾驶室顶设雷达桅一根，钢板焊接结构，上设雷达、避雷针、汽笛、天线横担、桅灯、失控灯、信号灯、雾灯等必需的信号设备。

One(1) radar mast, of steel plate welded construction, shall be fitted on the top of wheelhouse and with necessary signal equipments such as the radar, lightning rod, whistle, antenna cross arm, masthead light, NUC light, signal light, fog lamp and etc. provided.

(2) 前桅 FORE MAST

前桅设于首楼后端壁上，钢板焊接结构，其上设前桅灯、锚灯。

The fore mast, of steel plate welded construction, shall be fitted on Aft bulkhead of forecastle with the foremast light and anchor light provided.

(3) 信号设备 SIGNAL EQUIPMENT

船上设有：大号球体 3 只，4 号中国国旗 4 面，3 号国际信号旗 1 套，手旗 1 付，1 号标志旗 1 面，大型号笛 1 只，大型号钟 1 只。

The following equipment to be fitted on board:

Three(3) Large-size spheres, four(4) CHINA flags with size NO.4, one(1) international signal flags with size NO.3, one(1) signal flag, one(1) symbol flag with size No.1, one(1) large hooter, one(1) large bell.

(4) 无线电通信设备配备

Radio Communications equipments to be provided as follows:

甚高频无线电装置 VHF radio	VHF × 1 台/set
奈伏泰斯接收器 NAVTEX receiver	NAVTEX × 1 台/ set
卫星紧急无线电位标 SEPIRB	S-EP/RB × 1 台/ set
中/高频无线电装置 MF/HF radio	MF/HF × 1 台/ set
救生艇筏双向甚高频无线电话	
Two-way VHF radiotelephones of survival crafts	Two-way VHF × 3 只/ sets
搜救雷达应答器 Search and rescue radar transponders	SART × 2 只/ sets

IV 舱室舾装部分 ACCOMMODATION OUTFITTING

1.居住舱室 Accommodation space

供船员居住的船长、轮机长各一间，单人船员室十五间，内设床、衣厨、文件柜、写字台、椅子等。

One(1)captain room, one(1)chief engineer' s room, fifteen single crew room, fitted with: bed, wardrobe, file cabinet, secretaries and chairs etc.

2.公共处所 PUBLIC SPACE

在尾甲板室内设有厨房、餐厅、厕所、浴室作为公共处所。餐厅可同时供全船人用餐。

The galley, mess room , toilet and bathroom is arranged on aft deckhouse .The mess room can be used for all the person on board.

3.浴室 BATHROOM

浴室内设沐浴器二只，水斗一只，洗面兼洗衣槽台一只，洗面台前配镜面箱。

Bathroom equipped with two (2) Shower, one(1) bailer, one(1) washbasin& laundry tray and mirror box shall be fitted in front of washbasin .

4.厕所 TOILET

厕所内配大便器一只，洗池一只。

Two (2) lavatory pan, one (1) sink to be arranged in toilet.

5.其它 OTHERS

艏甲板室内近厨房处设有粮食间及餐厅。

Provision store and mess room to be fitted nearby the galley in aft deckhouse.

救生甲板后端设有电瓶间。

Battery room to be arranged on a lifesaving deck aft.

驾驶甲板室右舷海图区内设有海图桌、转椅；左舷内设有报务区；驾驶室内配有高脚扶手椅一把，钥匙箱、望远镜箱等。

The chart desk, and swivel chair to be arranged on starboard chat room of navigation deckhouse .Radio space to be arranged on port.One(1)High-leg armchair, key locker and telescope box to be arranged in wheelhouse.

另外，在艏楼甲板设有系泊设备。在#131~#136 舱底设应急消防泵组一套。

In addition, anchor and mooring equipment shall fitted on forecastle deck and Emer. fire pump set between #131~#136 on tank bottom.

V. 天幕和帆布罩 AWNING AND CANVAS HOOD

尾甲板室后部及驾驶甲板室左右舷设部分玻璃钢天幕。

露天甲板机械，机动救生艇，罗经等应设帆布布罩保护。

Part GRP awning shall be arranged on aft body of aft deckhouse and Port & starboard of navigation deckhouse.

The canvas hood is used for protecting the machinery on weather deck, motor life boat and compass.

VI. 防蚀 CORROSION PROTECTION:

本船采用锌阳极防蚀，锌块数量按船检规定。

Zinc anode corrosion protection will be applied. The numbers of zinc spelter are decided by Ship Inspection Bureau.

VII. 油漆 PAINT:

油漆按施工厂惯例，亦可参照以下规定：

Paint to be carried out as the workshop's practise, or as follow:

船壳：水线以下铝粉底漆二度，防锈漆一度，防污染二度，下水前12小时漆水线，防锈漆二度，水线漆二度。水线以上：防锈漆二度，油漆面色由施工厂与船东定。

油漆的使用应按生产厂规定，通常不应稀释，所有管路识别标志按CB3033定。

Shell: below waterline, aluminum primer 2°, antirust paint 2°, pollution prevention paint 2°

Waterline shall be painted before 12 hours launch, antirust paint 2°, waterline paint 2°;

Above waterline, antirust paint 2°, the paint color shall be decided by manufacture and

owner.

The using of paint shall be in accordance with the manufacturer, normally the paint shall be not diluted. All pipelines shall be marked as the requirement of CB3033.