

# 3200HP 远洋拖轮规格书

## SPECIFICATION OF 3200HP OCEAN GOING TUG

### 第一节 总则

#### SECTION 1- GENERAL

#### 1.0 定义 INTENT & DEFINITION

本规格书以及总图主要用于描述建造 1 艘双机双定距桨拖轮，并配有设施用于港作、停泊、远洋拖曳、海洋工作和其他作业的拖轮。

This specification together with the GA drawing is intended to describe the construction of a twin engines and twin fixed pitch screws tug completely equipped for harbor operation, mooring, ocean going towing, sea working and other related duties.

该拖轮入 BV 船级社符号为：1 +HULL +MACH，UN-RESTRICTED NAVIGATION。

It will be classed to BV notation: 1 +HULL +MACH，UN-RESTRICTED NAVIGATION.

#### 1.1 总体描述 GENERAL DESCRIPTION

本船为全焊接钢结构，双机双定距桨安装在船尾部固定的导管内。居住舱室位于主甲板和升高甲板。主体由五道水密横舱壁分成如下若干个舱室，详见总图。

This vessel is to be all welded steel construction with twin engines and twin fixed pitch propellers inside fixed nozzles. The vessel's accommodation is to be located on the main deck and raised (forecastle) deck. The main hull is to be divided by five (5) transverse WT Bulkheads into the following compartments:

- |                   |   |
|-------------------|---|
| 1) 艏尖压载水舱 (兼作淡水舱) | Forepeak ballast tank (double as FW tank)                   |
| 2) 左右淡水舱和双层底淡水舱   | FW tank( P&S) and double bottom FW tank                     |
| 3) 机舱内燃油双层底舱和燃油边舱 | Engine room with double bottom F.O. tank and F.O. side tank |
| 4) 左右及中间燃油舱       | F.O. (P&S) center tanks                                     |
| 5) 舵机舱及左右燃油舱      | Steering gear compartment and F.O. tank (P&S)               |
| 6) 左右压载水舱         | Ballast tanks (P&S)   |

主甲板布置有下列舱室：餐厅、厨房及干粮库、1 个甲板储藏室、1 个 4 人间及 1 个 2 人间、1 个盥洗间、1 个空调室 (暂定) 须安装中央空调。请参阅 9.15 空调。

The main deck compartment is to consist of: Mess room, Galley and provision store, One(1) deck store, One(1) 4-Men cabin and One(1) 2-Men cabin, One(1) W.C., One(1)air condition

room(Interim) A centralized air-conditioner is to be installed. Please refer to 9.15 AIR-CONDITION.

升高甲板布置有下列舱室：2 个单人间、1 个盥洗间、1 个电瓶间、1 个储藏室

The Forecastle deck house is to consist of: Two (2) Single cabins, One (1) W.C., One (1) battery room, One (1) storeroom.

## 1.2 主要参数 PRINCIPAL PARTICULARS

### 船体尺寸 Main Dimensions

总长 Length Overall	:	36.00m
水线间长 Length WL	:	31.70m
型宽 Beam Moulded	:	10.97m
型深 Depth Moulded	:	5.00m
设计吃水 Draft Design	:	4.10m

### 居住舱室 Accommodation

2 x 单人间 2xSingle Cabin	:	2 人 2men
2 x 双人间 2x2-Men Cabin	:	4 人 4men
2 x 四人间 2x4-Men Cabin	:	8 人 8men
总共 Total		14 人 14men

### 舱容 Tank Capacity (approx.)

淡水 Freshwater	:	约 100 M <sup>3</sup>
燃油 Fuel oil	:	约 393 M <sup>3</sup>
滑油 Lub.oil	:	1.0 M <sup>3</sup>

<u>主机Main Engines</u>	:	2 x Cummins KTA50 - M2, 1600BHP/1800rpm 与“Reintiges”WAF663 齿轮箱相连，速比 5.95:1 To be joined to gear box WAF 663(Reintjies), ratio 5.95:1
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### 性能参数Performance

自由航速 Free speed : 航行状态 12.0 节 12knots at sail condition  
系缆桩拉力 Bollard Pull : 持续拉力在 100%MCR 时超过 40.0 吨 more than 40T at 100% MCR and continuity pulling

### 1.3 入级 CLASSIFICATION

本船的建造、机械及电气设备的配置和安装要满足 BV 船级社的最新要求。本船 BV 船级符号为：1 +HULL +MACH , TUG UNRESTRICTED NAVIGATION ( 待确认 ) ；

本船挂新加坡旗。

The vessel is to be constructed, machinery and electrical equipments fitted and installed in accordance with the latest Rules for Shipbuilding of BV Class.

Class notation is: 1 +HULL +MACH , UN-RESTRICTED NAVIGATION (to be confirmed).

The vessel to be registry under the flag of Singapore.

### 1.4 规则 REGULATIONS

本船应满足下列规则要求 ( 暂定 ) : The vessel is to comply with: (Interim)

a ) 商船 ( 非常规船 ) 安全规范 1981

Merchant Shipping ( Non convention vessel ) (safety) Regulations 1981

b ) 国际载重线公约 1966 及其最新修改

International loadline convention 1966 and the latest amendments.

c ) 登记国当局无线电通讯规范

Radio Communication Equipment to Government regulations.

d ) IMO 稳性准则 A167 & A562 IMO Stability Guideline A167 & A562

e ) 海上防碰撞国际公约 1972 及 1981 修正

Convention on International Regulations for Preventing Collisions at Sea 1972 and Amendments of 1981

f ) 国际载重吨测量公约 1969 International Tonnage Measurement Convention 1969

g ) Marpol 73/78 ( 包括 BV 发布的声明 )

International Convention for the Prevention of Pollution from Ships  
Marpol 73/78 (including statements issued by BV)

h ) SOLAS 1974 海上救生国际公约及最新修改

International Convention for the Safety of Life at Sea  
SOLAS 1974 and the latest Amendment

i ) 新加坡 MPA 海洋船舶规则规范 Regulation and rule for MPA of Singapore

j ) 船级社相关规范 Related rules by Class Society

## 1.5 证书 CERTIFICATES

下列证书应在交船时提供给船东

The following certificates are to be supplied to the shipowner at the time of delivery:

- 1 ) 建造者证书 Builder Certificate
- 2 ) 入级证书 ( 船体和机械设备 ) Classification Certification (Hull and Machinery)
- 3 ) 安全设备证书 Safety Equipment certificate
- 4 ) 安全结构证书 Safety Construction certificate
- 5 ) 吨位证书 Tonnage Certificate
- 6 ) 载重线证书 Loadline Certificate
- 7 ) 无线电安全证书 Radio Safety Certificate
- 8 ) Marpol 附则 I、IV 及 VI 证书 ( 须符合 Marpol 73/78 )  
Marpol Annex I, IV and VI Certificate (to be complied with Marpol 73/78)
- 9 ) 罗经调整证书 Compass Adjustment Certificate
- 10 ) 系缆桩拉力试验证书 ( BV 船级社出具 ) Bollard Pull Test Certificate issued by BV class.
- 11 ) 无鼠证书 Deratting Exemption Certificate
- 12 ) 无石棉证书 Non-asbestos Certificate
- 13 ) 船级社锚及锚链试验证书 Certificate for Anchor & Chains by the Classification Society  
检验、入级和获取证书所产生的全部费用由建造方承担。
- 14) NOX Certificate. NOX 证书

所有检验费，船级费和证书费用由卖方负责。

All the survey fee, class fee and charges incidental to certificates should be on account of the Seller.

## 1.6 材料 & 工艺 MATERIAL & WORKMANSHIP

A ) 所有材料和工艺应是新的品质良好。所有钢材、分段、船体铸锻造件及设备应满足船级社要求且提供船级社需要的试验证书。所有钢板表面均要光滑平整。

All materials and workmanship are to be of good quality. All steel plates, section, hull forging and casting and equipments should be meet classification's equipments, which test certificates required by classification to be supplied.

B ) 所有锻件或制造附件应设计合理，平滑，无缺陷。

All smith work or fabricated fittings are to be of neat design, smooth and free from defects.

C) 所有铸造件应品质良好，封闭纹路且无裂纹、气孔和其他缺陷。钢质铸造件的制造应满足船级社要求且须认可。

Steel casting of good quality, close grained and free from all cracks, blow holes and other defects. Steel casting to be manufactured comply with Classification requirements and approval.

## 1.7 焊接 WELDING

本船根据合同中的总图、规格书以及船级社规范进行全焊接建造，并尽可能采用自动焊和 CO<sub>2</sub> 焊。

The vessel to be all welded construction in accordance with contract Plans, Specifications and Rules of Classification. Automatic Welding and CO<sub>2</sub> Welding to be used as far as possible.

焊接要满足船级社要求。

Welding should meet the requirements of Classification.

压载水舱、淡水舱以及暴露在露天和与海水接触的区域的所有焊接均要采用双面连续焊。

All welding for Ballast Tank, FW tank and the area exposed to weather which contact with the Sea Water to be of double continuous welding.

采用的所有焊条应具有良好的焊接质量、无剥离或其它有害缺陷，且经船级社认可。

All electrodes shall be of good quality, free from laminations and other harmful defects and also class approved.

焊接焊缝应满足 CSQS 要求/标准。

Welding seam should be satisfied with the CSQS standard.

采用高标准的最新焊接工艺和焊接程序以达到精确的校准度、平整度和焊缝宽度，按船级社要求对大合拢的对接焊缝、甲板拼板焊缝等进行 X 光探伤。

Adopt the high standard latest welding schedule and welding procedure in order to reach accurate calibration, smoothness and welding seal width. X ray photograph to be taken for the butt welding seam of big fold and deck joint plate welding seam according to the classification requirement.

如有可能，在分段和组装分段里进行预装结构以获取最大数量的俯焊。

If possible, preassemble structures shall be carried out in subsection and assemble subsection in order to obtain Maximum quantity downhand welding.

## 1.8 检查/检验 INSPECTION/SUPERVISION

在船舶的整个建造过程中直至交船前，验船师、船东代表及其顾问有权在正常的工作时间内自由进入建造方船厂进行检查检验。建造方船厂在建造期间应提供良好合作。

Throughout the construction period prior to the delivery of vessel, the surveyors and owners' representative and counselor are to be given free access to the Builder's shipyard during normal working hours for supervision and inspection. Builder Shipyard shall keep good cooperation during the construction period.

## 1.9 试验 TESTS

交船前，船体结构、船体密性、所有机器、电器、管系、所有设备、机械设备和甲板附件均要在验船师、船东及其代表在场情况下进行试验。

Prior to the delivery, hull construction, hull tightness, all machinery, electrical, piping, all equipment installed, machinery and deck fitting are to be thoroughly tested in the presence of the classification's attending surveyor, owners and their representative.

### 1.11 系泊试验 MOORING TEST

船舶完工后，要进行下列系泊试验；

Upon the completion of the vessel, the following trails are to be carried out:

1 ) 所有管系功能试验，包括阀件铭牌 ( 为英文 ) 检查

All Piping systems are to be fully tested, including the checking of valve and name plates (English Language)

2 ) 电力装置及所有灯具 Electrical power plants together with all lights

3 ) 辅助机器包括发电机组负荷试验 Auxiliary machinery including Generator load test

4 ) 所有甲板机械 All deck machinery

5 ) 主机及推进系统 Main engine and propulsion system

6 ) 所有泵等等 All pumps etc.

7 ) 所有室外门、窗和舱盖水密试验 All outdoors, windows and hatch WT test

### 1.12 试航 SEA TRIALS

试航要根据船级社/船东认可的程序安排和进行。建造方要安排试航所需的船长及船员，并提供试航需要设备及食物。建造方还要负责提供试航所需的燃油、滑油、淡水和承担试航产生的费用。试航后船上余留的燃油由船东根据原价收购。

Sea trials are to be arranged and carried out in accordance with a program approved by the class and owners. The Builder should supply master, crews and necessary equipment and victuals. All diesel oil, lubrication oil, F.W. and dues for the trials are to be paid by the Builder. The remaining oil on board after the trials to be charged to owner at acquisition cost.

试航前应进行罗经调节。

The compass is to be adjusted before sea trials.

在船舶完工前下列试验应做完：

The following tests should be finished before the vessel completion:

- 1 ) 操纵性试验 Steering test
- 2 ) 抛锚试验 Anchoring test
- 3 ) 测航速 Speed test
- 4 ) 主机满负荷 4 小时续航力试验 Endurance Test at Main engine load Four (4) hours
- 5 ) 导航设备调试 Navigation equipments debugging test
- 6 ) 静态拖曳拉力试验 Static state towing pull test

### 1.13 交船 DELIVERY

本船在建造方船厂码头 ( 船应处于自由飘浮状态 ) 交船。

Delivery of vessel is to be taken afloat in Builder's Shipyard Dock.

### 1.14 图纸 DRAWINGS

完工时，提供 3 套下列英文版船级社认可的蓝图：

On completion, three (3) sets of the following as fitting drawings in English language in blue prints as approved by Classification to be supplied to Shipowner

- |                    |   |
|--------------------|---|
| 1 ) 总图             | General Arrangement                         |
| 5 ) 舱容表 ( 图 )      | Tank Calibration Table(Plan)                |
| 6 ) 结构外形图和甲板图      | Structural Profile & Deck                   |
| 7 ) 主机基座详图         | Main engine seating Details                 |
| 8 ) 艏分段及其舱壁图       | Forward section & bulkheads                 |
| 9 ) 艉分段及其舱壁图       | Aft section & bulkheads                     |
| 10 ) 外板展开图         | Shell Expansion                             |
| 11 ) 上层结构详图        | Superstructure Details                      |
| 12 ) 轴系布置图和艉管详图    | Shafting Arrangement and stern tube Details |
| 13 ) 舵系布置图         | Rudder Assembly                             |
| 14 ) 导管详图 A19      | Nozzle Details A19                          |
| 15 ) 舵机舱布置图        | Steering Gear Arrangement                   |
| 16 ) 机舱布置图         | Engine Room Layout                          |
| 17 ) 舱底、压载和消防管系原理图 | Bilge, Ballast and Fire main System         |

18 ) 燃油管系原理图	Ship's Fuel System
19 ) 柴油机冷却水管系原理图	Diesel Engine Cooling system
20 ) 淡水和海水管系原理图	F.W. & S.W. piping system
21 ) 消防救生布置图	Life Saving & Fire Fighting Arrangement
22 ) 透气、测深&注入管布置图	Position of Tank Vents, Sounding & Filling Pipes
23 ) 接线原理图及有关附件	Wiring Diagram and Related Accessories
24 ) 主配电板接线图	Main Switch board Wiring Diagram
25 ) 24V DC 无线电蓄电池充电板 &24V 配电板图	24V DC Radio Storage Battery Charging Panel & 24V Distribution Board Plan
26 ) 通风布置图	Ventilation Arrangement
27 ) 舱容图	Tank Calibration Plan
28 ) 进坞图	Docking Plan

及其他必要的图纸如密性图，锚绞图，舵机液压图等等。

And other necessary drawings such as tightness plan, anchor winch plan, steering gear hydraulic plan.

其中 1 ) , 5 ) , 17 ) , 21 ) 等图需制作相框布置在船上甲方指定的位置。

Thereinto 1), 5), 17), 21) are to be framed for display in the position specified by the shipowner.

### 1.15 机械设备手册 MANUALS OF MACHINERY & EQUIPMENT

建造方提供 1 套中英文版主要机械设备的操作手册。

One (1) set of manuals of main machinery and equipment in English language to be supplied by the Builder.

### 1.16 建造方/合同方责任 BUILDER RESPONSIBILITY

建造方负责与设备分包商之间的联系以确保设备的兼容。建造方应保证船舶建造和设备质量问题。最终图纸和实际参数应提交给船东或船东代表认可。建造方任何情况下都不能解除上述责任。

The Builder shall responsibility for contact with the equipment's subcontractor in order to insure the equipments compatibly. The Builder shall guarantee the quality of the vessel construction and the all equipments. Final drawings and practice parameters shall be supplied to shipowner or his representatives for approval. Under no circumstances must the builder release from above responsibility.



船舶建造和设备安装过程中，建造方应在任何时候对船上设备和管子都要加以保护和清洁。尤其要保护设备以防损坏、灰尘进入、焊花飞溅、油漆粘上和机械损伤。任何损伤均要加以修复并要得到船东满意，费用建造方船厂自理。

During the vessel construction and equipments installation, the Builder shall protect and clear the equipments on board and pipes at anytime, especially protect the equipments from failure, dirt entering, weld splashing, paint covering and mechanism damage. Any damage should be repaired and met to the Shipowner's satisfaction, which charges arisen should be born to the Builder.

### **1.17 船名，登记港等等 VESSEL NAME , PORT OF REGISTRY**

船艏每侧都要装船名，字母由钢板切割而成且满焊在舷墙上。船名和登记港名装在船艏，字母由钢板切割而成且满焊。船东标志应装在船左右舷船东认可的位置。

The name of the vessel is to be welded and painted on the bow port and starboard, the name and port of registry are to be welded on and painted on the stern. All letters are to be cut from the steel plate and full weld. Shipowner mark should be installed on the position of the port and starboard specified by the shipowner.

### **1.18 信号 SIGNAL**

按照挂旗国政府和船东要求，建造方应提供安全标志和 IMO 符号。

The Builder should supply the Safety Signal (symbol) and IMO Number in accordance with the requirements of flag nation government and Shipowner.

## **第二节 结构**

### **SECTION 2- STRUCTURE**

#### **2.0 总则 GENERAL**

船体和甲板室应全焊接结构。全船采用横向框架结构，肋距 500mm。通常，船体板厚应大于船级社最小要求的 20%。下列构件尺寸仅供参考，按照船级社认可图执行。

The hull and deckhouse are to be of all welded construction. Transverse framing system is to be used throughout, frame space is 500mm. Generally, the hull plate thickness shall more than 20% of the least requirement of the Classification. The following scantlings are for guidance only and will be subjected to class approval.

#### **2.1 龙骨 KEEL**

安装 800x12mm 厚平底龙骨。

A flat plate keel of 800x12mm thick is to be fitted.

## **2.2 首柱 & 弯鼻型首柱 STEM BAR & SOFT NOSE**

首柱是由焊接在一个圆锥体形 12mm 钢板支撑的弯鼻型首柱上的 250x14mm 厚直板制成的。

The stem is to be made up by a 250x14mm thick vertical plate welded to a cone shape soft nose of 12mm plate.

## **2.3 呆木 SKEG**

船体尾部底端中心安装一个箱形呆木。呆木底板厚 14mm，旁板和腹板厚 12mm。

A box shape skeg is to be fitted at the centerline on stern bottom. The bottom of the skeg is 14mm with sides and webs 10mm thick.

## **2.4 艏龙骨 BILGE KEEL**

艏龙骨由 250x12mm 钢板和直径 18mm 圆钢组成，安装于左右舷。

Bilge keel is to be made up of 250x12mm plate and  $\phi$ 18mm round bar, which to be fitted at port and starboard.

## **2.5 底部结构 BOTTOM CONSTRUCTION**

本船为单底除了船员居住舱室和机舱部分区域为双层底。为了保证船体底部结构的连续性，左右舷两根纵桁以及中间纵桁尽可能延伸且与尾部舱的纵舱壁相连。

The bottom is to be of single bottom except in crew's accommodation and part of the engine room where double bottom construction is to be adopted. In order to give a structural continuity in the bottom, two engine girders P& S, together with the center girder are to be extended as far as forward as possible and are to be linked with the longitudinal bulkheads of aft tanks.

## **2.6 外板 SHELL PLATE**

底板和旁板应纵向排板，且为对接焊，板厚 12mm，但海底门开口和艏推进与船体接触部位应用 14mm 钢板。

The bottom and side plating should be longitudinally plated and to be butt welded, plate thick 12mm, but the plate 14mm thick where the opening of sea connection and stern propulsion, which contacted with the hull structure.

## **2.7 肋骨 FRAMES**

船体主肋骨为 125x75x10mm，间隔 500mm，T 形焊接在外壳板上。

Frames for main hull to be 125x75x10mm, spaced at 500mm, T shape welded on side hull.

## **2.8 横梁 BEAMS**

主甲板横梁为 125x75x8mm，布置在每个肋骨上。它们与甲板开口和腹板处 8mm 型材制成的强横梁合并。

Beams for main deck are to be 125x75x8mm, and fitted at every frame. They are to incorporate with strong beams of 8mm plate fabricated section fitted in way of deck openings and other locations.

## **2.9 纵桁 & 立柱 GIRDERS & PALLARS**

机舱应设置 8mm 型材制成的纵桁和直径 3"或 4"圆管制成的立柱。

Girders of 8mm plate fabricated sections together with 3"or 4"diameter round pipe pillars are to be fitted in engine room.

## **2.10 柴油机纵桁 DIESEL ENGINE GIRDER**

柴油机纵桁由 22mm 立板和 300x30mm 面板组成。柴油机垫片为约 30mm 环氧垫块。

Diesel engine girder should be made up of 22mm vertical plate and 300x30mm face plate. Diesel engine packing piece is about 30mm epoxy type.

## **2.11 甲板 DECK**

主甲板板厚 10mm。The main deck plate is 10mm thick.

## **2.12 水密/油密舱壁 WATERTIGHT / OILTIGHT BULKHEADS**

水密/油密舱壁板厚为 8mm 或 10mm 钢板 (以船级社退审图为准)。

The W.T./O.T Bulkheads are 8mm or 10mm plates.( subject to the approval drawings by Classification)

## **2.13 驾驶室 WHEELHOUSE**

驾驶室由 6mm 钢板制成，周边分别焊装 75x50x6mm 纵向和横向加强筋。

The wheel house is to have 6mm plate and sides with 75x50x6mm for vertical stiffeners and beams respectively.

## **2.14 护舷木 FENDERS**

橡胶护舷木 Rubber fender

拖轮首尾配置直径 500mm 橡胶护舷木，具体布置见总图。

Rubber fender Dia. 500mm shall be installed forward and aft of the vessel as shown on the GA drawing.

管形护舷木 Pipe fender

如总图所示船体旁板上焊装 10”半圆管形护舷木或钢板压制而成的半圆管形护舷木。

Half section 10” pipe fenders are to be welded to side shell as shown on the GA drawing.

轮胎护舷木 Tyre fender

本船配置和安装足够数量用镀锌链条挂的轮胎。Enough Tyre fenders with galvanizing chain are to be fitted around the vessel.

### 第三节 居住舱室、驾驶室 & 储藏室

## SECTION-3 ACCOMMODATION, WHEELHOUSE & STORE

### 3.0 总则 GENERAL

本船居住舱室内的壁板、天花板、家具及地板色彩搭配要适当，所有固定和散装家具（含床垫、椅子）均有建造方提供并安装；

Scheme of decoration together with colours for bulkhead, ceiling, furnishing fabrics and floor etc., are to be pleasant. The owners are free to make their selection from samples given by the Builder.

居住舱室内的所有个人衣柜为木质的且均要设铜质锁。所有室内外门满足规范防火要求，每个门应有 3 把钥匙，且本船门应有 3 把万能钥匙。居住舱室门框底须有不锈钢薄板条。

All bureaus in accommodation are to be of wood for crew's personal effects clothing and to be fitted brass locks. All internal and exterior doors should meet SOLAS, which to be fitted good quality locks with three (3) labeled keys each, and three (3) Skeleton Keys to be supplied for doors on the vessel. The bottom of doorframe in accommodation should have stainless steel sheet pieces.

舱室内装后最低净高为 2 米，并尽可能高。按照总图布置居住舱室。

Minimum headroom in all accommodation areas is to be 2M and as high as possible. Accommodation should be arranged in accordance with the GA drawing.

所有的电插座应为船用形式。

All sockets should be marine type.

### 3.1 甲板敷料 ( 防火型 ) DECK COVERINGS (FIREPROOFING TYPE)

甲板敷料敷设之前，钢甲板须全面清洁。所有家具包括嵌入部分的底部都要敷设甲板敷料。  
Steel decks are to be thoroughly cleaned before the installation of deck coverings, which are to be laid under all furniture including the built-ins.

甲板敷料敷设部位：Position of deck coverings:

驾驶室室内、餐厅、休息室、船员房间、内走道及内梯道：10mm 乳胶上铺 PVC 板；

Wheelhouse interior, Mess, Lobby, Crew's cabin, interior corridors and stairways:  
Covered with PVC tiles on 10mm thick latex

盥洗间和厨房：水泥地面贴防滑地砖；

W.C. and Galley: Covered with anti-skid ceramic tiles on cement.

机舱、舵机舱：底层铺设花钢板；

Engine Room, steering gear compartment: Covered with chequered plates on bottom

甲板储藏室、驾驶室顶和露天甲板：甲板漆 ( 2 层填密装置 ) ；

Deck store, wheelhouse top and exposed deck: Covered with deck paint (2 tier stuffing fitting).

### 3.2 壁板及天花板 MINOR BULKHEAD & LINING

驾驶室、船员舱室、餐厅、内走道应安装表面贴有 PVC 膜的复合岩棉板，壁板安装后应保护好表面，其上的保护塑料薄膜应在试航后去除；厨房内壁板及天花板安装表面贴有不锈钢板的 TC 板；内走道应采用不锈钢防暴扶手；

Composite Rockwool Panels finished with PVC surface to be installed on wheelhouse, crew's cabin, mess, interior corridors. After installing the bulkheads, which surface should be protected, but the protecting plastic films are to be moved after trial; stainless steel finfish face TC plate is to be installed on interior wallboard and ceiling of galley; Interior corridors adopt the stainless steel storm rail.

盥洗间、干粮库、储存室的壁板及天花板表面涂白油漆，但盥洗间、干粮库有绝热处要铺设镀锌白铁皮。

Steel bulkheads and ceilings surface in way of washrooms, provision store, and deck stores are to be generally white painted finish, but the galvanized iron shall be laid on insulation area of W.C. and Provision store.

### 3.3 绝热 ( 须满足 SOLAS 规范要求 ) INSULATION (TO BE MEET SOLAS)

所有暴露钢构件均要从内侧进行绝热包扎，绝热表面贴铝箔布。

驾驶室及其他舱室暴露的甲板顶 – 100mm 岩棉

All exposed steel work is to be insulated on the inside, with aluminum foil on insulation surface.

Wheelhouse and exposed deckhead of other cabins ----- 100mm Rockwool

### 3.4 窗户 & 舷窗 WINDOWS & SCUTTLES

所有窗户为铝质框架和可开启玻璃窗，其设置满足船级社要求。

All windows are to be aluminum framed type with tempered glass to suit the Classification's requirements.

### 3.5 钢质门 STEEL DOORS

本船所有室外门均为钢质门（驾驶室门除外），且按照载重线公约要求主甲板门设置一定高度的门槛。钢质门设置 6 只内外均可开启的把手，活动部件油脂润滑。门框内设氯丁橡胶或类似的软垫片密封。门上配挂锁用耳板，及使门处于开启位置的挂钩。

All exterior doors on the vessel to be of steel (Except wheelhouse doors), the doors on Main deck shall be set coaming with certain height according to the Load line convention. Six dogs workable from both sides are to be fitted with clips and grease fittings. The doors to be channel- framed tightened to gaskets of soft neoprene or similar. Doors to be fitted with sturdy padlocks and hold-back arranged to retain them in open positions.

外部轮机室水密门须为铝质（冲水试验）

External wheelhouse weather tight doors to be of aluminum type (to be hose tested.)

### 3.6 驾驶室 WHELLHOUSE

驾驶室内布置下列所有通讯导航设备和控制设备。操舵和主机操作台布置在驾驶室前面。驾驶室窗户的布置应能获取四周最大视线。

The wheelhouse to be fitted with all navigation, communication and control equipments as specified below. The helmsman's position and main engine console are to be arranged at forward of the wheelhouse. Wheelhouse windows are to be arranged to give maximum visibility all round.

驾驶室控制台配置如下：The wheelhouse control console forward is to be fitted with：

- 主机和齿轮箱的控制装置及主机转速表 Main engine and gear box controls and M.E. tachometers
- 尾轴转速表 Shaft tachometers
- 主付机及齿轮箱的高水温、低油压、低水位声光报警 Main and aux. engine audible & visual alarms for high water temperature, low oil pressure and low water level
- 应急车钟带按钮 Emergency Engine telegraph with buttons.
- 操舵手柄 Steering handle
- 每个舵应有 2 个舵角指示器（1 个装在驾 2 nos. Rudder angle indicators for each rudder (1 on wheelhouse console, 1

控台，另 1 个固定在驾驶室前壁板上 )	wheelhouse front ceiling mounted )
● 电笛按钮	Horn button
● 2 台雷达	2 radar
● 1 只测深仪显示器	1 depth sounder display
● 1 只计程仪显示器 ( 选项 )	1 speed log display ( for option)
● 1 只 GPS	1 GPS
● 1 只分罗经 ( 由磁罗径经转换装置提供信号 )	1 compass repeater (supplied from magnetic compass repeater)
● 拖曳绞车控制装置	Towing winch controls
● 莫氏灯按钮	Morse light signal buttons
● 内部广播对讲控制单元	intercom talk-back system control unit
● 1 台声力电话	1 sound powered telephone
● 烟火探测及报警板	smoke and fire detection and alarm control panel
● 航行信号灯板	Navigation signal light panel
● 不锈钢风暴扶手	Stainless steel storm rail
● 2 只内置在驾控台旁的烟灰缸	2 built-in ashtrays by console's side

另外，驾驶室内外还须提供和安装下列项目：

Other equipment in wheelhouse to be fitted out as follows:

● 旗箱及 1 套国际信号旗和国籍旗	Flag box and 1 set of international code of signal flag
● 2 只放双筒望远镜盒和 2 只望远镜	2 binocular box and 2 binoculars
● 带抽屉海图桌，其上配有可调光的海图桌灯，海图桌的抽屉应防止在海上航行时滑出	Chart table c/w drawers, light with dimmer switch, prevent drawer of chart table from slipping when sailing.
● 1 只无线电报务员钟	1 radio telegraph operater
● 1 台组合式无线电台及外通信设备 ( 详见 7.3.1 )	1 combined type radio stations and outside communication equipment( Detail 7.3.1)
● 1 张带扶手舵工椅，舵工椅前铺约 200mm 高的木格栅铝或钢质带垫子 alumimium or steel with cushions.	1x Helmsman's chair with arms, 200mm high
● 足够尺寸的书架	Book rack with enough size
● 1 只风速仪	1 x anemoscope

- 1 只电笛 1 x electric whistle
- 1 只直径 300mm 黄铜船钟，上面刻有船名、建造年月和船舶建造号，固定在驾驶室桥楼右舷 1 x Dia.300mm brass ship's bell engraved with vessel's name, built date and vessel hull No. should be fixed on the right side of bridge
- 1 只石英电子钟 1 x quartz electric clock
- 1 只倾斜仪，布置在船中线位置 1 x Clinometer, to be fitted on ship centre
- 1 只温度计 1 x thermometer
- 2x1000W 在驾驶室内手动控制的探照灯 2 x1000W search light handle control in wheelhouse
- 1 只求助信号灯 1 x aid signal light
- 2 只书架 2 x book rack
- 4 个 220V 电源插座 4 x 220V power points
- 1 个旋转视窗，直径 310mm 安装在前窗 1 x 310mm Dia. rotation screens to be fitted forward windows
- 2 只雨刮器，前窗 2 x window wiper, on forward

### 3.7 船长室及轮机长室 CAPITAL'S/CHIEF ENGINEER'S CABINS

船长室及轮机长室如总图所示布置在升高甲板前部，每间房配置如下：

The captain and Chief engineer are to be situated forward raised deck as shown on the drawings and fitted out as follows:

- 1 张 1900x800 带抽屉并配置床头灯 1 x 1900x800 built-in berth with drawers under bunklight
- 1 张带抽屉的桌子配有台灯，桌子上方配置 1 个台灯插座和 2 个 220V 备用电源插座 1 x Desk with drawers and light, 1x desk light socket and 2 x 220V spare power points to be arranged on desk
- 1 只固定衣柜带格架、衣架挂杆和挂钩，顶部储放救生衣 1 x built-in wardrobes c/w shelf, hanger rod and hooks, with fiddles for lifejackets stowage on top.
- 1 把带扶手的椅子 1 x Chair with arms
- 1 只壁挂摇头扇 1 x Wall Mounting Shake head fan
- 2 个书架 2 x Book racks
- 1 只带抽屉钢质文件柜 1 x Steel File cabinet with drawers
- 1 个带转角沙发 1 x Corner sofa
- 2 只衣帽钩 2 x Coat and hat hook



### 3.9 2 人船员室 ( 2 个 ) 2-MEN CABINS (2 OFF)

2 人船员室布置在主甲板上下各 1 个，每个 2 人船员室配置如下：

These cabins are to be situated under main deck and below main deck each one and each to be fitted out as follows:

- 1 个 2 层固定床带床帘，底部有抽屉，上铺有梯子，并配置床头灯； 1 x 2-tier berth with spring mattress c/w bunklights, curtains, drawers under, and ladder for upper berth.
- 2 只固定衣柜带格架和救生衣 2 x built-in wardrobes c/w shelf, with fiddles for lifejackets stowage on top.
- 1 张带抽屉的桌子配有台灯，桌子上方配置 1 个台灯插座和 2 个 220V 备用电源插座 1 x Desk with drawers and light, 1 x desk light socket and 2 x 220V spare power points to be arranged on desk
- 2 个书架 2 x Book rack
- 1 只壁挂摇头扇 1 x Wall Mounting Shake head fan
- 4 只衣帽钩 4 x Coat and hat hook
- 1 把带扶手的椅子 1 x Chair with arms

### 3.10 4 人船员室 ( 2 个 ) 4-MEN CABINS (2 OFF)

4 人船员室布置在主甲板上下各 1 个，每个 4 人船员室配置如下：

These cabins are to be arranged under main deck and below main deck each one and to be fitted out as follows:

- 2 个 2 层固定床带床帘，底部有抽屉，上铺有梯子，并配置床头灯； 2 x 2-tier berth with spring mattress c/w bunklights, curtains, drawers under, and ladder for upper berth.
- 4 只固定衣柜带格架和救生衣 4 x built-in wardrobes c/w shelf, with fiddles for lifejackets stowage on top.
- 1 张带抽屉的桌子配有台灯，桌子上方配置 1 个台灯插座和 2 个 220V 备用电源插座 1 x Desk with drawers and light, 1 x desk light socket and 2 x 220V spare power points to be arranged on desk
- 2 个书架 2 x Book rack
- 2 只壁挂摇头扇 2 x Wall Mounting Shake head fan
- 8 只衣帽钩 8 x Coat and hat hook
- 1 把带扶手的椅子 1 x Chair with arms

### 3.11 餐厅 MESS

餐厅布置在主甲板上，配置如下：The mess area is to be situated on the main deck and fitted out as follows:

- 1 排固定靠背沙发椅 ( 底下可储放东西 ) 1 x built –in settees with storage under
- 2 张 1200×600 的餐桌(带 6 张座凳) 2 x 1200×600 dining tables with 6 chairs
- 1 个书架 1 x Book rack
- 1 张餐具柜 ( 内部有隔板 ) 1 x cupboard ( with clapboard inside)
- 3 只备用电源插座 , 220/1/50 3 x spare power points, 220/1/50
- 2 个直径 250mm 舷窗及舷窗盖 2 x dia. 250mm portlight c/w deadlight
- 1 只挂壁钟 1 x wall clock
- 1 台 21”彩色电视机(配有室外电视天线) 1 x 21” color TV set (with outside TV antenna)

### 3.12 主甲板盥洗室 MAIN DECK WASHROOM

主甲板盥洗室配置如下：

The washroom situated on main deck to be fitted out as follows:

- 2 套莲蓬头、肥皂架和防暴扶手 2 x shower recesses c/w soap dish and storm rail
- 2 只带冷热水供应面盆，面盆上配镜箱 2 x washbasin with hot and cold water supplies, with mirror box over
- 1 只抽风机及风道 1 x exhaust fan and wind tunnel
- 2 只座便器带座圈、盖子、纸架和防暴扶手 2 x pedestals with seat and lid and toilet roll holder, storm rail.
- 2 台洗澡用热水器 2 x water heater for bath
- 1 台带烘干的 6 kg 洗衣机 1 x 6 kg washing machine with spin drying capability
- 1 张熨衣板 1 x ironing board
- 1 只电熨斗 1 x electric iron
- 4 只衣帽钩 4 x coat and hat hook

### 3.13 升高甲板盥洗室 RAISE DECK WASHROOM

升高甲板盥洗室配置如下：

The washroom situated on main deck to be fitted out as follows:

- 1 套莲蓬头、肥皂架和救生扶手 1 x shower recesses c/w soap dish and lifesaving rail
- 1 只带冷热水供应面盆，面盆上配镜子 1 x washbasin with hot and cold water supplies, with mirror box upper
- 1 只抽风机及风道 1 x exhaust fan and wind tunnel
- 1 只座便器带座圈、盖子、纸架和防暴扶手 1 x pedestals with seat and lid and toilet roll

- |                      |  |
|----------------------|--|
| 手                    | holder, storm rail.                                    |
| ● 1 台洗澡用热水器          | 1 x water heater for bath                              |
| ● 1 台带烘干的 4.5 kg 洗衣机 | 1 x 4.5 kg washing machine with spin drying capability |
| ● 2 只衣帽钩             | 2 x coat and hat hook                                  |

### 3.14 厨房 GALLEY

厨房布置在主甲板上，配置如下：

The galley is to be situated on the main deck and fitted out as follow:

- |                                       |  |
|---------------------------------------|--|
| ● 1 台 4 眼热板电灶带炉子和防护杆，其上配有集气罩及抽风机      | 1 x electric cooker of 4 hotplates with oven and retainer bars with vent hood and exhaust fan over   |
| ● 1 只不锈钢双水槽带冷热水龙头，上方设吊柜和格架            | 1 x twin bowl stainless steel sink c/w hot and cold water taps, with wall cupboard and shelves over  |
| ● 4 只备用电源插座，220/1/50                  | 4 x spare power sockets 220/1/50   |
| ● 1 张不锈钢操作台底部带抽屉和格架（桌子），上方设碗柜，布置交船东认可 | 1 x stainless steel workbenches(table), c/w drawers and shelves under and plates and cup rack over, which arrangement should be submit to Shipowner for approval |
| ● 1 台 400 升冰箱                         | 1 x 400 litres refrigerator  |
| ● 1 台 400 升冷冻柜                        | 1 x 400L cabinet freezer   |
| ● 1 只 15 人用电饭煲                        | 1 x electric rice cooker for 15 persons  |
| ● 1 台 10 升烧开水用热水壶                     | 1 x hot water urn (10 litres)  |

### 3.15 机舱 ENGINE ROOM

机舱用于布置所有的机器设备。底层铺设花钢板并用镀锌沉头螺钉固定，且在必要的地方装设防暴扶手及栏杆。

The engine room is to house all machinery and equipment. Steel chequer plates are to be used for flooring secured with galvanized steel counter sunk screws to steel bearers and fitted with storm hand grid as necessary.

## 第四节 油漆 & 阳极保护

### SECTION 4- PAINTING & CATHODIC PROTECTION

## 4.0 油漆总则 PAINTING GENERAL

所有钢表面均要进行钢材预处理打砂至 SA2.5 并且涂上油漆商认可的厚度的底漆。第一次喷涂之前表面要清洁，毛边要导圆，缺损表面和焊缝等要处理（打磨或冲沙）至 SA 2.5

All steel plates' surfaces should be fabricated and girt-blast to SA 2.5 standard and primed with one priming coat of thick approved by Painting Manufacturer.

The surface should be cleared; raw edge should be deburred, all welds, damaged area should be spot-blasted to SA2.5

所有焊缝、边缘、流水孔以及难以到达的区域在第一次喷涂之前要预涂油漆。任何破损地方要重新涂刷且达到规定的厚度。

All the welds, edges, free holes and other areas difficult to arrive should be painted in advance before the first time spray coating. Any damages should be re-coated to specify thickness.

所有的涂层应根据油漆商的要求涂刷并要得到油漆商认可。喷涂开始之前规定的干膜厚度（DFT）要达到最低要求。

All the coats should be painted in accordance with the requirements of the manufacturer and also should be approved by manufacturer. Specified DFT should be reached lowest requirement before coating.

## 4.1 油漆表 PAINTING SCHEMES

建造方应准备 IP 油漆规格书。以下配置仅供参考：

The Builder should prepare the painting IP specification.

Following specifications are only for guidance.

龙骨到水线 Keel to water line	DFT ( Microns )
1 层 Jotaguard 85	150
1 层 Safeguard	150
1 层防污垢 Seamate HB66	100
1 层防污垢 Seamate HB66	100
水线至甲板 Waterline to deck	
2 层 Jotamastic 87	2x150
1 层 Penguard 面漆	100
主甲板 ( 防滑粉 ) Main deck (Chalk)(Anti slip)	

1 层 Jotamastic 87 125

1 层 Jotamastic 87 125

污水井 Sewage well

1 层 Jotamastic 87 150

淡水舱 ( 防滑粉 ) FW tank (Chalk)(Anti slip)

1 层 Tankguard HB 125

1 层 Tankguard HB 125

空舱 Void tank

1 层 Balloxy HB Light 200

上层建筑内部 interior of superstructure

1 层 Jotamastic 87 125

1 层 Pioner 面漆 50

滑油舱及燃油舱

打磨清洁后抹油

Lub.Oil tank and F.O. tank

Oiling after grinding and clearing

舱室钢衬板 steel behind linings

1 层 Mamuut 底漆 80

#### 4.2 管路色彩 PIPEWORK COLOURING

所有裸露的管路均要安照下列色彩表采用色带加以识别：

All exposed system are to be identified with color bands in accordance with the following color schemes:

- |                                  |                  |
|----------------------------------|------------------|
| 1 ) 舱底 & 压载 Bilge and ballast    | : 黑色 Black       |
| 2 ) 消防 Firemain                  | : 深红色 Bright Red |
| 3 ) 淡水 冷水 F.W. System Cold water | : 兰色 Blue        |
| 4 ) 燃油 Fuel Oil                  | : 棕色 Brown       |
| 5 ) 滑油 Lub Oil                   | : 黄色 Yellow      |
| 6 ) 液压油 Hydraulic Oil            | : 紫色 Purple      |
| 7 ) 海水吸口 Sea Suctions            | : 绿色 Green       |

8 ) 海水冷却水 Sea Water Cooling : 绿色 Light Green

### 4.3 阳极保护 CATHODIC PROTECTION

装载货物时没入水中的舵、导管、海底门、压载舱及船体外壳要焊装一定数量和大小 的锌块以保证正常工作状况下达到 3 年保护期。

Appropriate numbers and sizes of zinc anodes are to be welded to the immersed loaded full and rudder, nozzles, inside of sea chests, ballast tanks and hull side shell for three (3) years life span.

## 第五节 管系

### SECTION 5 - PLUMBING & PIPING

#### 50 总则须为 JIS 标准 GENERAL to be of JIS standard

所有的管子应布置合理并有足够大的管径和壁厚。它们应很好地固定在船体结构上并尽可能采用最少的弯头。管子穿过水密或油密舱壁处应采用经型式认可的穿舱件。为避免由于船体结构膨胀而产生破坏，在必要的地方要安装膨胀弯。

All pipes are to be arranged according to good marine practice with sufficient diameter and thickness for the purpose intended. They are to be well clamped to the ship's structure and to have minimum number of bends. Approved type of bulkhead fittings are to be used where piping penetrates a watertight or oiltight bulkhead. Expansion fittings are to be fitted where necessary to avoid damage due to expansion or movement of the structure.

根据船级社的要求布置必要的泥箱、滤器和阀件。所有的海淡水管必须热镀锌。所有的阀件应配有相应的铭牌。直径大于等于 3/4" ( 20mm ) 的管子应采用法兰连接；直径小于 3/4" ( 20mm ) 的管子可以采用螺纹连接 ( 空气管则除外 )。任何情况下都应尽量避免采用螺纹管，生活用淡水系统除外。

Mudboxes, strainer, filters and valves are to be arranged according to Classification's requirements. All FW&SW pipes are to be of galvanized steel pipe. All valves will be marked with appropriately name plates. Pipes of 3/4" (20mm) and over to be butt welded with flanged connections, below 3/4" (20mm) are to be screwed with unions except for the air piping. Threaded pipes are to be avoided wherever possible except in freshwater supplies system for domestic use.

所有管内介质流速，吸入口不得超过 3.0m/sec，排出口不得超过 4.0m/sec。管子应布置在易于维修的长度范围内且设有足够的支撑。液压油管应设弹性管夹 ( Stauff R1 或类似的 )。

Velocity of fluids inside all pipes should be not exceeding 3.0m/sec inlet and not more than 4.0m/sec outlet. Pipes are to be arranged in length range accessible for maintaining. Hydraulic oil pipes are to be fitted spring pipe clamp (Stauff R1 or equivalent)

### **5.1 舱底&压载系统 BILGE & BALLAST SYSTEM**

舱底压载系统管子 ( 热镀锌无缝钢管 , Sch. 80 ) 、 阀件、 滤器、 泥箱、 总管和泵 的布置应根据管系图进行布置并满足船级社要求。机舱应设 2 只舱底水高位报警。

Bilge and ballast pipes of hot-galvanized seamless steel Sch. 80 are to be arranged with valves, strainer, mud-boxes, manifolds and pumps in accordance with the pipes drawing to meet the Classification's requirements. 2 units bilge high lever alarm should be fitted in engine room.

### **5.2 燃油系统 FUEL OIL SYSTEM**

燃油系统管子 ( 低炭黑钢无缝管 ) 、 阀件、 滤器、 总管、 泵 和油舱的布置应根据管系 图进行布置并满足船级社要求。燃油加油口和日用油舱尽可能布置在方便的地方。

Fuel oil pipes of black mild seamless steel are to be arranged with valves, filters, manifolds, pumps and tanks in accordance with the piping drawings to meet Classification's requirements.

每舱须设测深管和透气管。加油管须引至主甲板 , 左右舷设 3" 阀用于所有舱的快速注油和排放。日用油舱应设有供油管、注入管和溢流管、泄放阀、玻璃视窗或容量表以满足船级社要求。另配一台手摇泵以备紧急时将燃油从储藏舱输送至日用油舱。

Sounding and air pipes are to be fitted to each tank. A bunkering line is to be led to the Main deck, P&S with 3" valve for quick filling and discharge for all bunkers. Daily service tank is to be provided with supply, filling and overflow pipes, drain valves, sight glass or content gauge to meet classification requirement. A hand pump is to be provided to transfer fuel from storage tanks to the day tanks for emergency.

### **5.3 液压系统 HYDRAULIC SYSTEM**

应用于拖曳绞车和锚机的液压管系应按照厂家推荐和船级社要求进行布置 , 且配置足够多的滤器。该动力容量 KW 参考拖曳绞车的规格书。

The hydraulic piping for the towing winch and anchor windlass which to be arranged in accordance with the manufacturer's recommendations and to meet Classification's requirements. Adequate strainers are to be provided. (The capacity KW of the power pack is referred to the specification of the towing winch.

### **5.4 杂用、甲板冲洗 & 消防 SUNDRY , WASH DECK & FIRE FIGHTING SERVICE**

用于杂用和甲板冲洗的海水由总用泵和消防泵供至位于主甲板和机舱的消防栓。管子材料：  
热镀锌无缝钢管，Sch80。

Salt water for the sundry, fire-fighting and wash deck service is to be supplied via Sch 80 hot-dipped galvanised seamless steel pipe from the G.S. & fire pump to hydrants fitted on main deck and in engine room.

## 5.5 淡水系统 FRESHWATER SYSTEM

淡水系统冷热水管（冷水管用热镀锌钢管，热水管用紫铜管）主要为饮用和冲洗包括洗衣而设置。淡水舱按图布置。淡水通过位于机舱的淡水压力水柜送至居住舱室和机舱。

Hot and cold F.W. piping system of hot-galvanized pipe for cold piping and copper pipe for hot piping is to be fitted for drinking and washing purposes. F.W is to be supplied to the accommodation and engine room through F.W. pressure tank fitted in the engine room.

## 5.6 海水卫生水系统 S.W. SANITARY SYSTEM

海水管（热镀锌无缝钢管，Sch. 80）、阀件、水封、落水和压力水柜的布置应根据良好的造船经验并满足船级社要求。

S.W. sanitary pipes of hot-galvanized pipe Sch. 80 seamless steel are to be arranged with valves, s-traps, scuppers and pressure set in accordance with good marine practice and to meet Classification's L requirement.

配置 1 台餐厅柜式空调的海水冷却泵，空调冷却水泵兼作主机海水备用泵；

To be fitted one (1) unit S.W. Cooling pump for stand air condition in Mess, which also stand by for main engine S.W. pumps.

## 5.7 卫生附件 SANITARY FITTINGS

1) 洗脸盆：白色玻璃陶瓷， $1/2$ "冷热水混水阀；

Washbasins: Washbasins of white vitreous China with  $1/2$ " hot and cold water chromed plated taps.

2) 淋浴房：浅色磁板， $1/2$ "冷热水混水阀（龙头可旋转）；

Showers: Light color mosaic on cement with  $1/2$ " hot and cold water screw down taps and mixing valves. (Tap can rotate)

3) 厕所座便器：白色陶瓷，塑料座垫和盖子，1"海水管带冲洗阀，冲洗阀前加只截止阀；

W.C.: White vitreous china with plastic seats and lids, 1" S.W. supply with flush valve, a stop valve should be added in front of flush valve.

4) 厨房水槽：16"不锈钢双槽水池， $1/2$ "冷热水混水阀（龙头可旋转）。



Galley Sink: 16" S.W.G stainless steel twin bowl unit 1/2" cold & hot F.W. supplies and mixing valves. (Tap can rotate)

## 5.8 排气管和消音器 EXHAUST PIPES & SILENCERS

主、辅机排气管须引至烟囱顶部。排气管和消音器须包扎热绝缘（矿棉或硅酸钙绝热）并外包镀锌铁皮。主、辅机及其排气管均须设置不锈钢膨胀节。膨胀节外包的镀锌铁皮应做成可拆式的。

Exhaust pipes from main and auxiliary engines to be led to top of funnels. Exhaust pipes and silencers to be well installed (mineral wool or calcium silicate) and covered with Galvanized sheeting. Stainless steel expansion pieces for main and auxiliary engines, exhaust pipes shall be arranged. Galvanized sheeting covered on expansion pieces should be of separable.

## 5.9 加油注入管 FILLING PIPING

所有的油注入管须布置在认可的地方，并配设集油盘收集飞溅出的油，在集油盘底部配置带链子青铜旋塞。

All oil filling pipes should be arranged on approval position, and are to be fitted with spill tray for oil splashed collecting; bronze faucet with chain is to be fitted on the bottom of oil collecting tray.

## 5.10 测深管 SOUNDING PIPING

所有的油水舱及空舱均要设测深管，并应在测深管下面设置防击板。

Sounding pipes to be provided for all oil water tanks and voids, which should be have proper striking plates below.

## 5.11 透气管 AIR VENT PIPING

所有的封闭舱均要设置型式和尺寸经认可过的并带有必要附件的透气头。管子材料：热镀锌无缝钢管 Sch 80 用于海水和淡水，低碳黑钢无缝管 Sch 80 用于燃油和滑油。

For all enclosed tanks, the air vent heads which type and size have been approval to be provided with necessary accessories. Pipe material: hot-galvanized seamless steel pipe Sch 80 for S.W. &F.W., black mild seamless steel pipe Sch 80 for Fuel oil and Lub. oil.

每个海底门上的透气附件应包括直径约为 50mm 法兰接口的铸钢阀，并且布置合理以防损坏。

Air vent accessories on each sea connection should include  $\phi$  50mm cast steel valve with flanged joint and are to be arranged properly against damage.

## 5.12 杂用空气管系 SUNDRY AIR PIPING

船上配置 1 台空压机、杂用空气瓶及按常规需要的杂用空气管系；

1 unit air compressor, sundry air receiver and other normally necessary sundry air piping are to be fitted on board.

## 第六节 甲板机械

### SECTION 6 - DECK MACHINERY & EQUIPMENT

#### 6.0 总则 GENERAL

所有甲板机械的供应和安装均应满足船级社要求。

Deck machinery and equipment are to be supplied and installed to meet Classification's requirements.

#### 6.1 锚、锚链 & 缆绳 ANCHORS, CHAIN CABLES & MOORING LINES

锚、锚链 & 缆绳的供应均应满足船级社要求。下列配置以供参考：

The anchors, chain cables and mooring lines are to be supplied in accordance with the Classification's requirements. For guidance, they are as follows:

锚：两个无杆船艏锚，每个 660kg；

**Anchors:** Two (2) stockless bow anchors, each 660kg;

锚链：左右锚链共 15 节，直径 26mm，Q2 有档钢链；带卸扣和转环组。

**Chain cables:** P&S total 15 knots, dia 26mm. Q2 stud link chains with shackles and swivels

拖缆：1 根直径 47.5mm×700 米长的钢缆

**Towing line:** 1 x 700M long Towing line of dia 47.5mm

#### 6.2 锚机 ANCHOR WINDLASS

一台电液式锚机配有锚链轮，速度在 10m/min 时拉力为 3.0 吨，适于直径 26mm 有档链且设有双绞缆筒。每个绞缆筒设有手动离合器和拧紧刹车，双带缆卷筒用于系缆，液压马达与封闭的箱形齿轮箱中浸泡在油池中的齿轮相连并通过一台内置电液动力单元驱动。

One (1) electric anchor windlass cum gypsy wheel having capacity 3.0 Tons at 10m/min suitable double gypsies for 26mm dia. Stud link chain. Each gypsy with manual jaw clutch and screw down break, double warping drums for mooring, hydraulic motor is to be jointed with gear dipped in oil sump in sealed box type gear box, and droved by a built-in electric hydraulic power unit. 11/11/7.5KW

### 6.3 桅杆 MAST

通讯桅杆上应配置整套的必要的用于航行灯支撑的支架、支柱、挂绳用耳环及雷达平台等。还须设置攀爬踏步。桅杆上的所有紧固件须采用不锈钢螺栓螺母。室外电缆扎带采用不锈钢的。桅杆可放倒。

The navigation mast is to be completely fitted out with necessary brackets & stays for navigation lights and shapes and eye plates for hanging rope and radar platform. Climbing rungs are to be provided. All fasteners on mast must be stainless studs and nuts. Cables bandage outdoor should adopt stainless. Mast can be lay down.

### 6.4 人孔盖 MANHOLES

所有的人孔盖均为椭圆形且配有不锈钢螺柱和螺母。

All manholes are to be elongated shape with stainless steel studs and nuts.

### 6.6 逃生盖 ESCAPE HATCHES

下列舱室应设置水密逃生盖（有可内外开的手柄），并配有平衡重以易于开起，逃生盖上有用挂锁的耳板，且每个舱盖内设踏步或直梯至下列舱室：

Watertight hatches (having inward and outward hand handle) to be provided for the following compartments, and fitted with balance weight easily to open, eye plates for hanging locker on escape hatches, and Climbing rungs or vertical ladders are to be provided inside each hatch to following compartments:

- 机舱（1套） engine room (1 off)
- 首部储存室（1套） store room in forward (1 off)
- 舵机房（1套） steering gear compartment (1 off)

### 6.7 风暴扶手 STORM RAILS

驾驶室外周围、外舱壁须设有钢质风暴扶手，驾驶室内、内走道、内梯道及盥洗间适当地方要设有不锈钢风暴扶手，以保证最大安全。

Storm rails to be fitted all round wheelhouse and on exterior bulkheads. Stainless storm rails also to be fitted in convenient position in wheelhouse, interior walkway, interior stairs access and toilets in order to insure maximum safety.

## 6.8 甲板落水 DRAINAGE FOR DECKS

烟囱、驾驶室顶及其他露天甲板须设置适量的落水管将落水引至主甲板落水。在主甲板上应布置足够数量的落水口以便于将雨水排至舷外。

Suitable scupper pipes to be positioned in funnels, wheelhouse top and other exposed deck to facilitate deck drainage. Enough scuppers are to be fitted on main deck easily to discharge rainwater overboard.

## 6.9 门 DOORS

按照总布置图设置门。所有室外门（驾驶室门除外）为水密钢制门，室内门及驾驶室门应为防火门。

Doors are to be fitted as shown on the General Arrangement drawing. All outdoor doors (except wheelhouse doors) to be in W.T. steel, indoor doors and wheelhouse doors are to be of fireproof.

## 6.10 栏杆 & 支柱 HANDRAILS & STANCHIONS

露天甲板舷边应装有栏杆，栏杆支柱为 75x12 扁铁，1000mm 高，支柱间隔不超过 1.50m。支柱上方焊装 1"镀锌钢管，中间为 2 层直径为 16mm 圆钢。出入口处配有镀锌链条和挂钩及眼板。

Stanchions are to be 75 x 12 FB x 1000mm high with short backstays and spaced not more than 1.5m apart. Top rails of 1" galvanised pipe and the interspace are of 2 tiers dia.16mm round bar. At access points, pipes substituted by short link galvanised chain with hook and eyes.

## 6.11 风机 VENTILATORS

机舱设置两台足够容量的轴流风机，其中有 1 台可逆转。供风至机舱的主风道由厚为 1.2mm 镀锌白铁皮制成，支风道由厚为 0.75mm 镀锌白铁皮制成，上面安装风栅。盥洗间和厨房安装轴流抽风机。

Two (2) fans of adequate capacity are to be provided for ventilation of engine room, one of which is axial flow. Ventilation duct will provide ventilation to the engine room main trunking made of 1.2mm thick galvanized sheet metal, distribution trunking made of 0.75mm thick galvanized sheet metal c/w louver opening. Washplace, galley is to be provided with axial flow extractor fans.

## 6.12 甲板设备罩子 COVERS FOR DECK EQUIPMENT

安装在甲板的设备如传声管、罗经、探照灯、锚机、拖曳绞车等都要配有扎实的帆布罩子。

Strong canvas covers for deck equipment such as voice pipe, compass, searchlights, windlass, towing winch etc are to be provided.

### **6.13 楼梯 LADDERS**

所有楼梯为钢制的。室外楼梯要防滑，由镀锌花钢板制成或类似结构。焊装在舱壁上的直梯的扁钢踏步应距离舱壁 250mm。

All ladders are to be of steel construction. External ladders to be antislip and made of galvanized chequered plate or similar construction. Vertical ladder to be constructed with square bar rungs welded to steel flat bar and to be clear of steel bulkheads.

( 1 ) 室外楼梯上下端采用镀锌螺栓固定，并且可以拆移。

Upper and lower ends of outside ladders should be secured by galvanized studs, and can be moved.

( 2 ) 楼梯最大斜度为 60°。Maximum degree of inclination of ladder is: 60°

### **6.14 拖曳防护桩 TOWING BOLLARDS**

两套直径 12”，十字型且由厚壁管制成的拖曳桩按图布置在船艏艉。

Two (2) 12” dia. NB heavy pipe cross towing bollards are to be fitted on fore and aft main deck.

### **6.15 投光灯 FLOODLIGHTS**

4 x 500W 高压钠灯，艏艉各 1 只，船舳 2 只。

4 x 500W high pressure sodium lamp, forward and aft each one, two (2) on Shipcenter.

### **6.17 探照灯 ( 安装位置由船东决定 ) SEARCHLIGHTS (The installing locations to be decided by The Buyer)**

2 x 1000W，在驾驶室内手动控制，1 只汞氙灯，1 只为白炽灯。

2 x 1000W, manual control on wheelhouse, one (1) is mercury xenon lamp, one (1) is incandescence lamp.

### **6.18 系缆桩 MOORING BOLLARDS**

#### **a ) 带缆桩 BOLLARDS**

如总图所示布置 6 只 8”船用厚壁管制成的双柱带缆桩。

Six (6) 8” dia. NB heavy pipe double bollards are to be fitted as shown on the drawings.

#### **b ) 导缆孔 FAIRLEADS**

如图所示在船艏舷墙布置只导缆孔，艏部 4 只，艮部 2 只。 4 pieces for forward and 2 pieces for afterward.

Four (4) fairleads are to be fitted on forward bulwark as shown on the drawings.

### 6.19 锚链筒 & 锚穴 HAWSE PIPES & ANCHOR RECESSES

两只 10” 船用 Sch. 80 锚链筒与 14mm 船壳板焊装。

Two (2) 10” dia. NB, Sch 80 hawse pipes welded to 14mm hull anchor recesses.

### 6.20 拖曳绞车 TOWING WINCH

一台电液式绞车安装在主甲板上。绞车容量和配置见如下：

One (1) towing winch is to be driven by electric-hydraulic, which to be fitted on main deck. The capacity and parameters as followings:

型式 TYPE :	双滚筒、双系缆卷筒 double drums, double gypsies
滚筒容量 Drum Capacity :	满足直径 47.5mm×700m 长的钢缆 700m of mm dia. SWR 47.5mm x 700m
离合器 Clutch :	电磁式 electromagnetic
控制 Control :	机旁和驾驶室遥控 remote in W/H & local at site
绳速 Rated Pull :	10 吨 × 6m/min 10t × 6m/min
拖力 Pull :	40 吨 40T

拖曳绞车应能从驾驶室遥控和就地控制。机旁控制箱安装在露天甲板，其外应设带盖子铁箱子，以防被风浪损坏。

Towing winch can be controlled remote in wheelhouse and local at site. Control box aside the winch should be fitted on exposed deck, and setup with steel box with cover against damage from storm.

## 第七节 安全 & 航行设备

### SECTION 7 - SAFETY & NAVIGATION EQUIPMENT

#### 7.0 救生设备 LIFT SAVING EQUIPMENT

救生设备应完全满足商船（非常规船）SOLAS 安全规范以及配员 14 人相关修改案要求。

Life saving equipment is to be in accordance with the requirements of the Government authority for the intended trade & Solas 1974 of Merchant Shipping ( Non convention vessel ) for a complement of 14 men.

## 1 ) 救生筏LIFERAFTS

2 只 15 人气胀式、玻璃钢外壳带救急包救生筏，满足 SOLAS 74 公约。救生筏储放在升高甲板铰链式支架上，可以快速施放下水。

Two (2) 15-man inflatable liferafts with full emergency pack in rigid fibre glass container conforming to SOLAS 74 convention. The liferafts are to be stowed on the raised deck in hinged type cradles for quick sideway launching.

## 2 ) 救生圈LIFEBUOYS

总共 8 只救生圈配置，应满足规范要求：

Total eight (8) lifebuoys to be supplied in accordance with rules:

- 4 只带 30 米长救生绳  
Four (4) lifebuoys with 30m buoyancy line
- 4 只自燃灯（其中 2 只能发射烟信号）  
Four (4) self-igniting electric lights, two (2) lifebuoys with s smoke signals.

## 3 ) 救生衣带口哨和灯LIFEJACKETS with whistles and lights

20 套型式认可的救生衣，每个床附近安放一只。

Twenty (20) approved type lifejackets are to be supplied and stowed adjacent to each berth.

## 4 ) 信号弹PYROTECHNICS

- 一套绳抛式装置（配有 4 只射弹，4 根绳）  
One (1) line throwing apparatus (with 4 projectiles, 4 lines)
- 12 只降落伞火箭  
Twelve (12) parachute distress rockets
- 2 只防水橙色烟雾信号弹，每只能持续释放 120 秒  
Two (2) orange smoke signals each to have 120 seconds discharge time and be waterproof.

## 5 ) 反光带RETRO-REFLECTIVE TAPE

救生设备上应贴反光带。

To be fitted to all lifesaving appliances

### **7.1 消防设备 FIRE-FIGHTING EQUIPMENT**

消防设备应满足船级社及政府规范要求，并且还要满足下列要求：

Fire-fighting equipment is to be provided to meet classification, government regulations and generally in accordance with the following:

### 1) 消防总管 FIRE MAIN

安装 1 根消防总管和 5 只 1<sup>1</sup>/<sub>2</sub>”青铜消防栓，驾驶甲板 1 只，主甲板 2 只，机舱 2 只。每只消防栓附近安装 1 只水龙带箱，箱内放 15m 配有黄铜接口和喷嘴的帆布消防软管。

A fire main and five (5) 1<sup>1</sup>/<sub>2</sub>” bronze hydrants are to be fitted, one (1) on wheelhouse deck, two (2) on main deck and two (2) in engine room. 15m canvas fire hose c/w brass coupling and nozzle is to be supplied and stowed alongside each hydrant in a protective box.

### 2) 消防人员装备 FIREMAN'S OUTFITS

提供一整套消防人员装备：

One (1) complete set of fireman's outfit are to be provided:

- a) 一套防护服 One (1) protective clothing
- b) 一套呼吸器及安全绳 One (1) breathing apparatus and safety line
- c) 一只太平斧 one (1) fireman's axe
- d) 一只便携蓄电池式安全灯 One(1) safety lamp of portable battery type
- e) 一副手套和一双靴子 One(1) set of gloves and boots
- f) 一只压力测量计 One ( 1 ) pressure gauge tester

### 3) 便携式灭火器 PORTABLE FIRE EXTINGUISHERS

灭火器的供应均应满足船级社/政府当局的要求。下列配置以供参考（应符合最终认可）：  
Fire extinguishers as required by the classification/government authority are to be supplied and installed. For guidance, they are as followings: (subject to final approval)

地点 POSITION	数量 NO.	形式 TYPE
甲板居住舱室 Deck accommodation	2	9 升液态 CO <sub>2</sub> 9 liters water CO <sub>2</sub>
甲板储藏室 Deck store room	1	9 升泡沫 9 liters foam
机舱进口 Engine room entrance	1	9 升泡沫 9 liters foam
甲板下船员居住舱室 under deck crew's cabins	1	9 升液态 CO <sub>2</sub> 9 liters water CO <sub>2</sub>
机舱 Engine room	10	45 升泡沫 – 机械 45 liters foam-mechanical



9 升泡沫      9 liters foam

#### 4 ) 应急消防泵 EMERGENCY FIRE PUMP

船上应配备一台容量为 25m<sup>3</sup>/h 和压头 25m 的便携式柴油机驱动应急消防泵。

One (1) portable diesel engine driven emergency fire pump of capacity 25m<sup>3</sup>/h at 25m head.

### 7.2 导航设备 ( 进口 ) NAVIGATION EQUIPMENT (IMPORT)

#### 1 ) 雷达 ( IMO认可型 ) 2 套 Two (2) RADAR (IMO approval type)

一个 Raster-scan X 波段和一个 X 波段雷达 , 电源 AC220V , 6"扫描器 , 10kW 发射器 , 彩色显示器 ( 180mm PPI ) , 范围 0.125~48nm , (共用一个开关)包括 :

One Raster-scan X and one X wave band Radar, Power supply AC220V, 6" scanners, 10KW emitter, color display units ( 180mm PPI ) ,range: 0.125~48nm, including:

1 x 扫描器 Scanner

1 x 显示器 Display

1 x 天线及辐射器 Antenna and radeator

1 x 罗经转换器 Compass repeater

1 x 把手 Handle

1 x 标准安装材料包括 30m 组合电缆

Standard installation material including 30m combination cable

1 x 标准备件 Standard spares

1 x 操作手册 Operation manual

1 x 交流整流器 Alternating current rectifier

1 x 雷达性能监测器 NJU-64J 带 30m 电缆& 托架

Radar performance monitor NJU-64J c/w 30m cables & bracket

#### 2 ) 测深仪ECHO SOUNDER

1 x 6" 彩色测深仪 , 深度 3 ~ 800m , 200KHz/220VAC , 包括 :

1 x 6" color echo sounder, depth 3 ~ 800m, 200KHz/220VAC,including:

1 x 显示器/记录仪 Display/recorder

1 x 交流整流器 Alternating current rectifier

- 1 x 1.5m 动力电缆 Power cable
- 1 x 带 30m 电缆传感器 30m Cable transducer
- 1 x 标准备件 & 安装材料 & 操作手册  
Standard spares & installation manual & operation manual

### 3 ) GPS导航仪 NAVIGATION

6 英寸彩色 LCD Alpha/数字 GPS 导航仪，电源 DC24V，包括：  
6 inch color LCD Alpha/digital GPS navigation, power supply DC 24V, including:

- 1 x 显示器 Display
- 1 x 天线 antenna
- 1 x 标准安装材料 Standard installation material
- 1 x 15m 电缆 Cable
- 1 x 标准备件 Standard spares
- 1 x 交流供电 AC power supply

### 4 ) 磁罗经 2 只 MAGNETIC COMPASS two pieces

1 套反射式磁罗经，直径 165mm，立式，驾驶室装有磁罗经校正器和反射器。罗经上装有灯以备夜间使用。配磁罗经模拟信号转换装置，及 1 个罗径复示器（其信号可输出至雷达、GPS 及自动舵）

One (1) reflector compass, dia. 165mm, stand type, corrector and reflector are to be fitted in wheelhouse. Lamps are to be fitted on compass for using in night. Analog signal conversion device and one (1) compass repeated (Signal can be output to radar, GPS and automatic rudder) are to be supplied for magnetic compass.

## 7.3 对外通信设备（进口，JRC 或 FURUNO）

### **COMMUNICATION EQUIPMENT (IMPORT, JRC OR FURUNO)**

#### **1 ) GMDSS站 GMDSS CONSOLE**

GMDSS 站设置应满足国际规范关于 A1，A2 和 A3 区域要求。下列配置以供参考：  
GMDSS console should meet requirements of international rules for A1 A2 A3 area. For guidance, they are as followings:

- a ) 1 套 SSB 无线电电台，150w MF/HF，电源 DC 24V，频率范围 1.6~27.5 MHz，包括：  
One (1) SSB radio transceiver, 150w MF/HF, DC 24V, Frequency range 1.6~27.5 MHz, including:

- 1 x 控制单元 control unit
- 1 x 天线及接口 antenna and joint
- 1 x 话筒 watch keeping receiver
- 1 x 5m 控制电缆 control cable
- 1 x 5m RF 电缆 RF cable
- 1 x 收发机 Transceiver
- 1 x 电源 Power supply
- 1 x 标准备件 Standard spares
- 1 x 支架 & 标准附件 Bracket & standard accessories
- 1 x 操作使用手册 Operation manual

b) 1 套 MF/HF-DSC 终端，电源 DC24V，包括：  
One (1) MF/HF-DSC terminal, DC 24V, including:

- 1 x DSC 终端 DSC terminal
- 1 x 3m DSC 电源电缆，1.5m AF 电缆，1.5m 控制电缆，控制单元  
3m DSC Power cable, 1.5m AF cable, 1.5m control cable, control unit.
- 1 x 标准安装材料 Standard installation material
- 1 x 标准附件包括室外喇叭和 2 只 3A 备用保险丝  
Standard accessories including outdoor horn and two (2) 3A standby fuse
- 1 x 18' 鞭形天线，12' 鞭形天线，交流整流器，蓄电池自动充电器，应急灯  
18' whip antenna, 12' whip antenna, AC rectifier, battery auto-charger, emergency lamp.

c) 1 台 C 站(船用移动通讯地面站)带内置 EGC，电源 AC110V 和 应急电源 DC24V，包括：  
One unit Inmarsat-C (marine mobile communication earth station) c/w built-in EGC, AC 110V and emergency DC 24V, including:

- 1 x 外部安装设备 Exterior installation equipment
- 1 x 内部安装设备 Interior installation equipment
- 1 x 天线带 30m 同轴电缆用于连接 EME 和 IME  
Antenna with 30m coaxial cable for connection EME to IME
- 1 x 数据终端设备 DTE
- 1 x 键盘 Keyboard
- 1 x RO 打印机 RO Printer
- 2 x 遇险呼救信号按钮 Distress signal push button

- 1 x 接受信号装置 Received signal device
- 1 x 供电装置 Power supply device
- 1 x 选择开关箱 Option switch box
- 1 x 遥控遇险呼救按钮 Remote distress signal push button
- 1 x 标准备件 & 使用的安装材料 Standard spares & using installation material
- 1 x 操作手册 Operation manual

d) GMDSS 甚高频电话 ( 2 套 )  
GMDSS VHF TELEPHONE (2 UNITS)  
半双联型 , 电源 DC24V , 包括 :  
Semi- amphistyly, DC 24V, including:

- 1 x 接收器带内置 DSC Receiver c/w built-in DSC
- 1 x 带底座手持话机 hand held telephone with foundation
- 1 x 标准安装材料 ( 不包括天线 ) standard installation material ( except antenna)
- 1 x 操作手册 Operation manual

e) 一套电源 & 充电器  
ONE (1) POWER SUPPLY & CHARGER

- 1 x 交流电源带交直流转换 AC power with alternating current-direct current conversion
- 1 x 交流电源 AC power
- 1 x 充电器 Charger

f) 一套天线  
One(1) antenna

- 4 x 船用甚高频天线 Marine VHF antenna
- 1 x RX 天线 RX antenna
- 1 x SSB 天线 SSB antenna

**2) 2 套手持甚高频无线电话 , 包括 :**  
**Two (2) handheld VHF radio telephone, including:**

- 1 x 带固定天线手持接收器 handheld receiver with fixed antenna
- 1 x 锂电池座 lithium battery seating

1 x 操作手册 Operation manual

**3 ) 2 套 GMDSS 雷达应答器 , 每套包括 :**

**Tow (2) GMDSS radar transponder, each one should include:**

1 x 锂电池 lithium battery

1 x 底座及标准附件 seating and standard accessories

1 x 操作手册 operation manual

**4 ) 1 套 GMDSS 通讯台**

**One (1) GMDSS Communication station**

- 其设计要易于操作、安装和维修

Which design suitable for easy operate, install and maintain.

- 用于 MF/HF 无线电装置和 C 站终端的操作板要安装在同一控制台上

Operation panel using for MF/HF radio device and C-station terminal should be fitted on the same console.

- 应急灯 & 应急照明 Emergency lamp & emergency light

**5 ) 1 套 GMDSS 应急示位标 , 包括 :**

**One (1) GMDSS EPIRB, including:**

1 x ACR 卫星应急示位标 406MHz , 型号 : RLB-32 (2774)

ACR EPIRB 406MHz , Type : RLB-32 (2774)

1 x 锂电池 lithium battery

1 x 水力释放机构 water power release gear

1 x 标准附件 & 操作手册 standard accessories & operation manual

**6 ) 1 套气象传真接收机 , 包括 :**

**One (1) weather fax receiver, including:**

1 x 记录仪 recorder

1 x Pre-AMP 传真-5 带 2.6m 辫子 Pre-AMP fax -5 with 2.6m plait

1 x 交直流整流器 DC AC rectifier

1 x 标准附件 standard accessories

1 x 15m 同轴电缆 15m coaxial cable

1 x 交流转换器 AC converter

**7) 1 套电传接收机，包括：**

**One (1) navtex receiver, including:**

- 1 x JRC 电传接收机，型号 NCR-330，直流电 12/24V  
JRC navtex receiver, type NCR-330, AC 12/24V
- 1 x 发射天线 transmitting antenna
- 1 x 40m 热敏纸 7ZPJD0044 thermographic paper
- 2 x 备用保险丝 6ZXAF00021 standby fuse
- 1 x 标准材料包括 20m 电缆 standard material include 20m cable
- 1 x 标准附件 standard accessories
- 1 x 操作手册 operation manual

**8) 自动识别装置 ( AIS ) ( 1 套 )**

**One (1) AIS**

- 1 x 显示器 Display
- 1 x GPS 天线 GPS antenna
- 1 x Shakespeare 型天线 Shakespeare type antenna
- 1 x 接线盒 junction box
- 1 x 标准附件 standard accessories
- 1 x 标准安装材料包括 15m 天线电缆  
Standard installation material include 15m antenna cable
- 1 x 标准备件 standard spares
- 1 x 操作手册 operation manual

**7.4 内部通信设备及报警 INTERCOM EQUIPMENT AND ALARM**

**1) 广播系统，包括：Public address system, including:**

- 1 x 台式安装主站 100W，带内置扩音器，位于驾驶室控制台上  
Desk-top type installation master station 100W c/w built-in amplifier, located on wheelhouse console.
- 3 x 壁式安装主站，带内置扩音器，餐厅，船长室，轮机长室。  
Wall mounted installation master station c/w built-in amplifier, mess, capital cabin, chief engineering cabin
- 4 x VML 1520 喇叭 Horn

位于锚机处、拖曳绞车处和机舱及餐厅

Located on windlass, towing winch, engine room, and mess.

## 2 ) 声力电话 **Sound Power Telephone**

下列舱室设置声力电话：Sound power telephone as followings compartments

- 驾驶室  
Wheelhouse
- 机舱，设声（铃）光（蓝色）信号  
Engine room, sound (bell) light (blue) signal
- 舵机舱，设声（铃）光（蓝色）信号  
Steering gear room, sound (bell) light (blue) signal

## 3 ) 通用 & 火灾报警：**General & fire alarm**

设置通用报警 & 火灾报警探测及红色声光报警信号

General & fire alarm detection and red audible and visual alarm signal should be set up.

## 7.5 其他设备 **OTHER EQUIPMENTS**

1 ) 电笛：1 只电笛，范围 3 海里。

*Electric Horn: One ( 1 ) ,range : 3 sea miles*

2 ) 船钟：1 只 12”黄铜钟，刻有船名和船舶完工时间，安装在驾驶室桥楼右侧。

*Ship's bell: One (1) 12” brass bell, engraved with vessel's name and completion time, to be fitted on right side of Wheelhouse Bridge.*

3 ) 旗箱：放置一整套国际信号旗。

*Flag chest: a complete set of international code flag to be laid*

4 ) 航行灯及信号灯：根据规范要求配置一整套 DC 24V 航行灯及信号灯，并在驾控台上设有航行灯及信号灯控制板；另外驾驶室内配 1 只手提救助信号灯

*Navigation lights and signal lamps: a complete set of DC 24V navigation lights and signal lamps to be fitted in accordance with the Rules, and control panel for navigation lights and signal lamps should be located in wheelhouse console. One (1) portable aid signal light in wheelhouse.*

5 ) 倾斜仪：2 只，壁挂式,1 只装在驾驶室，另 1 只装在餐厅

*Clinometers: Two (2) wall mounted - one (1) in the wheelhouse and one (1) in the Mess*

6) 探照灯：2 x 1000w，驾驶室内控制

*Searchlight:* 2 x 1000w, to be controlled inside wheelhouse.

7) 海图桌：带抽屉海图桌并配有可调光台灯

*Chart table:* c/w drawers and chart light with dimmer

8) 旋转视窗：驾驶室前窗中心装一只直径 310mm 旋转视窗

*Rotation View Screens:* One (1) 310mm rotation view screens to be fitted on front window centre of wheelhouse.

9) 石英钟：2 只带电池石英钟（1 只在驾驶室，1 只在餐厅）

*Clock:* Two (2) quartz clocks with battery (one (1) in wheelhouse, one (1) in mess)

10) 电视天线：在餐厅电视接收插座；

*Television antenna:* television reception sockets to be fitted in mess room.

11) 风速风向仪：在驾控台上装有风速风向显示仪；

*Anemorumbometer:* to be fitted on wheelhouse console.

12) 车钟：机舱机旁控制站附近和驾驶室均要安装一只应急车钟；

*Engine telegraph:* emergency Engine telegraphs are to be fitted near by control station in engine room and in wheelhouse.

13) 锚球：2 只黑色菱形锚球，直径 0.6m，2 只球形，1 只菱形。

*Anchor ball:* 0.6m dia. two balls; one diamond

14) 舱底水报警：设置黄色声光报警信号用于舱底水报警

*Bilge alarm:* yellow audible and visual alarm signal to be fitted for bilge alarm.

15) 雨刮器：在驾驶室前窗玻璃外侧装 2 个雨刮器

*Window wiper:* Two (2) window wiper to be fitted outside front window in wheelhouse.

## 第八节 电气

### SECTION-8 ELECTRICAL

#### 8.0 总则 GENERAL

电气部件和接线系统原则上要满足船级社要求。所有电气元件均应质量良好且适于热带和海洋环境。



Electrical apparatus and wiring system are to comply with the Classification's requirements. All electrical components used to be of good quality and suitable for tropical and marine environment.

## 8.1 供电系统 SYSTEM OF SUPPLY

a) 400V , 3 $\phi$  , 50Hz – 用于供电 ( 马达 )

For power supply (motor)

b) 230V , 1 $\phi$  , 50Hz – 用于常规照明和低于 3kW 设备的供电 ( 马达 )

For general lightings and power supply less than 3Kw (motor)

c) 24 V – 用于报警、应急照明、无线电、导航救助、航行灯和其他应急负荷

For alarm, emergency lights, radio, navigational aids, navigation lights and other emergency loads.

## 8.2 供电 POWER SUPPLY

### a) 交流电 AC SUPPLY

交流主电源由两台均为 90kW , 400V/3 $\phi$ /50 Hz ,  $\text{COS}\phi$ 为 0.8 的发电机提供。发电机可以并车, 但一台发电机应能提供全船电力设备在正常航行状况下所需要的电力, 具体的容量待电平衡计算后定。

The A.C. main power supply system is to be obtained from T two (2) in number generator sets, each rated about 9kW. 400V/3 $\phi$ /50 Hz ,  $\text{COS}\phi$  0.8. The generators are to run in parallel, but each is to be capable of supplying the vessel's electrical requirement under normal sea load condition, specific capacity to be confirmed after calculation of electrical balance.

### b) 直流电 ( 24V DC ) SUPPLY

1) 应急照明和导航救助的 24V DC 直流电由 2 层 24V , 200AH 蓄电池提供

The 24V DC supply for emergency lights and navigation aids is to be obtained from 2 banks of 24V, 200AH batteries.

2) 无线电的 24V DC 直流电由 2 层 24V , 144AH 蓄电池提供

A 24V D.C. supply for radio is to be obtained from 2 banks of 24V, 144AH batteries.

3) 上述蓄电池由一台 40 安培, 24V DC 直流电输出的充电器充电。另还须提供 一台备用充电器。共两只。

One (1) battery chargers, 40 amp, 24V DC output is to be provided for charging the above batteries. One another charger also to be supplied for standby. Total two pieces

4) 蓄电池储放在相同的配有铰链盖的 GRP 盒子里, 蓄电池房通风良好。

Batteries to be stored in the GRP boxes fitted with hinged cover and provide with sufficient ventilation and drainage.

### **c ) 岸电 SHORE POWER SUPPLY**

80 安培，400V，50Hz 岸电系统由一个岸电箱和一只安培表组成。岸电有通过一只三相开关与主配电板相连且与发电机开关连锁。岸电箱内设有相序指示灯和断路器。主配电板上也要设一只用于岸电回路带有相序选择开关安培表。岸电软电缆（长 60m）必须与岸电箱连接牢固。

80A, 440V, 50Hz shore power supply system is to be made up of a shore power connection box and an ampere meter. Shore supply connection box to be provided c/w phase sequence indications, pilot lamp and circuit breaker. Ampere meter with phase sequence selected switch for shore power supply circuit to be fitted on main switchboard. Shore power supply flexible cable (60m length) to be jointed securely to shore power connection box.

### **8.3 电缆 CABLES**

船上所用电缆必须是铜导体、乙烯丙稀橡胶（EPR）绝缘和钢丝网保护，且要满足船级社要求。

All cables installed in the vessel are to be tinned copper conductors, EPR insulated and woven wire sheathed to meet classification's requirements.

### **8.4 电缆安装 INSTALLATION OF CABLES**

电缆通常由镀锌钢质支架支撑，并用电缆扎带固定，室外采用钢扎带。电缆穿水密/油密舱壁、甲板或舱处须设置水密电缆密封填料函。露天甲板上电缆要穿护套管。

Cables are generally supported by a perforated hot-dipped galvanised steel cable tray and secured by stainless steel cable clips or similar. Where cables pass through W.T. /O.T. bulkheads, decks or tanks, approved W.T. cable sealing glands is to be fitted. Cables run on exposed deck are to be run through conduits.

### **8.5 配电板 – 总则 SWITCHBOARD-GENERAL**

配电板应是防尘防滴漏的、前端面固定、自支撑框架结构，并设有扶手和通风栅，安装于机舱。

电源 400/230V、50Hz。所有指示灯、旋钮和把手都要有清晰的铭牌。

配电板上还要有同步装置用于操作发电机并车，共设配电板 4 屏。

The switchboard is to be dust and drip-proof and deadfront type with sheet steel construction and self-supporting framework c/w handrail and ventilation louvres, suitable for marine duty to be installed in the engine room.

Power supply 400/230V、50Hz. All indicators, knobs and handles clearly marked by name plates.

The switchboard shall be designed, constructed and installed for the control of the diesel engine driven alternators operating in parallel and feeder distribution board.

### a ) 交流配电板 AC SWITCHBOARD

交流配电板由下列为发电机服务的控制元件和仪表组成：

Switchboard is to consist of the following controls and instrumentation for each generator:

- 主断路器 ( MCCB ) 带过流继电器和逆功率继电器      MCCB c/w over-current and reverse power relays
- 带选择开关电压表      Voltmeter c/w selector switch
- 带选择开关安培表      Ammeter c/w selector switch
- 功率表      Kilowatt meter
- 频率表      Frequency meter
- 调压器      Voltage trimmer
- 应急按钮      Emergency push button
- 指示灯      Indicator lights
- 同步装置      Synchronizing facility
- 调速开关      Governor switch
- 接地试验装置      Earth test system
- 逆功率继电器      Reverse power relays

下列设备通过抽屉式断路器模块经汇流排供电：共 14 短路器。

The following outgoing circuits are to be fed from the bus-bar via plug-in moulded cased circuit breaker: total 14 circuit breakers.

- 燃油输送泵      Fuel oil transfer pump
- 总用消防泵      General service fire fighting pump
- 机舱风机      Engine room ventilation fans
- 海水压力水柜      S.W. pressure set
- 厨房设备      Galley equipments
- 锚机      Anchor windlass
- 舱底压载泵      Bilge and ballast pump

- 淡水压力水柜 F.W. pressure set
- 油水分离器 Oily bilge water separator
- 蓄电池充电器 Battery charger
- 常规照明和供电 General light and power supply
- 导航设备 Navigation equipments
- 拖曳绞车 Towing winch
- 空调海水泵 Air-condition S.W. pump

### **b ) 24V DC 配电板 24V DC SWITCHBOARD**

配电板中的使用仪表和控制元件由下列：

The instrumentation and controls are to consist of the following:

- 蓄电池充电器开关 Battery charger switch
- 断路器模块 Moulded-case Circuit breaker
- 安培表 Ammeter
- 电压表 Voltmeter
- 指示灯 Indication lights
- 蓄电池转换开关 Battery change-over switch
- 接地试验装置 Earth test system

下列设备通过抽屉式断路器模块经汇流排供电：

The following outgoing circuits to be fed from the bus-bar via moulded case circuit-breakers:

- 导航设备 Navigation equipments
- 报警 ( 通用、火灾、发动机和低液位 ) Alarm( general, fire, engine and lower lever)
- 航行灯 Navigation lights
- 主机仪表 Main engine instruments
- 无线电 Radio

### **C ) 24V DC 无线电充电板 RADIO CHARGING PANEL**

- 蓄电池充电器开关 Battery charger switch
- 蓄电池转换开关 Battery change-over switch



single phase and overload protection and running indication. Fuel pumps, and all supply i.e. outside the engine exhaust ventilation fans are to have remote push-stop controls mounted in the main deck and clearly marked.

### **8.8 照明带玻璃罩 LIGHTING WITH GLASS COVERS**

全船照明为内置式荧光灯，甲板区域、舵机舱、厕所、储藏室以及应急照明灯除外，这些处所采用白炽灯。救生筏区域安装 DC 24V 泛光灯。罗经灯和海图桌灯为调光灯。

All lighting throughout the vessel is to be fluorescent built-in type except for deck area, steering gear compartment, toilet and store and emergency lighting where incandescent lights are to be used. 24V D.C. floodlight fittings are to be mounted in way of liferafts areas. Compass light and chart table light to be provided with dimmer switch.

### **8.9 开关、插座 & 带开关的插座 SWITCHES, SOCKETS & SWITCH SOCKET**

居住舱室的所有开关、插座 & 带开关的插座均为嵌入模块式；机舱及其他机器处所和水密舱室应为水密式。居住舱室、厨房、餐厅、储藏室和其他机器处所要设置足够数量的带开关的插座以供便携式设备使用。

All switches, sockets and switch-sockets in the accommodation are to be flush mounted moulded-cased type and in the engine room and other machinery and W.T. compartments are to be Watertight. An adequate number of switch-sockets to be provided in accommodation, galley, mess room, store and other machinery spaces for portable equipment.

### **8.10 照明变压器 LIGHTING TRANSFORMER**

2 只，400V/230V, 25KVA, 干式变压器；  
Tow (2), 400V/230V, 25KVA, dry type transformer.

8.11 机舱配电板附近安装 1 个满足规范要求的报警箱，报警点包括主付机、齿轮箱的冷却水高温、滑油低压；舱底水高位及油舱高位报警等；其中主付机、齿轮箱的报警点延伸至驾控台。

One (1) alarm box meet to rules requirements is to be fitted nearby distribution board in engine room, alarm set point including: Main & Aux. engine, gear box cooling water high temperature, Lub.Oil lower pressure, bilge water high lever and oily tank high lever alarm etc. Main & Aux. engine, gear box alarm point should extend to wheelhouse console.

## **第九节 轮机 SECTION-9 MACHINERY**

## 9.0 总则 GENERAL

主机要经认可且须提供船级社要求的证书。

Main engine is to be approved type and supplied with certificates as required by Classification.

其他设备需按船级社要求提供必要的证书。

Other machinery also should be supplied with necessary certificates required by Classification.

### 9.1 主机及齿轮箱 ( 进口 ) MAIN ENGINE & GEAR BOX (IMPORT)

2 台康明斯船用柴油机，型号 KTA50 - M2，1600 马力/1800rpm；配可反转减速齿轮箱，适当速比。柴油机电起动，热交换器（15% 结垢系数）冷却。主机及齿轮箱可在机旁及驾驶室控制。NOX 证书须提供给买方，请参见 1.514。

Two (2) CUMMINS marine diesel engines, model KTA50 - M2, 1600HP at 1800rpm c/w reverse gearbox of approximately ratio. Diesel engine to be electro-started and heat exchanger (15% incrustation coefficient) cooled. Main engine and gear box can be controlled at site and remote in wheelhouse. NOX Certificate to be provided to The Buyer. Please refer to 1.5 14).

### 9.2 发电机组 GENERATING SETS

2 台国产康明斯船用发电机组，约 90kW，柴油机驱动发电机，400/3/50，3 线，柴油机电起动，热交换器冷却。具体的发电机功率待负荷计算后再确定。须为并联。

Two (2) CUMMINS marine diesel engine driven generators made in China, 90 kW each, 400/3/50, 3-wire. Engines to be electro started and cooled with heat exchangers. Exact power for generators is to be confirmed after load calculation. To be paralleled.

### 9.3 舵机 STEERING GEAR

国产电液式舵机，3.0 t-m，舵角 2x35°，带备用泵和应急手动操舵功能且满足船级社要求。

An electro-hydraulic steering gear made in China of 3.0 t-m, 2x35° rudder angle c/w stand by pump and emergency hand steering, and also to be meet classification requirements.

驾驶室： a ) 电液操舵杆形式 Electro-hydraulic steering

Wheelhouse: b ) 手动应急操舵 Hand emergency steering

### 9.4 舱底 & 压载泵 BILGE & BALLAST PUMP

1 台卧式自吸式离心海水泵，流量：36m<sup>3</sup>/h；压头：30m；380/3/50；

One (1) horizontal self priming centrifugal S.W. pump, capacity of 36m<sup>3</sup>/h at 30m head, 380/3/50

## **9.5 总用 & 消防泵 GENERAL SERVICE & FIRE PUMP**

1 台卧式自吸式离心海水泵，流量 36m<sup>3</sup>/h；压头 30m；380/3/50；

One (1) horizontal self priming centrifugal S.W. pump, capacity of 36m<sup>3</sup>/h at 30m head, 380/3/50

## **9.6 燃油输送泵 FUEL OIL TRANSFER PUMP**

1 台燃油输送泵由卧式齿轮泵组成，流量 20m<sup>3</sup>/h；压头 30m；380/3/50；

One (1) fuel oil transfer pump to be made up of a horizontal gear pump, 20M<sup>3</sup>/hr at 30M head, 380/3/50.

1 台应急燃油手摇泵；

One (1) emergency fuel oil hand pump.

## **9.8 淡水压力水柜 FRESHWATER PRESSURE SET**

1 台；容量 3m<sup>3</sup>/h；压力 40 PSI；220/1/50；

One (1) FW pressure set capacity of 3m<sup>3</sup>/h, pressure 40 PSI, 220/1/50

2 台淡水泵，容量与压力水柜相配，其中 1 台淡水泵可兼海水泵使用

Two (2) F.W. pumps capacity match with pressure set, of which can be used double as S.W pump.

## **9.9 油水分离器 OILY WATER SEPARATOR**

数量 1 台；容量 500 升；压力 2kg/cm<sup>2</sup>；油分浓度低于 15ppm 且满足 MARPOL 要求，并配带 1 台污水泵；

One (1) separator, capacity 500L, pressure 2kg/cm<sup>2</sup>, c/w pumps not more than 15mmp to meet Marpol requirements, and with One(1) sewage pump.

## **9.10 污油泵 DIRTY OIL PUMP**

1 台污油泵，流量 5m<sup>3</sup>/h；压头 30m；380/3/50，须满足 MARPOL 要求。

One(1) dirty oil pump, capacity 5m<sup>3</sup>/h at 30m head, 380/3/50 to meet Marpol requirements. 主甲板上设排放接口。



Discharge joint to be fitted on main deck.

### **9.11 海水压力水柜 SEAWATER PRESSURE SET**

1 台；容量 3m<sup>3</sup>/h；压力 40 PSI；220/1/50；

One (1) SW Pressure set, cap. 3m<sup>3</sup>/h, pressure 40 PSI, 220/1/50

1 台海水泵，容量与压力水柜相配；

One (1) S.W. pump, capacity match with pressure set.

### **9.12 污水泵 SEWAGE PUMP**

1 台污水泵，排放污水舱中污水用；

One (1) sewage pump, using for draining sewage from sewage tank.

### **9.13 生活污水处理装置 SEWAGE TREATMENT PLANT**

1 台按 14 人船员配置生活污水处理装置

One (1) unit of sewage treatment plant of capacity suitable for 14 men is to be provided.

### **9.14 通风 VENTILATION**

机舱采用机械送风和自然出风；厨房采用机械抽风和自然送风；舵机舱采用机械送风。所有舱应根据规范要求设透气管。驾驶室和居住舱室应布置自然送风。

Engine room adopts Forced supply and natural exhaust, galley adopts forced exhaust and natural supply, steering gear compartment adopts forced supply.

Air vent pipes are to be fitted in all the tanks in accordance with rules. Natural supply should be arranged in wheelhouse and accommodations.

### **9.15 空调 AIR-CONDITION**

中央空调应安装用于轮机室和船长和轮机长室，餐厅，船员居住舱等，中央空调规格书作为该规格书的附件。

Centralized air-conditioner to be installed for the wheelhouse, capital and chief engineer's cabins, the mess, the crew's accommodation rooms and etc. The detailed specification of the centralized air-conditioner is annexed to this specification.

### **9.16 螺旋桨 & 轴系 PROPELLERS & SHAFTING**

#### ***螺旋桨 PROPELLERS***

2 套定距桨；材料：镍铝青铜或类似

Two (2) fixed pitch propellers, Material : Nickel aluminum bronze or equivalent

### **轴系和艉管 *SHAFTING & STERN TUBE***

艉管安装在船内外，深海密封，油润滑。根据规范要求设铸钢轴尺寸。首尾轴承为巴氏合金和密封为深海唇形式。螺旋桨支架为“Y”型碳钢结构，上部支撑尾轴毂，下部防止钢丝绳进入导管以保护螺旋桨。

Stern tubes are to be fitted inside and outside the vessel, deep sea seals, oil lubrication. The size of the cast steel shaft should be setup in accordance with the Rules. Forward and aft shaft bearings are Babbitt alloy and shaft seals are of lips deep sea type. The brackets for propellers are to be of Y type carbon steel construction, the upper bracket should support the stern boss, the below should protect the propellers and prevent the steel wire from entering into ducts.

### **固定的尾导管 *FIXED STERN DUCTS***

安装 2 只固定的碳钢尾导管。每只导管由两只流线型边支架支撑。安装导管的船体底部结构采用额外的纵横构件加以加强。

Two (2) fixed carbon steel stern ducts are to be fitted. Each duct should be supported by two streamline side brackets. Hull bottom construction fitted ducts should be reinforced by additional longitudinal and transverse structures.

导管内螺旋桨尖对应部位要安装不锈钢耐磨环。耐磨环宽度为螺旋桨满螺距时盘面面积的宽度的 25% ( 焊接处要远离盘面面积区域 ) 。

Corresponding position of Propeller tip in ducts should be fitted stainless steel wearing ring. The width of wearing ring is 25% of width of disk surface area in propeller full pitch. (Weldings position should far from disk surface area)