REV 版本号	DATE 日 期	DESCRIPTION 描 述	DESIGNED 设 绘	CHECKED 校 对	VERIFIED 审 核	APPROVED 审 定
A	2018.05.18	ISSUED FOR CLASS,OWNER,SHIPYARD APPROVAL 供船级社，船东，船厂认可	张鑫斌	唐山	姚俊卿	李兵
B	2018.06.12	ISSUED FOR CLASS,OWNER,SHIPYARD APPROVAL 供船级社，船东，船厂认可	张鑫斌	唐山	姚俊卿	李兵

APPROVED
This approval covers only ABS requirements and does not include items not required by ABS. Details of this approval are set forth in the ABS letter.

ABS

APPROVED
on behalf of the government of the vessel's registry subject to conditions of ABS letter

ABS

SIGN 会签

OWNER 船 东	QMS BANI YAS INC	HULL NO. 工程号	HXLB3007
BUILDER 船 厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD. 青岛海西重机有限责任公司	CLASS 船级社	ABS
TITLE 船 名	QMS BANI YAS	DETAIL DESIGN 详细设计	
DRAWING 图 名	OPERATING MANUAL 操作手册	DWG NO. 图号	JH316G-102-07
		SCALE 比 例 / WEIGHT 重 量 / PAGE 页 码 / DATE 日 期	1/302

BESTWAY WMMP
上 海 佳 豪 船 海 工 程 研 究 设 计 有 限 公 司
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0 PREFACE

0.1 Revision register

Rev. No.	Issued date	Description of procedure revision
A	2018.05.18	Issued for Owner's and Class's approval.
B	2018.06.12	Issued for Owner's and Class's approval.

Approved by:

Approved date:

0.2 Preface to liftboat operating manual

This manual is specifically written for safe and efficient operation and management of the liftboat – specially the jacking related operations. This booklet deals with jacking up/ down and sailing operations. Since this liftboat is built to MODU Code (without drilling facility) and is self-propelled jack up accommodation unit, it meets applicable sections of MODU Code.

0.2.1 Construction portfolio

As required by classification society, another booklet called 'construction portfolio' has been developed and provided separately demonstrating different grades and strengths of structural materials used together with description of the material and welding procedures employed.

In accordance with IACS Recommendation No.71 - Guide for the Development of Shipboard Manuals - September 2000, all **WARNINGs**, **CAUTIONs** and **NOTEs** are shown in '**bold text**'.

0.2.2 ISM Manual "Marine Safety Management System"

This separate booklet contains guidance for the safe operation of the liftboat during normal as well as envisaged emergency conditions. It provides guidance and specific procedure to ensure the safety of all personnel and the liftboat.

It is necessary to refer the ISM manual for the procedure and guidance related to fuel storage and transfer, personnel transfer by basket, changing the mode of liftboat operation, towing, anchoring and mooring, helicopter operations and various safety management systems.

0.2.3 Fundamental differences

0.2.3.1 General concept

The following points should be carefully considered as they are sensibly difficult in concept from conventional ship and can lead to incorrect results due to misinterpretation.

1) Hydrostatic data are for the hull from baseline including the volume of the leg & spud can (no sink for field move; lower 10 m for ocean move).

2) Hence to reach the correct floating displacement from the draft reading, care should be taken to adjust the displacement derived from hydrostatic data.

3) Sea water density of hydrostatic calculation is 1.025 t/ m^3.

4) The displacement value (floating) includes the following:

a. The leg & spud can weight

b. The weight of the jacking system

c. The weight of the hull

d. Variable cargo (liquid or solid)

0.2.3.2 Caution

Every liftboat Captain, Chief engineer or jack-man shall undergo a specific induction course/ training for familiarization for the specific differences for each liftboat. This training shall be endorsed by the company HSE/ training Officer. A qualified/ approved training syllabus for liftboat operation, maintenance and periodic report submission must be documented and provided by HSE/ training Officer.

0.2.3.3 Liftboat move

No liftboat move can be performed without application of the appropriate moving procedure approved in writing by liftboat **Owner/ Manager**.

1 GENERAL

1.1 Introduction

The purpose of this manual is to provide guidance for the operating of the QMS BANI YAS. This manual is not intended to cover all aspects of the liftboat operating, and the users of this manual are expected to have the experience and training to apply this guidance.

1.2 Description

1.2.1 Classification

The QMS BANI YAS is a self-elevating unit which is designed in accordance to the latest requirements of American Bureau of shipping (ABS) Guide of Building and Classing of Mobile Offshore Units (MOU) for a self-elevating unit (Liftboat) as:

ABS + A1, Self-elevating Unit, + AMS, CRC (OC-PL+), CPS, DPS-1, HELIDK

The liftboat is intended for unrestricted ocean service, but not fitted for ice area.

1.2.2 Rules and regulations

The construction of the liftboat conforms to the following American Bureau of Shipping and International Marine Organization (IMO) rules and regulations:

1 ABS Guide for Building and Classing Mobile Offshore Units (2008)
2 IMO Resolution A1023 (26) “Code for the Construction and Equipment of Mobile Offshore Drilling Units” as amended
3 IMO SOLAS (only applicable for those requirements which ABS MOU guide and IMO MODU Code are referred to)
4 International Convention on Load Lines, 1966 and Protocol of 1988
5 International Convention on Tonnage Measurement 1969
6 International Regulation for Prevention of Collision at Sea, 1972 and amendments
7 IMO Resolution A468 (XII), Code on Noise Levels on Board Ships
8 Performance Standard for Protective Coating at dedicated seawater ballast tanks (PSPC)
9 Maritime Agreement Regarding Oil Pollution (MARPOL) 73/78, the latest amendments of the following contents:
Appendix 1 (Oil); Appendix 4 (Sewage); Appendix 5 (Garbage); Appendix 6 (Air Pollution)
10 Crew cabins to be satisfied with MLC2006 requirement
11 CAP437 for Helicopter Facilities with ABS statement of fact, 7th edition
12 American Petroleum Institute Specification for Offshore Cranes, API Spec

2C, 7th edition

13 IEC79 for hazardous area classification and IEC92 for electrical installation

14 ISO 6954-2000 (E), Guidelines for Overall Evaluation of Vibration in Merchant Ship

15 ABS Guide for Certification of Lifting Appliance, July 2016

16 GCC CAAP 71 helicopter requirements, 2016

17 Lighting will in accordance with relevant ILO regulations and acceptable LUX readings

1.2.3 Builder

The liftboat is designed by BESTWAY. The following is a description of the liftboat:

Type of liftboat	Self-elevating Unit
Class of liftboat	ABS
Hull number	HXLB3007
Builder	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD
Location	Qingdao, Shandong, China
Year	2017

1.2.4 Port of registry

The following is a description of the registration of the liftboat:

Name	QMS BANI YAS
Owner	QMS BANI YAS INC.
Flag	PANAMA
Port of registry	PANAMA
ABS number	YY269889
IMO number	9828065
Distinctive number or call sign	3FXL3
MMSI	374355000
IMN-CID (IMN)	PENDING
Registration number	50647-PEXT
Loaded/lightship displacement	7833.0 t/ 5995.1 t
Loaded draft	3.35 m

1.3 Main dimensions

1.3.1 Main hull

Length between perpendiculars	64.80 m
Length including helideck	~87.00 m
Width	40.40 m
Depth of hull	6.00 m

1.3.2 Legs and spud cans

Type of leg	Tubular
Length of legs (include spud can)	90.00 m
Bow to forward legs	9.60 m
Distance centerline aft legs and forward legs	43.20 m
Transverse leg centers	33.40 m
Height of spud can	1.50 m
Footing area of spud can	55.59 m^2

1.3.3 Helicopter deck

Heliport	22.20 m
Type of heliport	S76/ S92A/ S61N
Maximum take-off weight	5307/ 12565/ 9298 kg

1.3.4 Accommodation

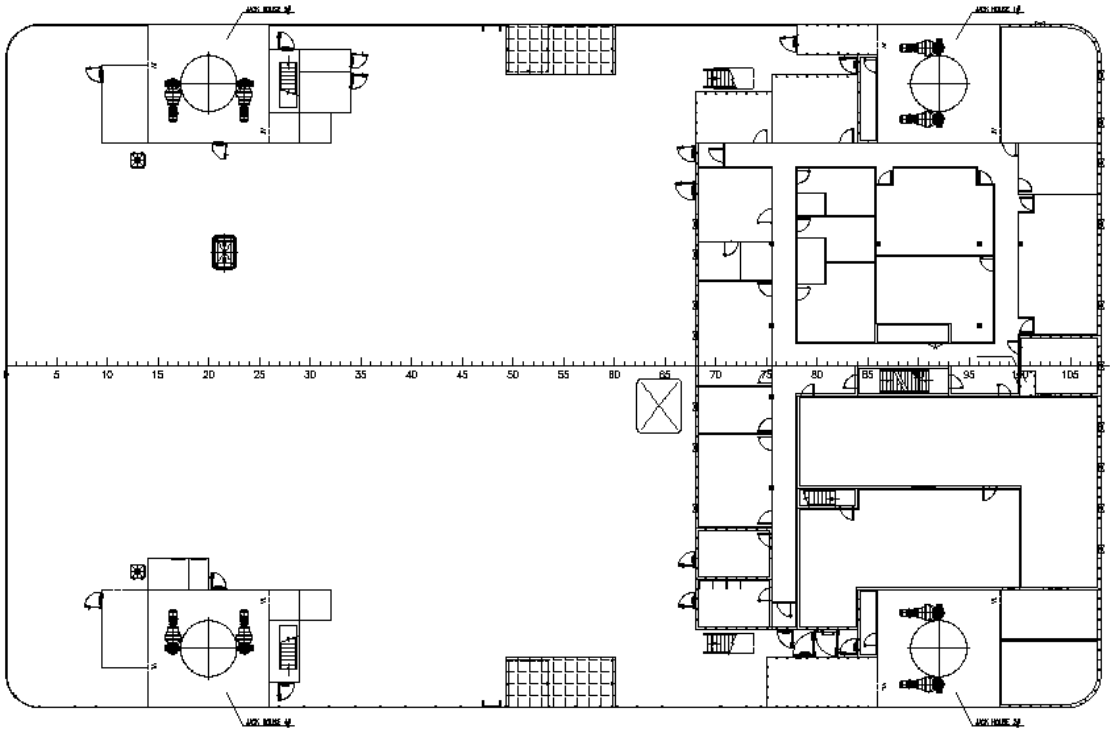
Length of accommodation	24.00 m
Width of accommodation	40.40 m
Height of accommodation	12.00 m
Maximum accommodate	150 P

1.4 Jacking system

1.4.1 Description of the jacking system

1.4.1.1 General

Corresponding to four (4) tubular legs, 56 sets of pinions, rack type jacking units and their jack frames are integrated on this liftboat.



The jacking system has the following characteristics:

The jacking system is designed /manufactured for:

1) Hull lifting and lowering;
2) Leg lifting and lowering;
3) Activity diagonally preloading;
4) Operation/ storm holding.

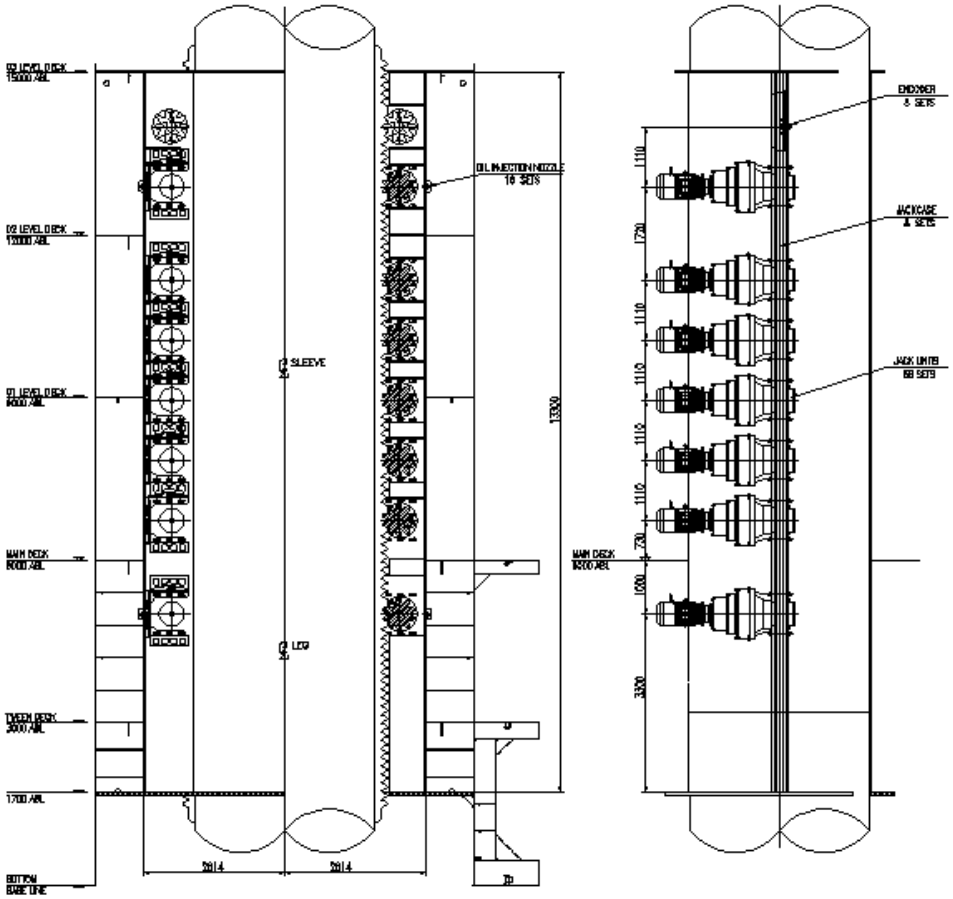
The jacking units are equally divided into 4 groups and arranged in jack frames, each 14 sets for one leg and arranged to 7 layers.

The jacking units are driven by VFD electrical motors with built-in brake.

The upper and lower guide plates are integrated on the jack cases which are the main part of jack frames with original tolerance of about 3.2 mm to the teeth top surface.

Jacking operation could be controlled by one person.

The arrangement of the jacking system is such that in the event of one single failure, jacking can be continued.



1.4.1.2 Characteristics of jacking system

The pinions are driven by the electrical motor and gear boxes, the gear speed reducers are completely close type with self-lubrication function and observation hole for the oil level.

The jacking mechanisms are designed and manufactured for lowering and lifting the unit in the maximum rated normal load condition specified in this operating manual, all the mechanical losses are considered. And the mechanisms are able to withstand the forces imposed on the liftboat from the maximum environment criteria for the liftboat. In this situation, the brakes must be fail-safe and reliable.

The jacking mechanism are such constructed that elevation of the leg relative to the liftboat can be safely maintained in case of loss power and arranged so that a single failure of any component (e.g. one pinion broken) does not cause an uncontrolled descent of the liftboat.

The brakes are normal close type with the distance switch and temperature switch, used for monitoring the open or close state of the brake and overheat. The hydraulic system includes four hydraulic pump stations and each pump station is drive by a motor. The pump station's function is to supply the power to the hydraulic brake. The jacking system can work only after the pump is running and the hydraulic brake is released; and after the jacking motion is completed, the hydraulic brake is closed and the hull's load can transfer to the hydraulic brake. Therefore, the pump can stop only after the jacking is over.

There are hand pump and connector for each brake for opening the brake manually.

The braking resistor cabins are arranged in an individual and special designed place so that the heat won't affect the normal operation of other equipment in the condition of lowering the liftboat.

1.4.1.3 Controls

The electrical control system is a field bus control system based on international famous brand's PLC and VFD to achieve control and monitor function of the jacking system. The motors are driven by frequency converter, which combined with PLC to control the multi-function and safety protection of the jacking system. The whole control system includes central control station, motor control cabin, control center cabin, VFD control cabinet, brake resistor cabinet, local control box and sensors. Each intelligent liftboat exchanges data and shares information with field bus.

A central control panel is arranged on the wheelhouse. The system can also be controlled locally, near each jack frame on the main deck. The jacking speed is not less than 0.6 m/min with full deadweight. Maximum jacking speed should be limited to avoid leg damage and excessive wear during hull lowering. Considering the calorific value of the braking resistor cabins in the condition of lowering the liftboat, the cabins should be arranged in the place so that the heat will not affect the normal operation of other equipments and the temperature of the resistor is controlled under the 150 ℃。

1.4.2 Technical data of the jacking system

The basic specification parameters of the jacking system are to be listed as follows:

Number of jacking units in each leg	14
Normal jacking capacity of each unit	110 ton
Preload jacking capacity of each unit	150 ton
Max. normal holding capacity of each unit	150 ton
Storm holding capacity of each unit	210 ton
Design operating life	2000 hours
Normal jacking speed	0.6 m/min
Alarm angle	0.3°
Electric source	AC380V, 50Hz (main source) AC220V, 50Hz (control source)

1.4.3 Operating manual

For more information of the jacking system, please refer to OPERATION AND MAINTENANCE MANUAL from WMMP.

1.5 Cranes

1.5.1 Main crane

There is one crane which can slew 360° fixed on the platform through a leg when the range over 9.5 m. The crane is driven by diesel engine through hydraulic system. The boom which luffed by wire rope is truss structure. Four motions (slewing, main hoist, auxiliary hoist and luffing) can be operated on rated load.

Main hook used condition:

Safe working load SWL	190 t @ 9.5 m
	38 t @ 40 m
Hoisting speed	4 m/min
Max. lift trip	~ 65 m

Auxiliary hook used condition:

Safe working load SWL	10 t
Safe working load (personnel lift)	1.67 t
Slewing radius	11 m ~ 43 m
Hoisting speed	30 m/min
Max. lift trip	~ 75 m
Slewing speed	0.5 r/min
Design service temperature	0 ℃ ~ 50 ℃
Slewing angle	360°
Luffing time	180 s
Luffing angle	22° ~ 81°

Four motions including slewing, main hoist, auxiliary hoist and luffing can be achieved through separate selector switch. And all these motions are able to infinitely adjust by separate selector switch. Every two of all these motions can be achieved simultaneously except main hoist and auxiliary hoist. At this time the crane can meet the requirement of parameters in above tables. Because of every motion has a separate selector, three motions operated simultaneously is forbidden. There are two work conditions for the main hoist, onboard lift condition and off board lift condition, whilst there are three for the auxiliary hoist, onboard lift condition, off board lift condition, and person lift condition.

1.5.2 Auxiliary crane

One auxiliary crane is installed. The crane is to be self-contained, electromotor driven, hydraulically operated, oil cylinder luffing, box boom, pedestal and 360° revolving, furnished with a pedestal adaptor, an enclosed cabin and all auxiliary equipment suitable for duties associated with an offshore vessel. The crane is capable of lifting, slewing and luffing.

The crane is to be equipped with main hoist and whip hoist. Main hoist is to be used for heavy lifting with 2 falls, and whip hoist for light load and personnel lifting with 1 fall.

Main hook used condition:

Safe working load SWL	20 t @ 5.7 m ~ 20 m
	10 t @ 30 m
Hoisting speed	21 m/min
Max. lift trip	Max. 54 m (25 m down deck)

Auxiliary hook used condition:

Safe working load SWL	3 t
Safe working load (personnel lift)	0.9 t
Slewing radius	7 m ~ 33 m
Hoisting speed	60 m/min
Max. lift	Max. 56 m (25 m down deck)
Slewing speed	0 ~ 0.5 rpm
Design service temperature	0 ℃ ~ 50 ℃
Slewing angle	360° unlimited
Luffing time	140 s
Luffing angle	0.12° ~ 79.05°

1.5.3 Crane working condition

Wind speed in service condition	20 m/s
Wind speed out service condition, but the boom stowed on boom rest	55 m/s
Design service temperature	0 ℃ ~ 50 ℃
Platform inclination	Trim/ heel 0.5°
Significant wave height for main crane	

Main hook		Onboard lift	3.5 m
		Off board lift	0.35 m
Auxiliary hook		Onboard lift	3.5 m
		Off board lift	2.5 m
Significant wave height for auxiliary crane			
Main hook	Elevating	Onboard lift	3.5 m
		Off board lift	2.5 m
Auxiliary hook	Elevating	Onboard lift	2.5 m
		Off board lift (include personnel lift)	2.5 m

1.6 Lightship weight

1.6.1 Basic weight Information (legs no sink)

Name	Weight (tons)	LCG (to FR.0) (+fwd, -aft) (m)	TCG (to C.L.) (+ P, -S) (m)	VCG (to B.L.) (m)
Elevated lightship	3982.9	36.283	0.206	7.345
Transit legs and spud cans [4)]	2012.2	33.600	0.000	42.150
Lightship condition[1),2),3),4),5)]	5995.1	35.382	0.137	19.027

1) The lightship condition consists of the hull and the installed equipment, the four legs and spud cans. Four (4) sets of spud cans are buoyant.

2) The legs and spud cans are being stored above the base line of the hull (T.O.C. = 0 m).

3) Cranes are in the stowed position.

4) Leg VCG as started is measured from the base line of hull.

5) In ocean move, the legs and spud cans are lowered 10 m below base line (T.O.C. = 10 m below baseline).

IMPORTANT

The lightship particulars are based on HXLB3007 inclining experiment report JH316G-942-02BG_REPORT OF INCLINING TEST dated 16-MAY-2018. Any change in the lightship and variable load values in this manual is revised accordingly.

1.6.2 Lightship components

The lightship weight includes the hull and superstructures, as well as other items of permanent construction, machinery, mechanical equipment, piping, and all other outfitting items that are included in the lightship condition at their wet weight, including water, oil and grease at normal operating level and with the pipes full of liquid.

All major equipment items and lifesaving equipment items are include in the lightship, in their normal position, crane boom stowed, and the anchors racked.

Items intended to be excluded from lightship weight are those items expected to vary during normal operation, such as variable deck load, treated water, sanitary water, potable water, fuel oil, lube oil, brine water, ballast and any other miscellaneous items.

Items specifically excluded from lightship and CG:

1) Fluids in miscellaneous tanks
2) Crews and effects
3) Galley provisions and stores
4) Tool house

The lightship value input on the loading forms shall be the one officially approved by the Class Society. In the event of a lightship adjustment, the adjustment value shall be included as deck load in the loading form to reach the correct total lightship, until official approval for the adjustment is obtained. If there are any questions about what the adjustment should be, the engineering department of the **Owner** must be contacted for further guidance.

All alterations onboard the liftboat resulting in lightship changes from the approved value must be recorded. The lightship alterations shall be reported to the liftboat **Manager**, who shall maintain a running file. A record of these alterations shall also be kept onboard. An alteration can either be a weight added or removed or relocated.

Running totals of the lightship changes shall be record on the lightship alteration forms as deck load until the lightship value is revised by the engineering department of **Owner**, submitted to and approved by the Class Society.

Date	Name	Weight (tons)	LCG (to FR.0) (+fwd, -aft) (m)	TCG (to C.L.) (+P, -S) (m)	VCG (to B.L.) (m)
2018-05-16	Elevated lightship	3982.9	36.283	0.206	7.345
	Transit legs and spud cans	2012.2	33.600	0.000	42.150
	Lightship condition	5995.1	35.382	0.137	19.027
	Added weight				
	Remove weight				
	Relocated weight				
	Elevated lightship				
	Transit legs and spud cans				
	Lightship condition				

Added weight list				
Name	Weight	VCG above BL	LCG from AP	TCG (PS+,SB-)

	(t)	Arm (m)	Moment (t*m)	Arm (m)	Moment (t*m)	Arm (m)	Moment (t*m)
Sum (+)							

Removed weight list							
Name	Weight	VCG above BL		LCG from AP		TCG (PS+,SB-)	
	(t)	Arm (m)	Moment (t*m)	Arm (m)	Moment (t*m)	Arm (m)	Moment (t*m)
Sum (-)							

Relocated weight list							
Name	Weight	VCG above BL		LCG from AP		TCG (PS+,SB-)	
	(t)	Arm (m)	Moment (t*m)	Arm (m)	Moment (t*m)	Arm (m)	Moment (t*m)
Initial state							
Sum_1							
Operation state							
Sum_2							
Total (sum_2 –sum_1)							

CAUTION

All alterations and repairs are subject to the same Class requirements specified for the initial construction of the liftboat. Class approvals and inspections may be required for the alterations or repairs.

1.7 Corrosion protection

All the steel plates are protected by good coating and all the structures can be checked through the structure access. For more information about the structure access, please refer to JH316G-266-02_STRUCTURE ACCESS MANUAL.

1.8 Main power system

1.8.1 Description

The main power supply on the liftboat is provided by four (4) diesel engine generator sets (CATERPILLAR C32). Each has a capacity to provide 830 ekW, three phases, 50 Hz. Four main generators can be parallel operation for a long time. The main parameter and description of the generators as follows:

Rated power (kW)	830
Voltage (V)	AC400
Current (A)	~1443
Number of phases	3 Phases
Power factor	0.8
Frequency (Hz)	50
Insulation class	H
Ambient temperature (℃)	50℃
Excitation	Brushless
Cooling	Air cooling with filter
Space heater	AC230V

There are also two main lighting transformers to be arranged on the liftboat, which supply AC230V power source for normal lighting system and small power equipment. The specification as follows:

Rating capacity (kVA)	160
Voltage (V)	400/ 230
Frequency (Hz)	50
Number of phases	3 Phases
IP code	IP22
Type	Dry Type
Insulation class	F

1.8.2 Limitations

The Captain shall be fully conversant with the load limitations of main power system.

The Captain shall also fully comprehend that when the electrical power consumption reaches a predetermined percentage of total power available, load shedding should automatically occur and non essential equipment will be temporarily effected.

1.8.3 Main power system single line diagram

The main power system is represented in the attached one line diagram: JH316G-611-01_PRIMARY POWER SYSTEM DIAGRAM.

1.8.4 Electrical calculation

The main power system is represented in the attached load calculation: JH316G-601-01JS_ELECTRICAL LOAD BALANCE CALCULATION.

2 DESIGN CRITERIA

2.1 Environmental criteria

2.1.1 Storm condition

Water depth (m)	35
Max. wave height (m)	9.5
Wave period (s)	10.2
Wind velocity (m/s)	51.5
Current velocity at surface (m/s)	1.8
Current velocity at mud line (m/s)	1.03
Air gap (m)	10
Total elevated load (excluding legs, t)	4582.9
Penetration depth (m)	3
Maximum hull elevation (air gap + water depth, m)	45

2.1.2 Maximum operating condition

	Normal	Case 1	Case 2	Crane
Water depth (m)	30	60	25	60
Max. wave height (m)	6.3	6.3	6.3	6
Wave period (s)	8.3	7	8.3	7
Wind velocity (m/s)	36	25.7	25.7	15.5
Current velocity at surface (m/s)	0.77	0.77	0.77	0.77
Current velocity at mud line (m/s)	0	0	0	0
Air gap (m)	20	8	25	8
Total elevated load (excluding legs, t)	5652.9	5652.9	5652.9	5652.9
Penetration depth (m)	3	3	3	3
Maximum hull elevation (air gap + water depth, m)	50	68	50	68

2.1.3 Additional operating condition (Case 3)

Water depth (m)	55
Max. wave height (m)	6.3
Wave period (s)	7
Wind velocity (m/s)	36
Current velocity at surface (m/s)	0.77
Current velocity at mud line (m/s)	0
Air gap (m)	8
Total elevated load (excluding legs, t)	4982.9

Penetration depth (m)	3
Maximum hull elevation (air gap + water depth, m)	63

2.1.4 Maximum allowable transit/ tow condition

Maximum allowable draft (m)	3.35
Displacement (t)**	7833.0

** Note:

1) Allowable vertical center of gravity value (AVCG) as per section 7.2.

2) Legs sink 10 m for ocean move – 100 knots wind.

2.1.5 Maximum allowable condition for the jacking-up and/or jacking down operations

Design wind speed (1 minute mean speed, m/s)	10.3
Maximum wave height (m)	2.0
Current speed – at surface (m/s)	1.03
Current speed – at bottom (m/s)	0.00
Leg & spud can weight (t)	2012.2
Maximum allowable weight for hull (excluding legs, t)	5652.9
Displacement** (t)	7665.1
Associated draft of the hull (m)	3.35
Maximum allowable trim (degree)	0.3
Maximum allowable heel (degree)	0.3

** Note:

Before jacking-up operation, variable load should be reduced to 1670 t as per section 7.3.2.5 example form for elevated (normal operating).

In order to refer the displacement in hydrostatics, total estimated weight of liftboat need to be corrected by adding loss of buoyancy due to hull penetration and deducting buoyancy of immersed portion of leg below hull.

CAUTION

The maximum air gap should not be greater than 25 m in any case.

2.1.6 Design temperature

Ambient temperature	0 ℃ ~ 50 ℃
Sea water temperature	0 ℃ ~ 35 ℃

Note: Materials of hull structure, leg structure and jacking system are to be designed from 0 ℃ (not include) to 50 ℃.

2.2 Variable load

2.2.1 Definition

The variable load of the liftboat includes:

1) Fuel oil, diesel oil, lube oil and dirty oil in tanks

2) Fresh water, brine water, sea water, sewage water in tanks

3) Deck loads such as containers, removable cranes or miscellaneous equipment

4) Provisions, stores, spares

5) Sundries

2.2.2 Variable load capacity

The maximum variable load at each condition is as follows:

Afloat condition (field move & ocean move)	1837.9 t
Elevated condition (during jacking up/ down)	1670 t
Jacked up operating condition (normal, case 1, case 2, crane working condition)	1670 t
Jacked up operating condition (case 3)	1000 t
Jacked up survival condition (storm condition)	600 t

Note:

Locally, on the main deck, the design load is 5.0 t/ m^2.

Design Loads for deck loads are as follows:

Main deck area	5.0 t/ m^2
Weather deck area	2.5 t/ m^2
Storage area	1.33 t/ m^2
Machinery area	2.0 t/ m^2
Muster area/ top of accommodation	1.0 t/ m^2
Accommodation area/ passage & walkway	0.5 t/ m^2
Platform within jack house	0.5 t/ m^2
Jack house roof	1.0 t/ m^2

For more information about deck loads, please refer to JH316G-103-09_DECK LOADING PLAN.

2.2.3 Helideck

The helideck is designed for S76, S92A & S61N helicopters.

3 OPERATIONAL CRITERIA AND LIMITATIONS

3.1 Afloat condition

3.1.1 Field move

The Captain of the liftboat shall have in his possession, and shall adhere to the specific rules or local requirements that are applicable to the area of the move.

IMPORTANT

The Captain must refer to ZMI Marine Safety Management System and MOU Standard procedures manual to ensure that relevant procedures are followed. Consideration must also be given to compliance with field or client procedures where these may be more restrictive.

CAUTION

No field move shall be conducted should the predicted weather exceed the following limits:

Wind speed: **20 knots**

Wave height: **2 meters**

Whenever possible, the anticipated duration of the field move, plus the elevating process should not exceed the predicted weather window. However, should, for any reason, the anticipated duration of the entire move, exceed the predicted weather window, the route shall be planned to ensure that the major portion of the move is in a water depth that does not exceed 60 m sand permits a safe jacking operation.

The Captain shall always minimize the time the liftboat remains in a water depth that exceeds 60 m.

The Captain shall have the liberty to reduce the above criteria, should any condition deteriorate. It shall be ascertained that:

1) The total displacement and vertical position of the center of gravity shall comply with:

a. The ABS load lines (summer freeboard 2.658 m).

b. The limits provided in the hydrostatic tables (as shown in section 7.1) and maximum allowable KG chart (as shown in section 7.2).

2) The horizontal weight distribution shall ensure that the static trim does not exceed 324 mm.

The maximum allowable difference between forward and aft marks is 262 mm.

3) The horizontal weight distribution shall ensure that the static heel angle does not exceed 0.2 degree.

The maximum allowable difference between PS and SB marks is 141 mm.

4) All watertight openings on the main deck are to be secured watertight. These hatches, manholes and vents are shown in section 7.6.3 - openings through the main deck.

Ventilators installed height greater than 4.5 m above main deck are to be kept open and ventilators installed height less than 4.5 m above main deck are to be kept closed during navigation and DP operation.

For the engine room, all manual controlled weather tight louvers (installation height is greater than 4.5 m above main deck) used as air supply (fitted at the top of supply fan room) and air exhaust (fitted at the top of exhaust fan room) should be kept open, and two sets of air supply fans respectively installed on PS and SB should be adjusted according to the use of main diesel generator sets and main engines in the engine room, in this case, the ventilation capacity shall be capable of the maximum supply air volume. Two sets of air exhaust fans respectively installed on PS and SB shall be used for air exhaust of engine room.

5) All watertight doors below main deck levels are to be secured closed.

CAUTION

Special attention shall be made to the doors separating the engine room from the below main deck accommodation. These doors shall be secured closed at all times whilst afloat. Should these doors required to be open in an emergency, the opening and closure times shall be entered in the deck log book. These doors are equipped with limit switches and are reported on the control console.

6) The submersible pumps shall be raised on board and hoses shall be secured.

7) Any heavy equipment shall be stowed in its designated location and secured.

8) Ascertain the position of the four legs utilizing the leg marks and calculate the corresponding draft. Verify that the legs are in their correct position relative to the guides. If required, a temporary sea fastening of the legs should be installed.

9) Verify, by adjustment of the torque, that the load of each leg is correctly spread over the fourteen pinions of the WMMP mechanisms.

3.1.2 Ocean move/ towage (legs sink 10 m)

The feasibility of any ocean move shall be studied, in accordance with:

1) The route

2) The duration

3) The season

Further to this study, particular requirements shall be determined by the designer, for example:

1) The maximum allowable displacement

2) The corresponding weight distribution

3) The position of the legs and sea fastening

CAUTION

No ocean move/ towage shall be conducted should the predicted weather exceed the following limits:

Wind speed: **100 knots**

Draught: **3.221 m**

It shall be ascertained that:

1) The total displacement and vertical position of the center of gravity shall comply with:

a. The limits provided in the hydrostatic tables (as shown in section 7.1) and maximum allowable KG chart (as shown in section 7.2).

2) The horizontal weight distribution shall ensure that the static trim does not exceed 324 mm.

The maximum allowable difference between forward and aft marks is 262 mm.

3) The horizontal weight distribution shall ensure that the static heel angle does not exceed 0.2 degree.

The maximum allowable difference between PS and SB marks is 141 mm.

4) All watertight openings on the main deck are to be secured watertight. These hatches, manholes and vents are shown in section 7.6.3 - openings through the main deck.

Ventilators installed height greater than 4.5 m above main deck are to be kept open and ventilators installed height less than 4.5 m above main deck are to be kept closed during navigation and DP operation.

For the engine room, all manual controlled weather tight louvers (installation height is greater than 4.5 m above main deck) used as air supply (fitted at the top of supply fan room) and air exhaust (fitted at the top of exhaust fan room) should be kept open, and two sets of air supply fans respectively installed on PS and SB should be adjusted according to the use of main diesel generator sets and main engines in the engine room, in this case, the ventilation capacity shall be capable of the maximum supply air volume. Two sets of air exhaust fans respectively installed on PS and SB shall be used for air exhaust of engine room.

5) All watertight doors below main deck levels are to be secured closed.

6) The submersible pumps shall be raised on board and hoses shall be secured.

7) Any heavy equipment shall be stowed in its designated location and secured.

8) Ascertain the position of the four legs utilizing the leg marks and calculate the corresponding draft. Verify that the legs are in their correct position relative to the guides. If required, a temporary sea fastening of the legs should be installed.

9) Verify, by adjustment of the torque, that the load of each leg is correctly spread over the fourteen pinions of the WMMP mechanisms.

For more information of towing arrangement, please refer to JH316G-222-01_TOWING & FITTING PLAN.

3.2 During jacking up/ down

Verification check should be conducted before the liftboat is elevated/ lowered.

Ascertain the load on each leg, by reference to the leg load measuring system.

- The maximum allowable static load on one leg is 1540 t.
- The max allowable static load difference between two legs is 200 t.

Ascertain that the liftboat is level, by reference to the trim indicators.

- The maximum allowable angle is 0.3 degree.

CAUTION

Do not attempt to elevate the liftboat if the static load on any leg exceeds 1540 t.

3.3 Buffer tank

Water stored in the buffer tank is not to be less than 40 m^3 plus engine cooling water consumption before unit lifting or lowering as per 5-2-2/1.1.7 (b-ii) of ABS MODU Rules.

Refer to ABS approved drawing: JH316G-463-01_DIAGRAM OF WATER COOLING PIPING SYSTEM, 40 m^3 stored in the buffer tank for firefighting system, and engine cooling water consumption is 86.1 m^3. So the water stored in the buffer tank is not less than 126.1 m^3. Considering of volume allowance, sea water stored in the buffer tank is 250 m^3.

CAUTION

The sea water in buffer tank shall not less than 250 m^3 before jacking operation.

3.4 Jacked up in operating condition

Periodic checks should be conducted whilst the elevated unit is in the operating condition.

Ascertain the load on each leg, by reference to the leg load measuring system.

- The maximum allowable pay load of liftboat to be restricted to 1670 t.
- The max allowable static load difference between two legs is 200 t.

Ascertain that the liftboat is level, by reference to the trim indicators.

- The maximum allowable angle is 0.3 degree.

CAUTION

Following completion of the preloading procedure, it is considered that the leg penetration will remain static. Any alarm activation, will indicate that the maximum angle of trim has been exceeded and that the penetration of one or more legs has increased. All operations shall be aborted and the liftboat shall be lowered down to the water. The preloading sequence must then be repeated.

Ascertain that, at any time, the liftboat can be elevated to the survival condition within four

hours.

Due attention shall be given to the operating condition criteria, as shown in chapter 3. Should a weather forecast exceed the operating conditions, all the instructions required under survival conditions shall be applied.

CAUTION

The minimum air gap between the still water level and the bottom of the hull shall not be less than 8 m.

CAUTION

At operating locations where securing and sea bed conditions may cause eccentric effect due to uneven bottom bearing, the operator/ Owner shall take measures to avoid uneven bearing under spud can.

3.5 Jacked up in survival condition

The total displacement of the liftboat shall not exceed 4582.9 t (excluding legs), meaning that the addition of the four weights given by the four load indicators shall not exceed 4582.9 t.

The maximum allowable departure of the center of gravity in any horizontal direction is 0.3 m.

- The difference between any two weights given by the load indicators shall not exceed 50.00 t.

The minimum air gap between the lowest still water level and the bottom of the hull shall exceed 10.0 m. This must be verified for the intended location/ area according to weather for survival condition.

All watertight doors and openings through the main deck shall be closed securely.

All heavy equipment on deck shall be stowed and duly sea fastened.

CAUTION

All miscellaneous equipment, with particular applicability to cranes, shall be stowed to provide the minimum resistance to the wind.

- **Check the emergency power supply.**
- **When the liftboat is operating in the elevated condition in more than 35.0 m of water depth, weather forecast monitoring shall be maintained, in order to ensure that the liftboat can be safely jacked down, moved to a location that water depth is not more than 35.0 m and jacked up to an air gap of 10.0 m when the weather forecast indicate winds in excess of 100 knots.**
- **For severe storm cases and if the liftboat is jacked up, the minimum air gap between still water level and the bottom of the hull shall not be less than 10.0 m at 35.0 m water depth.**

3.6 Procedures for minimizing damage

In case of one of the legs undergoing rapid penetration (punch through), the following procedure may be useful in mitigating further damage to the liftboat.

- Do not operate the jacking system at this point.
- Record hull inclination and level the unit by extending the lifted legs.
- Assess the structural integrity of the legs and the jacking system.
- Assess the watertight integrity of the compartments around the legs.
- Unload as much variable load as possible.
- Seek expert help.
- If immediate action is required and the integrity of the jacking system and legs is not impaired, the hull may be leveled by raising the hull on the side of the leg that has punched through in order to reverse some of the bending loads set up in the leg during the punch through.
- Any jacking operation must proceed very slowly and the leg loads monitored continuously.
- Once the hull is level, jack the hull down into water. Raise the legs if they can be pulled through the jacking tower, and sail to port for assessment and repairs.

In all cases, the Captain must use his judgment, expertise and good marine practice to deal with such emergency situations. The above procedure should be viewed as a useful guidance.

3.7 Procedure for bringing a vessel alongside

When the liftboat is jacked up alongside a fixed structure for a long period, one mooring buoy (back-down buoy) may be placed at a distance of about 100 m from the side where the crane can be used.

A vessel will approach the buoy from up wind direction and maneuver to tie the bow to the mooring buoy using a soft rope connected to the bow capstan. The vessel will used this rope to back down on engines towards the liftboat stern to. Once the vessel is close to the liftboat, soft lines will be thrown from the liftboat to be connected to the stern bollards of the vessel. The vessel will pick up slack on all three ropes for station keeping.

In case the mooring buoy is not deployed, the vessel will maneuver on engines and come stern to the liftboat to receive the mooring ropes. Once the ropes are connected, the vessel will keep minimal speed ahead for station keeping until cargo transferred.

In case of snatching cargo, the vessel will approach the side and maneuver under the crane to get the load and then clear location. The vessel Captain will observe the current direction and shall only approach the side against the current.

4 LIFTBOAT MOVE PROCEDURE

IMPORTANT

Any operation of the liftboat approaching the design criteria and operational limitations presented in this manual is to be checked in a site specific assessment.

4.1 Introduction

4.1.1 General description

This chapter describes a complete jacking operation, i.e. from the elevated situation on one location, through the procedures of hull lowering, leg lifting, repositioning of the liftboat, leg lowering, pre-loading and jacking to the elevated position on the next location.

It includes checks, precautions and logs that are related to the actual jacking operations.

For limitations details, see chapter 3.

For more information about jacking system and specific operation guide, please refer to OPERATION AND MAINTENANCE MANUAL from WMMP.

4.1.2 Responsible person

Before the liftboat move starts, there must be trained and competent personnel who are responsible for the jacking operation and to check all stability calculations before jacking started.

In compliance with custom of the company, the jacking responsibility is also could be taken by the Captain, Chief Officer or/and Chief engineer, the reference of pre-move check lists is indicated in section 4.2.

4.1.3 Liftboat move report

The format of the liftboat move report will vary per company, but the basic contents noted are:

1) Pre-move information, site information for present and next location includes coordinates, water depth, seabed condition, expected penetration and any other relevant information.

2) Sailing information such as distance between locations, estimated sailing time.

3) Information of personnel on board during the move: names of personnel, their responsibilities and duty stations.

4) Weather forecast.

5) Report on liftboat inspection to move.

6) Load sheet, includes variable load on board, load distribution, calculation center of gravity, stability verification, etc.

4.1.4 Log of actual move

This part of the report covers the actual operation and contains information, such as: Time record of operation, actual draft, trim and corrections made departure and arrival on site, weather data events, any requirement to be met prior to the next liftboat move operations.

4.2 Preparations for liftboat move

4.2.1 Check on variable load on board

During the jacking operation, the center of gravity of the elevated weight will be within a certain area (see chapter 3.2).

The liquids on board are arranged in such a way that a minimum of free surface areas in tanks is obtained when the liftboat is afloat, i.e. tanks are arranged to be either full or empty as much as possible.

4.2.2 Pre-move inspection

The equipment directly involved in the liftboat move operation is to be inspected, such as: Jacking system, submersible hose reel, cooling water supply system, instrumentation, lifesaving appliance, alarm & warning system, and thrusters & DP system.

Any required cleaning, adjusting, lubricating (especially between rack and pinions/ guide), etc. is to be taken care of.

4.2.3 Preparations for floating condition

All preparations for the floating condition are made, such as: Watertight doors and hatches are closed, loose equipment is properly stowed and crane booms are fastened on the boom rests.

4.2.4 Assignment of personnel

All personnel involved in the jacking operation are assigned to their duty stations.

4.2.5 Final weather checks

The actual weather and sea state conditions as well as the forecast are to be within the design conditions for operation.

4.2.6 Pre move task list - Captain

The Captain shall:

1) Assemble all charts, weather forecast information and data for the planned route of the move.

2) Assemble all data for the next location.

3) Ensure receipt of the liftboat mooring procedure/ approach procedure (must be approved by QMS BANI YAS INC. office).

4) Recalculate loading conditions (using sample loading conditions) and stability calculations and verify if everything is safe/ within acceptable limits. Please refer to section 7.3 in this operating manual.

5) Request a diving and geotechnical survey of the new location when required. The position and direction of all pipelines should be marked utilizing two location buoys, if required. The Captain shall request to receive a written report of any obstruction or abnormality on the sea bed at the new location.

6) Check the navigation lights and day shapes.

7) Check the VHF radios, telephone and public address system.

8) Assign personnel to key locations and brief accordingly.

9) Ensure good interdepartmental communications are maintained.

10) Complete a jacking panel function test for lamps and alarms.

11) Ascertain that the weight distribution on the liftboat is within the acceptable limits of the jacking system.

12) Ensure that the wave height is suitable for the jacking operation in accordance with the operating manual (as shown in section 3.1).

13) Ascertain that all designated personnel check lists have been completed.

Watertight hatches and doors shall remain securely closed, with all dogs on, at all times whilst the liftboat is afloat (as shown in section 4.2.3 of the operating manual).

4.2.7 Pre move task list - Captain

Date		Time	

		Yes	No
I	Is jacking panel function tested? (Lamp/alarm test):		

		on	off
1.	Motors' alarms for:		
a.	Supply defect		
b.	Overload temperature rise		
c.	Brakes defects		

2.	Weight distribution on each leg:	
	Leg No.1	t
	Leg No.2	t
	Leg No.3	t
	Leg No.4	t

3.	Trim/heel inclination:	
	XX	
	YY	

		on	off
4.	WT doors "closed/ open" indicator light of:		
	Door No.1		
	Door No.2		
	Door No.3		
	Door No.4		
	Door No.5		
	Door No.6		

5.	Last time inspection of brake discs. (Date): See Chief engineer pre-move check list	

II Date for the next location:

		Wind/Sea
1.	Weather forecast for prospected duration of move:	
	Max significant wave height 2 m	
	Max wind speed 20 knots	
	Max current speed 2 knots	
2.	How many hours of weather window is required for the move?	

		Yes	No
3.	If weather window is not sufficient for the final destination, is the " STBY position" determined?		
4.	Is liftboat orientation diagram received?		
5.	Sea bottom survey is received and analyzed.		
6.	Position of plumb line at next location is specified as:		
a.	Over the helideck safety net, or		
b.	Over the helideck		

III Radio and navigation equipment check-up

		Yes	No
1.	Navigation charts oil field charts for the liftboat's move are assembled.		
2.	Navigation lights and day shapes checked.		
3.	Communication means tested and found OK.		
a.	VHP radio		
b.	PA system		
c.	SPT telephone		

Date		Time	

			Yes	No
	4.	Navigational equipment tested and ready:		
		a. Gyro compass		
		b. Magnetic compass		
		c. NDB system		
		d. Radars (PS & SB)		
		e. GPS		
IV	1.	Is total weight and load distribution analyzed?		
	2.	Is load condition form completed?		
	3.	Actual variable load (Max allowable for jacking up or down is 1670 t)		
	4.	Afloat stability calculation is made (See stability calculation sheets.) Max allowable difference between: fore and aft 0.324 m PS and SB 0.141 m		
	5.	Are WT openings on the MD and BMD secured watertight? i.e. Tank manhole covers, all WT doors and hatches see operating manual.		
	6.	Is entry into deck logbook made in regard of all WT doors & hatches closure?		
	7.	Is personnel assigned and stand-by for legs greasing? Leg No.1 (name) _____ Leg No.2 (name) _____ Leg No.3 (name) _____ Leg No.4 (name) _____		
	8.	Has announcement been made over PA, prior to the commencement of jacking down?		
	9.	Has Chief engineer done his pre-move check and has it been registered in deck logbook?		
	10	Has Chief Officer done his pre-move check and has it been registered in deck logbook?		

		Yes	No
11.	Is hull integrity check done at 1.5 m draft?		
12.	Are propulsion motors tested whilst at 1.5 m draft?		
13.	Azimuth control		
	RPM control		
14.	Are the bow thrusters tested?		
15.	Is liftboat ready for jacking procedure and the move?		

Captain _____ Signature _____

4.2.8 Pre move task list - Chief Officer

The Chief Officer shall:

1) Ensure that all movable equipments on the liftboat are secured.

2) Confirm that the submersible pumps have been raised on board and the hoses are secured on deck.

3) Ascertain that all the pump valves are closed.

4) Inspect all void tanks to ascertain that they are empty, and rechecked for integrity at 1.5 m draft.

CAUTION

Whilst making a long move, all void tanks shall be regularly checked for ingress of seawater. Should any ingress be found, the appropriate action shall be instigated.

5) Check the legs above and below the hull are free of obstructions.

6) Ensure greases and brushes are available at each jack house.

7) Ensure that the cranes are stowed and secured.

8) Ensure that all watertight doors, hatches and openings on the liftboat have been closed and all dogs are on.

9) Report to the Captain that all the above items have been checked and confirm with a signed notation in the logbook.

4.2.9 Pre move check list - Chief Officer

Date		Time		Yes	No

		Yes	No
1.	All WT doors, hatches and opening on the liftboat have been closed and all dogs are on.		
2.	All movable equipments on the liftboat are secured.		
3.	Towing gear has been inspected and is ready.		
4.	Anchor checked and ready for deployment.		
5.	4-point mooring winches tested and ready.		
6.	Liftboat is in sea going position.		
7.	Submersible pumps are removed and secured.		
8.	All pump valves are closed.		
9.	All void tanks are inspected for fluids.		
10.	Legs above and below hull are free of obstructions.		
11.	Cranes are secured in sea going position.		
12.	Greases and nozzles are available at each leg.		
13.	Report to the Captain has been made.		
14.	Results of pre-move checking are noted in the logbook.		
15.	Liftboat is ready for jacking procedure and for the move.		

Chief Officer _____ Signature _____

4.2.10 Pre move task for Chief engineer

The Chief engineer shall:

1) Check the generators and main electrical functions.

2) Check the jacking equipment and verify the brakes are correctly set.

3) Check the weight distribution on the pinion of each leg by operating at the local control box.

4) Adjust the torque on each gear train as required.

5) Raise the submersible pumps on board and secured the hoses on deck.

6) Ascertain that the oil levels in jacking motor gear boxes are correct.

7) Report to the Captain that all the above items have been checked and confirm with a signed notation in the logbook.

NOTE

Reference shall be made to OPERATION AND MAINTENANCE MANUAL from WMMP for details of the jacking system.

4.2.11 Pre move task for Crane operator

The Crane operator shall ensure that:

1) The cranes are stowed in sea fastening position.

2) There is no load applied to crane's hook.

3) Any cargo lifted immediately before preparing to move the liftboat has been properly stowed/ sea fastened as required.

4.3 Lowering the hull to floating condition

4.3.1 Procedures before hull lowering

Before the commencement of hull lowering operation, the following procedures are to be performed:

1) Ensure that main generator sets are on line with:

a. When the hull is above the water level: Minimum combined electrical capacity of 2.49 MW + stand-by generator, and:

b. When the hull is in the water: Minimum combined electrical capacity of 2.49 MW + stand-by generator.

2) Confirm that the load on the mechanisms is satisfactorily distributed between pinions.

3) Confirm that within one minute, the weight is correctly distributed on four legs.

4.3.2 Hull lowering

Commence lowering the hull. During lowering, intermediate stoppage may be necessary for checking of the proper functioning of the jacking system. This operation must be performed at a low speed.

In general, do not interrupt the lowering procedure of the liftboat between the moment that the liftboat touches water and the moment that the liftboat is afloat.

On reaching about 1.5 m water draft, allow to stop jacking and confirm watertight integrity of all tanks and spaces before continuing jacking to floating draft.

Submersible hose reel clearance with seabed shall to be checked and adjusted accordingly.

4.3.3 Thruster system

Before entering the wave zone (air gap approx. 2 m), the Captain is to verify that the propulsion system is ready for operation.

4.3.4 Cooling water

As soon as the hull is submerged and has a draft of approx. 2.5 m, the cooling water supply is changed over from submersible hose reel to the seawater inlet chest in the hull bottom.

4.3.5 Leg pulling/ lifting

The lowering operation is again continued until the hull is at full draft. The thruster system is on stand-by mode. When the hull is afloat, the legs are pulled free from the seabed.

In areas of deep penetration, leg extraction can be difficult sometimes. Increasing the liftboat draft over design buoyancy is a method of increasing leg pull force to aid extraction. However, if excessive over buoyancy is applied, sudden leg extracted can result in a violent movement of the liftboat with associated risk of impact. So do not apply over buoyancy in excess of one meter extra draft.

The liftboat should then be held at this draft for some time until the leg releases. If the legs do not free themselves, the jetting system should be utilized to loosen the areas around the spud cans. In areas where leg extraction is expected to be difficult, it is a good practice to utilize the jetting system prior to leg pulling, i.e. once the liftboat is at floating draft.

Although these activities may add times taken to depart location, they are necessary to reduce the possibility of any damage to the liftboat or facility.

If one or more of the legs are still stuck in the seabed, the other leg(s) is (are) to be kept on the seabed in order to prevent the possible rotation of the hull, which could induce twisting of the leg(s).

At no time it is permitted to try and release the legs by DP or winches to move or turn the liftboat. This imposes unacceptable stresses on the legs and jacking system with a high risk of spud can damage.

When all four legs are free (i.e. only resting on the seabed), the thrusters are activated with the control system on manual. All four legs are elevated and when the liftboat is at a safe distance from nearby structure, the DP system may be activated if required.

4.3.6 Preparations for sailing

When the liftboat is afloat, it can sail on its own power to the next location.

4.4 Leg lowering and hull elevating

4.4.1 Procedures before leg lowering

When the liftboat arrives at the new location, preparations for the actual jacking operations start:

1) Ensure the proper functioning of the propulsion system for maneuvering the liftboat near to the platform.

2) Ensure that main generator sets are in line with: Whilst on DP mode in maximum environmental conditions, power station will be operated on DP mode and three (3) sets of generators on line.

3) Ensure buffer tank is filled to 250 m^3.

4) Maximum jacking load 5652.9 t is to be checked, and maximum total allowable elevated weight is to be checked.

5) The center of gravity of the elevated weight is to be checked and, if necessary, by shifting variable load, adjust to make sure the inclination angles are less than 0.3° on both two horizontal perpendicular axes.

6) The jacking crews are assigned to their stations.

7) All warning and alarm systems are checked on proper functioning.

4.4.2 Leg lowering

Provided the actual environmental conditions and the forecast are acceptable for the operation, the jacking operation can start. The legs are lowered down to approx. 3 to 5 m above the seabed.

4.4.3 Final positioning

The lowering of the legs is stopped and the final positioning of the liftboat is performed.

4.4.4 Legs lowered onto the seabed

In general, the legs are lowered onto the seabed simultaneously. If straddling pipeline or close to pipelines, two or more legs (clear from the obstructions) may be lowered first, then position confirmed by a diver before lowering the others. During this operation the inclinometers are continuously observed and the liftboat is kept level within the acceptable range.

4.4.5 Cooling water supply

The cooling water supply is switched over from the sea chest to the buffer tank, and if the jacking procedure lasts too long, it’s also feasible to switch to submersible hose reel

pumps. The sea water submersible pump is lowered simultaneously with jacking, whilst supplying the sea water and the length of the hoses shall be adjusted so that the immersion of the pumps is not less than 3 m.

4.4.6 Pre-driving

The liftboat is begun to lift out of water by four legs, whilst the draft is decreasing. When the draft reaches about 1.5 m, the jacking procedure should be paused, then inspect all void tanks to ascertain that they are empty, and recheck for integrity.

4.4.7 Hull lifting to pre-load position

The liftboat is lifted out of water to the pre-load position (air gap of 1.5 ~ 2.5 m), to ensure that the hull bottom not to be stroked by waves.

4.5 Pre-loading

4.5.1 Pre-loading procedure

The four legs are pre-loaded in diagonal pairs. As soon as any list of the hull is observed on the inclinometers, the pre-loading is stopped and the liftboat is to be leveled. After leveling, pre-loading is to be started again.

The jacking capacities as per section 1.4.2 are available per leg.

Diagonal pre-loading is allowed up to a maximum load of 2072 t at jacking system level. To achieve this maximum pre-load, the elevated weight should range from 4744 (2072*2 + 600) t to 5652.9 t.

For pre-loading legs 1 & 4, switch to preload mode, jacking hull on legs 1 & 4 slightly, which will bring the major part of the elevated weight on legs 1 & 4 themselves. Stop when the load indicators of legs 1 & 4 have reached the required pre-load.

In case load on leg 1 & 4 is not distributed equally, the liftboat has to be leveled before pre-loading may resume.

In case penetration is encountered during pre-loading, the pre-loading process is to be stopped. The liftboat is to be leveled before pre-loading may resume.

After pre-loading of legs 1 & 4, legs 2 & 3 will be pre-loaded in the same way.

4.5.2 Duration of pre-loading

The full amount of pre-load is maintained for a certain period depending on the type of seabed encountered. Soil mechanical reports made prior to the move will define this period. Generally, at least 20 minutes maintenance is required for confirmation.

4.5.3 Sudden penetration

The following steps should be undertaken in the event of a sudden penetration (punch through) of one leg:

1) The hull is to be leveled by means of lowering of the hull at the non-penetrated legs.

2) Legs, in way of guides, should be visually checked for any structural distortion or cracking. This checking is also to be done on the jacking system.

3) Re-assess the location. Either resume pre-loading operations or make preparations for a move to another location.

4.6 Elevating to required air gap

Before jacking is commenced it is to be verified that the liftboat is in line with jacking limitations as per section 3.2.

The hull is elevated to the required air gap, i.e. the operational height. During this operation the hull is to be maintained level within the predefined margin.

4.7 Personnel transfer to/ from liftboat

When transferring personnel to and from vessel, the following procedures are to be implemented:

In Port

The vessel's gangway should be installed between the liftboat and the nearest dock such that personnel can walk safely on and off the vessel.

Elevated alongside a fixed platform

If the liftboat is close to a fixed platform, the gangway may be extended between the platform and the liftboat in a position that will not interfere with the proper operation of the vessel. In the event that the liftboat must be elevated out of reach of the gangway, or if operations prohibit the physical connection of the vessel to the platform, personnel shall be transferred using the vessel's crane and the personnel basket provided on board. When personnel are boarding the vessel from areas other than the adjacent platform (e.g. crew change), they can be transferred via personnel basket or helicopter using the vessel's helicopter deck.

In Transit

Under no circumstance (except in case of emergency) should personnel be transferred to or from the liftboat whilst it is underway.

5 EMERGENCY SYSTEMS

5.1 Chain of command and responsibilities

Captain - the man/ woman having command of the liftboat.

Chief Officer - the Officer next in rank to the Captain and to whom the command of the liftboat shall transfer in the event of the incapacity of the Captain. The Chief Officer acts as the deputy to the Captain and acts as the safety Officer, the security Officer and the helicopter landing Officer.

Chief engineer - the senior Engineer officer responsible for the mechanical propulsion, the operation and maintenance of the mechanical and electrical installations of the liftboat.

Second engineer - the Engineer officer next in rank to the Chief engineer and to whom the responsibilities of the Chief engineer shall transfer in the event of the incapacity of the Chief engineer.

Deck officer - an Officer qualified in accordance with the provisions of chapter II of STCW.

Engineer officer - an Officer qualified in accordance with the provisions of chapter III of STCW.

Officer - a member of crew, other than the Captain or a Rating.

Assistant engineer - a person under training to become an Engineer officer.

Radio operator - a person holding an appropriate certificate issued under the provisions of the radio regulations.

Medic - a person assigned the responsibilities of providing medical first aid and cares to people onboard the vessel.

Crane operator - a person assigned the duty to operate shipboard crane.

Rating - a member of crew other than the Captain or an Officer.

5.2 Emergency power system

5.2.1 Description

The liftboat is fitted with a diesel driven emergency generator set (WEICHAI), with the capacity to provide 250 ekW, three phases, 50 Hz to the emergency switchboard. Should the main power supply fail, the emergency system is designed to start automatically and connect to the emergency switchboard. This system take care the liftboat emergency operation load requirement from second fire pump, submersible pump, battery chargers, emergency lighting through alternator, supply fans, starting air compressor etc.

24V DC power system is also provided to support the emergency generator supplying to control panels, helideck status lights, temporary emergency lightings, radio charging panel etc.

The main power supply on the liftboat is provided by four (4) diesel engine generator sets (CATERPILLAR C32). Each has a capacity to provide 830 ekW, three phases, 50 Hz. The diesel engine generator sets are air started locally, engine cooled by water, and alternator cooled by air.

Manufacturer's manuals for operation and maintenance are provided onboard the vessel together with laptop based maintenance/ trouble shooting software.

5.2.2 Limitations

The Captain shall be fully conversant with the load limitations of the emergency and main power system.

The Captain shall also fully comprehend that when the electrical power consumption reaches a predetermined percentage of total power available, load shedding should automatically occur and non essential equipment will be temporarily effected.

The Captain shall also fully comprehend that when the electrical power consumption reaches a predetermined percentage of total power available, load shedding should automatically occur and non essential equipment will be temporarily effected.

5.2.3 Emergency power system single line diagram

The emergency power system is represented in the attached two single line diagrams:

1) JH316G-611-01_PRIMARY POWER SYSTEM DIAGRAM
2) JH316G-611-03_CHARGING & DISCHARGING PANEL SYSTEM DIAGRAM

5.2.4 Electrical calculation

The emergency power system is represented in the attached load calculation: JH316G-601-01JS_ELECTRICAL LOAD BALANCE CALCULATION.

5.3 Bilge system

5.3.1 Description

Please refer to JH316G-510-01_DIAGRAM OF BILGE PIPING SYSTEM for system arrangement and various pump capacities.

The liftboat is equipped with two sets of general service & fire pump as main bilge pumps, listed as below:

1) General service & fire pump: 100/ 60 m^3/h @ 4/ 7 bar JIANGSU ZHENHUA CLH150-125-6/2 45kW self-priming, centrifugal pump.

In addition, the liftboat is equipped a bilge daily pump (5 m^3/h @ 3 bar) used for daily bilge water transfer and discharge.

There is bilge suction in the engine room, rudder propeller room, chiller room, pump room, B/T room, emergency fire fighting pump room, all of void tanks and other machinery space etc.

Please refer to JH316G-462-02_DIAGRAM OF DIRTY OIL PIPING SYSTEM and JH316G-510-01_DIAGRAM OF BILGE PIPING SYSTEM.

Oily bilge should be drained into the bilge tank (capacity 19.1 m^3) and then processed with the WUHAN ZHONGZHOU oily water separator (2.5 m^3/h) with oily result to fill into the dirty oil tank (capacity 19.1 m^3), the balance water below 15 ppm going to the sea being monitored by built-in monitor module that protect against accidental overboard discharge of oil.

NOTE

The position of the deck controlled valve for the oily water separator is indicated on the drawings contained in the following section.

5.3.2 Schematic drawings

5.3.2.1 Drawing - ballast and fire piping

Please refer to JH316G-512-01_DIAGRAM OF BALLAST PIPING SYSTEM, JH316G-510-01_DIAGRAM OF BILGE PIPING SYSTEM and JH316G-521-01_DIAGRAM OF FIRE MAIN PIPING SYSTEM.

5.3.2.2 Drawing - bilge piping system

Please refer to JH316G-510-01_DIAGRAM OF BILGE PIPING SYSTEM.

5.3.2.3 Drawing - lube oil, drainage and oily bilge system

Please refer to JH316G-462-02_DIAGRAM OF DIRTY OIL PIPING SYSTEM and JH316G-462-01_DIAGRAM OF LUBE OIL PIPING SYSTEM.

5.3.3 Operational guidance

The Captain and the Chief engineer shall verify that MARPOL Regulations and the Shipboard Oil Pollution Emergency Plan (SOPEP) are strictly adhered to and that all related operations are performed in accordance with the recommendations of the manufacturer.

The Chief engineer shall be fully conversant with the details of the operation of the emergency fire pump, #2 submersible pump (installed at the SB), #2 main air compressor, #2 engine room supply fan, water sprinkler system and that they all function through the emergency generator switchboard.

Manufacturer's manuals for operation and maintenance of these systems are provided onboard the vessel.

5.4 Handling & stowage of dangerous materials

5.4.1 Procedure

The procedures for the handling and stowage of dangerous materials are detailed in the QUALITY ASSURANCE SYSTEM MANUAL section 3.1.2.2 and 3.5.1.1 - 3.5.1.8. The

afore mentioned manual and the International Maritime Dangerous Goods Code (IMDG Code) shall be referred to whenever dangerous materials are to be handled or stowed on board the vessel. The appropriate material safety data sheets shall be supplied to provide a valuable source of information relating to the individual properties of dangerous materials and the relevant safety precautions.

WARNING

No dangerous material shall be handled or stowed on board if the material safety data sheet is not provided.

5.4.2 Records and responsibilities

The Deck officer shall maintain a record of the movements of all dangerous materials onboard and a folio of material safety data sheets. Whenever dangerous materials are to be handled, the Deck officer shall notify the Captain and the Chief Officer. The Captain and the Chief Officer shall acknowledge this notification by signing afore mentioned record and shall instigate the appropriate precautionary procedures.

5.5 Stability & variable load monitoring

5.5.1 Stability

The general operating guidance to ensure that acceptable stability for the liftboat is maintained in the afloat and elevated conditions as shown in section 7.3.

5.5.2 Load conditions

Samples of the load condition for the liftboat in the envisaged modes of operation are shown in section 7.3.

5.5.3 Variable load monitoring

The duty Deck officer shall monitor all alterations of the quantity and position of the variable loads on the liftboat and ascertain the effect of the load on the liftboat compared to the preceding load calculation recorded by the Captain.

WARNING

The duty Deck officer shall immediately notify the Captain should any proposed alteration to the variable loads exceed 50 t or the authorized jacking ability of the liftboat be exceeded.

The Captain shall instigate the appropriate corrective action and record the amended calculations accordingly.

NOTE

The variable load design criteria for the liftboat and supplementary guidance are shown in section 2.2.

5.6 Limiting conditions of temporary mooring system

The set of anchoring equipment located in the SB at the bow will be used as temporary mooring purpose. Guidance for the normal operating limitations of the winch should be referred to OPERATION AND MAINTENANCE MANUAL from WMMP.

The liftboat is classed with notation DPS-1. If a propulsion failure occurs during ocean move, the Captain should make judgments based on the situation and give orders to deploy the temporary anchor. The anchor can be deployed by operating the control button on the fwd console or aft console and the DP system activated by operating the control button on the aft DP console in the wheelhouse.

When the liftboat is anchored for periods longer than 21 days, additional means of anchoring or external assistance such as a stand-by towing vessel will need to be provided.

5.7 Limiting conditions of helideck

The helideck is suitable for type S76, S92A or S61N, and the maximum take-off mass of the helicopter is 5307 kg (S76) / 12565 kg (S92A) / 9298 kg (S61N).

The helicopter shall not take off and land during crane operations.

The helicopter shall not take off and land during jacking operations.

The helicopter shall not take off and land during pre-loading operations.

The helicopter shall not take off and land when the liftboat is afloat.

Once caught fire on the helideck or supporting structure, the helideck should undergo a structural analysis to determine its suitability for further use.

5.8 Limiting conditions of crane operations

5.8.1 General operational limitations

Guidance for the normal operating limitations of crane operations regarding the load, angle and reach are shown in the specific CRANE OPERATIONS MANUAL and the relevant crane load charts (as shown in section 1.5).

5.8.2 Additional operational limitations

Additional guidelines shall be adhered to as follows:

1) The wind limits of the cranes are as follows:

Main crane – 15.5 m/s

Aux. crane - 20 m/s

Neither should the cranes be used in wind speed in excess of the above nor should they be used in wind speed in excess of field operational limits. The Crane operator at all times has the final decision on whether or not to operate the cranes.

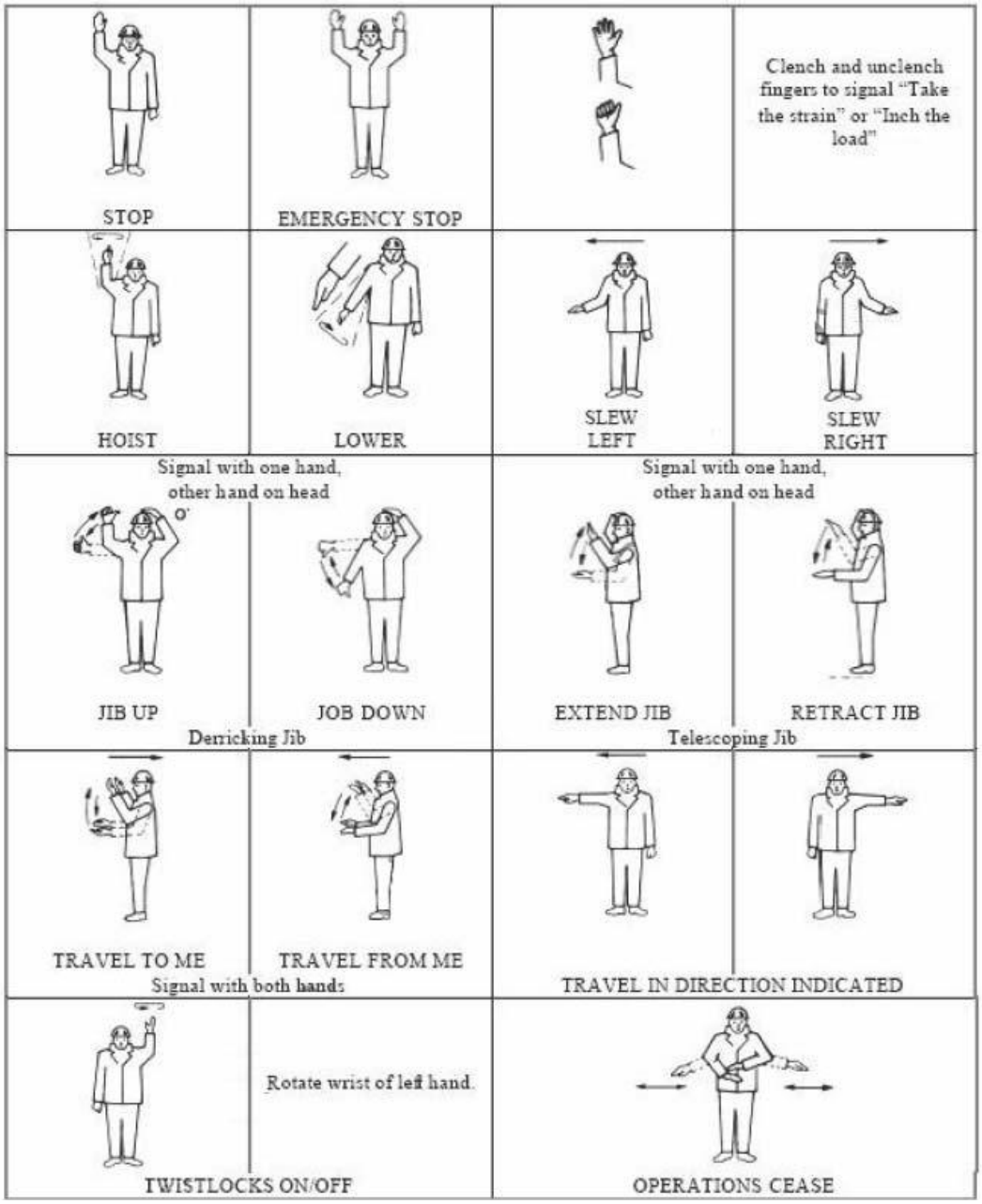
2) The cranes shall not be used during helicopter operations.

3) The cranes shall not be used during jacking operations.

4) The cranes shall not be used during pre-loading operations.

5) The auxiliary crane can be allowed to use for man riding transfer when the liftboat is afloat.

5.8.3 Signals code



5.9 Safety alarms & announcements

5.9.1 Responsibility to monitor alarms

All the safety system alarms shall be monitored in the wheelhouse, by the duty Radio operator on a 24 hours per day basis.

On commencement of duty the Radio operator shall:

1) Perform a lamp test and reset the fire & gas detection panels and all other monitored alarm systems.

2) Ascertain that the alarm panels are not showing any active alarm lights.

3) Should there be any alarm lights showing, investigate and confirm that it is a fault, and report the fault to the Chief engineer.

4) Verify that the load on each leg and the 'X-Y' indications has been correctly in the log book by the wheelhouse duty Officer and that there is no substantial variation from the original values set. Should there be a significant difference, the Captain shall be notified.

5) Review last load condition calculation recorded by the Captain and verify that no subsequent, significant alterations in liquid quantities or deck cargo locations have occurred.

5.9.2 How to investigate alarms

Should any alarm system be activated, the following applicable procedure shall be implemented:

5.9.2.1 Fire alarm

On receipt of a fire alarm the Radio operator shall determine the alarm location and immediately make the following public address announcement:

"ATTENTION ALL PERSONNEL,
WE HAVE A FIRE INDICATION IN (SPECIFY AREA),
WOULD SOMEONE IN THAT AREA,
PLEASE INVESTIGATE AND REPORT THE OUTCOME TO THE WHEELHOUSE IMMEDIATELY."

Should there be no response to the public address announcement within two minutes, it shall be repeated. Should there still be no response the fire alarm signal (as shown in section 5.9.3) shall be sounded. Should another fire alarm indication be activated in an adjacent space whilst the Radio operator is awaiting a response, the fire alarm signal (as shown in section 5.9.3) shall be sounded immediately.

Should a fire be confirmed, the fire alarm signal (as shown in section 5.9.3) shall be sounded and fire fighting procedures shall be instigated (as shown in section 3.1.4.4 of the QUALITY ASSURANCE SYSTEM MANUAL). Should the fire alarm indication prove to be a false alarm, the Radio operator shall make the following public address announcement:

"ATTENTION ALL PERSONNEL,
THE FIRE INDICATION IN (SPECIFY AREA) WAS A FALSE ALARM,
I REPEAT,
THE FIRE INDICATION IN (SPECIFY AREA) WAS A FALSE ALARM."

5.9.2.2 Combustible gas alarm

On receipt of a combustible gas alarm the Radio operator shall determine the alarm location and immediately make the following public address announcement:

"ATTENTION ALL PERSONNEL,
WE HAVE A COMBUSTIBLE GAS INDICATION IN (SPECIFY AREA),
WOULD A QUALIFIED PERSON,
WITH ADEQUATE PERSONAL PROTECTION AND GAS DETECTION EQUIPMENT,
PLEASE INVESTIGATE AND REPORT THE OUTCOME TO THE WHEELHOUSE IMMEDIATELY."

Should there be no response to the public address announcement within two minutes, it shall be repeated. Should there still be no response the gas alarm signal (as shown in section 5.9.3) shall be sounded. Should another combustible gas alarm indication be activated in an adjacent space whilst the Radio operator is awaiting a response, the gas alarm signal (as shown in section 5.9.3) shall be sounded immediately.

CAUTION

Only those personnel whom have undergone gas detector training shall check the area for combustible gas.

WARNING

When investigating combustible gas alarms, extreme caution shall be exercised to ensure there is sufficient ventilation for the safety of the investigator.

Should a combustible gas alarm be confirmed, the uncontrolled gas escape procedure shall be instigated (as shown in section 6.3 of the operating manual). Should the combustible gas alarm indication prove to be a false alarm, the Radio operator shall make the following public address announcement:

"ATTENTION ALL PERSONNEL,
THE COMBUSTIBLE GAS INDICATION IN (SPECIFY AREA) WAS A FALSE ALARM,
I REPEAT,
THE COMBUSTIBLE GAS INDICATION IN (SPECIFY AREA) WAS A FALSE ALARM."

5.9.2.3 H_2S gas alarm

Whilst operating in any potential H_2S zone, additional safety equipment (e.g. ELSA sets) shall be provided on board the liftboat.

On receipt of a H_2S gas alarm the Radio operator shall determine the alarm location and immediately make the following public address announcement:

"ATTENTION ALL PERSONNEL,
WE HAVE A H_2S GAS INDICATION IN [SPECIFY AREA),
WOULD A QUALIFIED PERSON IN THAT AREA,
PLEASE INVESTIGATE AND REPORT THE OUTCOME TO THE WHEELHOUSE IMMEDIATELY."

As soon as the announcement is made, all personnel shall don their breathing apparatus.

Should there be no response to the public address announcement within two minutes, it shall be repeated. Should there still be no response the gas alarm signal (as shown in section 5.9.3) shall be sounded. Should another H_2S gas alarm indication be activated in an adjacent space whilst the Radio operator is awaiting a response, the gas alarm signal (as shown in section 5.9.3) shall be sounded immediately.

Should it be confirmed that H_2S gas presents, the procedure for an uncontrolled gas escape shall be instigated (as shown in section 6.3 of the operating manual). Should the H_2S gas alarm indication prove to be a false alarm, the Radio operator shall make the following public address announcement:

"ATTENTION ALL PERSONNEL,
THE H_2S GAS ALARM INDICATION IN (SPECIFY AREA) WAS A FALSE ALARM,
I REPEAT,
THE H_2S GAS ALARM INDICATION IN (SPECIFY AREA) WAS A FALSE ALARM."

5.9.2.4 Bilge alarm

In the event that the bilge alarm sounds, the Radio operator shall inform the Chief engineer and the duty Deck officer, who shall instigate the appropriate investigations and corrective action(s).

5.9.2.5 Sprinkler system fault alarm

In the event that the sprinkler system fault alarm sounds, the Radio operator shall notify the Chief engineer who shall investigate and correct the fault(s).

5.9.2.6 Jacking system alarm

In the event that the jacking system alarm sounds, the Radio operator shall notify the duty Deck officer and the Chief engineer, who shall instigate the appropriate investigations and corrective action(s).

5.9.2.7 Sick bay alarm

On initiation of an alarm in the sick bay, an indication light illuminates outside the sick bay and in the wheelhouse.

In this event, the Radio operator shall contact the Medic immediately. Should he be unable to contact the Medic, he shall notify the Captain, who shall take the appropriate action.

NOTE

The Radio operator shall be mindful that it is essential to tackle any incident promptly. He will probably receive the first indication of any incident and it is therefore imperative that he proceeds incisively.

Should the Radio operator be in any doubt whatsoever as to the effectiveness or the accuracy of the response received for any indicated incident, he shall immediately sound the fire alarm and make the relevant public address announcement.

5.9.3 Muster list/ alarm signals

1) General alarm
2) Manual alarm
3) Fire alarm
4) Flammable gas alarm
5) H_2S gas alarm
6) Abandon alarm

Please refer to the liftboat's muster list as follows:

Hear, learn and memorize alarm patterns. It is MANDAROTY for everyone onboard.

General alarm	Seven short and one long cycle and periodic output and it repeats every other two seconds
Manual alarm	Control the output manually
Fire alarm	Continuous signal
Flammable gas alarm	One short and one long (periodic is 3 seconds)
H_2S gas alarm	One short and one long (periodic is 3 seconds)
Abandon alarm	One short and one long (periodic is 5 seconds)

INSTRUCTIONS

- Captain should inform ISM manager (designated person ashore) of any emergency that took place onboard the vessel.
- Chief Officer/ Captain should give safety induction to all incoming personnel (GMS employees, client's personnel, visitors, etc.) immediately upon arrival on the liftboat. Chief Officer/ Captain should ensure that all incoming personnel have heard the various alarm patterns (on VHS/ DVD etc.) and can identify each alarm pattern. The muster stations for all emergencies should be shown by walking around. Also, their responsibilities in each emergency situation should be explained. This is tabulated for main emergencies in the following table.
- Latest copy of this muster list should be posted in all designated locations including all cabins. Chief Officer should verify this every month.
- Every person participating in the abandon ship will be required to don his/ her life jacket.
- Chief cook/ camp boss will assemble and direct all the passengers and ensure that they are donning the life jackets correctly and lead them to their assigned muster stations.
- Person discovering the fire should immediately raise the alarm and notify the bridge and fight the fire with all available equipment.
- Upon hear H_2S gas alarm, proceed to your muster station on B deck with your personal BA set suitcase. For methane (CH_4) alarm, proceed to life raft muster station on main deck with your life jacket.

Crew	Stand-in	Emergency responsibilities

responsible	complimentary member	
Fire emergency		
Chief Officer - deck	Radio operator	Sound alarm, inform engine control room + client rep.
	Bosun	Direct operations; verify ventilation + A.C. blowers are shut down, identify location of fire, stop fuel transfer.
Fire team No.1 (deck)		
Bosun	AB-1	Provide fire extinguishers; activate fuel shut off valves, close vent covers and W.T. doors.
AB-2 (hose tender)	AB-1	Lead out fire hose to scene, fight the fire.
Camp boss (hose tender)	Cook	Arouse crew and passengers, close ports, shut off air condition, provide first aid kit. Don dire man's suit, stand by for orders. Evacuate galley if it is on fire and activate CO_2 flooding system.
Fire team No.2 (engine room)		
Engineer officer (team leader #2)	Chief engineer	Shut down fuel pumps, fuel valves and blower; close W.T. doors, start fire pumps, activate fixed FI-FI equipments if required.
Oiler (hose tender)	Mess boy	Lead out fire hose/ appropriated extinguisher to scene, fight the fire.
Damage control party		
The Captain	Chief Officer	Over all in-charge. Maneuver the liftboat/ stop as necessary, fix position, direct operations.
Radio operator	The Captain	Sound alarm, announce; monitor trim, list and draft; switch NUC light as applicable.
Chief engineer	Chief Officer	Supervise damage control parties, take tank soundings and monitor levels.
Engineer officer	Chief Officer	Start pumps; close E/R W.T. doors, hatches and fittings; if big flood in engine room, shut down gensets.
Bosun	AB-2	Close all deck W.T. doors; carry out orders for damage control; display applicable daylight shapes.
AB-1	Oiler	Close all W.T. doors; carry out order for damage control.

Camp boss	Cook	Provide first aid kit; stand-by for orders.
Search team		
Camp boss (team leader)	Bosun	Provide first aid kit.
Cook + mess boy	AB-1; AB-3	Take out stretcher, rescue the victim, and transfer to safety.
All emergencies		
Chief Officer	Bosun	Do head count and identify missing persons at muster station #1.
Radio operator	Engineer officer	Do head count and identify missing persons at muster station #2.
Passengers/ visitors	N.A.	Report to assigned muster station as per public announcement; don BA set for gas release; don life jacket for abandon ship; when inside lifeboat, don seat belt; extinguish cigarettes for fire; if MOB throw life ring for victim, keep victim in sight, inform bridge through somebody else; inform bridge on noticing oil spill.
Abandon the liftboat		
The Captain	Radio operator	Announce using PA system/ megaphone; direct all persons onboard.
	Chief engineer	Supervise launching of lifeboat #1.
	AB-3	(Coxswain L/B #1); Verify everyone has donned life jacket correctly.
Bosun	AB-2	(Hook handler L/B #1); Verify before launching if bottom plug is secured; Release the hooks upon instruction from coxswain.
Chief Officer	AB-1	(Coxswain L/B #2); Launch lifeboat #2; Verify if everyone inside the lifeboat has donned the seat belt.
AB-3	Oiler	(Hook handler L/B #2); Verify before launching if bottom plug is secured; Release the hooks upon instruction from coxswain.
Camp boss + cook	Mess boy	Arouse crew and passengers; provide blankets, food, water and first aid kit; stand-by for orders.
Engineer on	Engineer off	Secure engine room; provide engine room log

duty	duty	book; start emergency genset and leave it running.
Medic team		
R.O/ Medic	Chief Officer	Provide first aid, dispense medicines; inform the Captain.
Mess boy + camp boss	AB-3 + cook	Bring first aid kit; get stretcher or resuscitator; Assist as instructed.
Oil spill response team		
Chief Officer	The Captain	Stop bunkering; inform engine room and ask them to shut down fuel pumps.
Chief engineer	Engineer officer	Stop fuel transfer pump.
Bosun + Oiler + AB-2	Mess boy + AB-1	Bring SOPEP materials; assist as requested, follow instructions of Bosun/ team supervisor.
Man overboard rescue		
The Captain	Radio operator	Make announcement; fix the liftboat position, inform engine room, direct recovery operations, provide first aid, arrange medical care as required.
The Captain	Chief Officer	Stop the vessel and propulsion gears; inform tug Captain (if the liftboat is under towing).
Anyone who sees him		Throw life ring at victim; keep the victim in sight.
Bosun	AB-3	Launch the zodiac; take along/ put one spare life jacket for victim.
AB-1	AB-3	Assist in launching; connect slings and engage davit hook.
Chief Officer	Engineer off duty	Operate the rescue boat.
AB-2	Cook	Rescue the victim after recovery into the rescue boat.
Camp boss + mess boy	Cook	Stand-by for orders; follow the instructions, provide blanket, hot soup or coffee, first aid kit, arouse crew.
H_2S / methane release		
Radio operator	The Captain	Make announcement; Direct all crew/ passengers; verify shutdown of all blowers and A.C.

Chief Officer	Bosun	Verify gas tightness of face masks of BA sets for all at his muster station.
Chief engineer	Engineer officer	Verify gas tightness of face masks of BA sets for all at his muster station; verify all blowers are shut.
Camp boss	Cook	Shut down galley ventilators + A.C.

5.9.4 Public address system

5.9.4.1 Introduction & description

A new advanced PA system has been installed on the liftboat which has several salient advanced features described as below. The system consists of the following components:

1) 2 * Amplifier
2) 2 * Surveillance board (integral with amplifier)
3) 3 * Voice announcement board
4) 3 * general alarm control panel
5) 3 * Voice announcement & general alarm control panel (water-proof)

5.9.4.2 Zoning

The speakers are fitted all over the liftboat and have been divided into 3 zones as below. Special care should be taken not to disturb sleeping crew for routine non-emergency announcements:

Accommodation area

1) LQ except emergency generator room

Working area

1) Emergency generator room
2) B/T room, pump room
3) Rooms in tank top & tween deck
4) Jack house (#1 ~ #4)

Open deck area

5.9.4.3 Location of microphone remote controllers

There are six (6) mics located as below:

1) Wheelhouse - wheelhouse console (fwd)
2) Wheelhouse - wheelhouse console (aft)
3) Lifeboat (PS)
4) Lifeboat (SB)
5) CO_2 room
6) Engine control console

Only selected Officers are allowed to use mic to make any routine or emergency announcement. This is described in following procedures.

5.9.4.4 Priority/ hierarchy

In case the PA system is in use by switchboard room (3), his announcement will be overridden/ subdued whenever another announcement is being made either from wheelhouse (1) or muster area (2). Similarly, announcement being made from muster area (2) will be overridden by new announcement from wheelhouse (1).

Announcement being made from wheelhouse (1) cannot be overridden from any other mic. This is for safety reasons as per SOLAS requirements.

5.9.4.5 Who are authorized to use PA system

Only following persons are allowed (√) to use mic to make any normal announcement. All other should not use the PA system. Failure to abide by this procedure will necessitate issue of a warning letter. Repeated failure empowers the Captain to send the violating person off the liftboat/ expulsion:

	Wheelhouse (1)	Muster area (2)	Switchboard room (3)
Captain/ additional Captain	√	√	√
Oilfield authority rep.	√		√
Chief Officer/ additional Chief Officer	√		√
Radio operator	√		√
A person authority by Captain	√	√	√

5.9.4.6 Vender manual

Public address system documentation is available onboard the vessel.

5.9.4.7 GA plan of communication/ PA system

Please refer to JH316G-604-06_INTERIOR COMMUNICAITON & ALARM EQUIPMENT ARRANGEMENT.

5.10 Maintaining positive air pressure

5.10.1 Introduction

The environment in oilfields may be extremely hostile, especially in the presence of toxic or explosive gases such as H_2S and methane. Therefore it is essential, in this potentially life threatening environment, to maintain a positive air pressure throughout the enclosed working spaces, including the accommodation, machinery spaces, galley, wheelhouse, laundry, cabins and toilets etc., in order to prevent the ingress of toxic or explosive gases.

As a result, the ventilation system on the liftboat is designed to sustain a positive air pressure under normal operating criteria. However, in the event that gas is detected by the

gas detection system or there is a gas alarm or the general alarm is activated, the ventilation motors for the wheelhouse and the accommodation areas will be either automatically shut down or manually shut down at the ventilation system control panel.

5.10.2 Operating procedures

5.10.2.1 Wheelhouse

All external weather-tight doors and internal door to access the wheelhouse from within the accommodation shall remain closed except during entry or exit.

5.10.2.2 Galley

All external weather-tight door and internal doors shall remain closed except during entry or exit.

The inlet supply and the outlet exhaust fans for the ventilation system shall be operating continuously. However, during food service, when the service hatch and internal door are open, the inlet supply fan shall be shut down.

5.10.2.3 Toilets

All external weather-tight door and internal doors shall remain closed except during entry or exit.

The inlet supply and the outlet exhaust fans for the ventilation system shall be operating continuously.

5.10.2.4 Accommodation

All external weather-tight doors and internal doors shall remain closed except during entry or exit.

External fresh air is supplied through each AHU and stale air is discharged by exhaust fans fitted in each deck level. One internal fan (built-in each AHU) is fitted to each accommodation deck level for recirculation and filtration of stale air. All of these fans shall be operating continuously.

5.10.3 Safety training procedures

All personnel arriving on the liftboat shall receive safety induction training regarding the positive pressure ventilation system and records of this training shall be maintained in the official log book by the Chief Officer.

WARNING

It is strictly FORBIDDEN to disregard the safety guidelines and all procedures associated with the ventilation system.

It is strictly FORBIDDEN to modify any integral part of the ventilation system (e.g. exchanging a blower impeller, motor or trunk with an incorrect substitute size or capacity) by either unauthorized personnel or authorized personnel without an appropriately approved procedure.

It is strictly FORBIDDEN to disable any safety or cut out devices on the ventilation system.

5.10.4 Ventilation system

5.10.4.1 Description

The wheelhouse and accommodation spaces are comprised of four, individually regulated, fresh air and stale air areas, which act as independent positive pressure areas, and mainly through each AHU arranged in these areas to achieve the air regulating function.

These are:

Tank top & tween deck

Main deck

A deck

B deck & C deck

5.10.4.2 Layout of HVAC in living quarter

Please refer to JH316G-542-01_LAYOUT OF ACCOMMODATION AIR-CONDITION VENT DUCT AND MECHANICAL VENTILATION and JH316G-541-05_LAYOUT OF GALLEY VENTILATION.

5.11 Gas detectors

5.11.1 Types used onboard

A variety of gas detection equipment is carried on the liftboat.

5.11.1.1 Fixed gas detection system layout

CONSILIUM system is installed and the component, model, quantity and make are tabulated below:

Component	Model	Qty	Maker
H_2S sensor	5200262-01A	11	CONSILIUM
CH_4 sensors	5200260-02A	11	CONSILIUM
Central unit	SAL-GDS I-1A	1	CONSILIUM

5.11.1.2 Layout - fixed gas detectors

Please refer to JH316G-604-07_ARRANGEMENT OF FIRE AND GAS DETECTION ALARM EQUIPMENT

5.11.1.3 Transportable gas detector

1) Description

The transportable gas detector unit (TGDU) is designed for use in hazardous areas and certified explosion proof (suitable for use in a hydrogen atmosphere). The following is an example of the type of gas detector which will be available onboard.

2) Sketch

3) Specifications

The transportable gas detection unit is designed for the detection of:

a. Combustible gas

b. Hydrogen gas

c. Oxygen

d. Toxic

These allow for easy test/ calibration at the detector head without opening the control unit. No 'hot work' permit is required.

4) Hand held gas detectors

These are made by CONSILIUM.

Individual systems and equipment have an operating and maintenance manual supplied for guidance. This manual shall be referred to for specific operational and testing instructions to ensure the systems and equipment is operated effectively.

5.11.2 Operation of gas detectors

The fixed gas detection system is utilized for the permanent monitoring of areas or spaces where the presence of gas concentrations is possible. The portable equipment is utilized for monitoring spaces prior to entry by personnel or whilst carrying out hot work.

WARNING

Portable gas equipment shall only be utilized when the following criteria are fulfilled:

- **The equipment has been calibrated by a recognized authority within the previous 12 months.**
- **The equipment has been tested using the appropriate span gases supplied.**
- **The equipment has been tested in accordance with the manufacturers operating manual.**
- **The person using the equipment is appropriately trained.**

5.11.3 Testing of gas detectors

5.11.3.1 Fixed gas detection

The fixed gas detection system shall be function tested as per manufacturer's operating manual. Periodic testing/ calibration shall be done as per applicable statutory/ port state/ oil field and/ or charterer's requirements.

Test and functioning of fixed gas detection system shall be recorded as per planned maintenance system.

5.11.3.2 Transportable (hand held) gas detectors

The hand held gas detectors shall be tested monthly and reported back to office as per planned maintenance/ end of month reporting system.

5.11.4 Hazardous area

Please refer to JH316G-103-11_HAZARDOUS ZONE PLAN

6 EMERGENCY EQUIPMENT & OPERATIONS

6.1 Equipment & system

6.1.1 Fire proportion bulkheads and decks

Please refer to JH316G-103-05_FIRE PROOF DIVISION PLAN.

6.1.2 Fire detection system

6.1.2.1 Description

The system consists of smoke detectors and heat detectors are laid out as per following drawing.

1) Brand

CONSILIUM brand smoke and heat detector system has been installed on the liftboat. One (1) main central unit (SALWICO CARGO) is complimented with one (1) repeater of CONSILIUM M 4.3 and one (1) control unit of CONSILIUM M 4.3.

2) Smoke detectors

Area served	Type	Brand/ maker	Base configuration
WET AREA	Optical smoke Detector, EV-P/ IP55	CONSILIUM	SALWICO IP55
DRY AREA	Optical smoke Detector, EV-P, EVC-PY/ IP55	CONSILIUM	SALWICO UB-6 SCI, NS-ADAPT-IS

3) Call points

CONSILIUM brand call points are provided.

Model: MCP-A/ IP23 and MCP-A/ IP67

4) Heat detectors

They are fitted in common areas, wash places and galley.

Brand/ model: CONSILIUM EV-H/ 84C/ IP55, EV-H/ 54C/ IP55, EV-H/ 54C.

Temperature: 84 ℃, 54 ℃.

6.1.2.2 Fire detection equipment layout

Please refer to JH316G-604-07_ARRANGEMENT OF FIRE AND GAS DETECTION ALARM EQUIPMENT.

6.1.3 CO_2 flooding system

6.1.3.1 Description

The engine room and galley ducting are provided with a CO_2 flooding system. It is manufacture and installed by WUHAN CHANGJIANG. Please refer to WUHAN CHANGJIANG operation instructions onboard.

6.1.3.2 GA plan of CO_2 system

Please refer to the working drawing supplied by WUHAN CHANGJIANG.

6.1.3.3 CO_2 operation instructions

Please refer to the working drawing supplied by WUHAN CHANGJIANG.

6.1.4 Water sprinkler system

The living quarter is provided with water sprinkler system, designed and supplied by SHANGHAI SURE-SAFE FIRE EQUIPMENT CO., LTD.

Please refer to SHANGHAI SURE-SAFE's P&ID.

6.1.5 Fire main system

A complete fire main system is provided for the liftboat.

Please refer to JH316G-521-01_DIAGRAM OF FIRE MAIN PIPING SYSTEM.

6.1.6 Helideck firefighting system

One set of fixed foam firefighting system is provided for helideck firefighting.

Please refer to JH316G-526-06_DIAGRAM OF FOAM FIREFIGHTING PIPING SYSTEM FOR HELIDECK.

6.1.7 Fire & safety plan (LSA-FFA)

Please refer to JH316G-103-04_FIRE CONTROL & SAFETY PLAN.

6.1.8 Emergency generator

The liftboat is equipped with WEICHAI emergency generator set of 250 ekW. It has been provided with the independent fuel tank and as per SOLAS requirements, it can work continuously for 18 hours.

6.1.8.1 Layout - AC emergency switchboard distribution

Please refer to JH316G-611-01_PRIMARY POWER SYSTEM DIAGRAM

6.1.9 24V DC power system

The liftboat is equipped with 24 volt DC power supply and distribution system. The DC source can feed/ run continuously for 0.5 hour as per SOLAS requirements.

6.1.9.1 Layout - 24V DC system

Please refer to JH316G-611-03_CHARGING & DISCHARGING PANEL SYSTEM DIAGRAM.

6.1.10 Emergency shutdowns

The liftboat is equipped with emergency shutdown systems which can shutdown following systems and equipment:

6.1.10.1 Fuel oil equipment shutdown

Fuel oil transformer pump, fuel oil serve pump, fuel oil purifier etc. These equipments will be shut down by the pushbutton at the exit of engine room.

6.1.10.2 HVAC equipment shutdown

All electric motor driven ventilators on the liftboat (including those for machinery rooms/ pump rooms/ accommodation area) will be automatically shut down by the ESD

system. The automatic shutdown is triggered by the pushbutton of ESD system. The system will also shut down all air-conditioning blowers.

6.1.10.3 Circuit breaker overload trip

All circuit breakers of alternators & propulsion system and other equipment are provided with overload trip.

6.1.10.4 Jacking system shutdown

Jacking motors will be tripped off in following two (2) instances:

1) Liftboat inclination exceeds the safe angle.

2) Over jacking (limit switches) - when the leg is jacked out or jacked in beyond permissible limit, first it gives an alarm in the control console in bridge. Thereafter, the system will cut the power supply to motors to prevent damage.

6.1.10.5 Crane's load sensors

Each crane is fitted with load sensors and programmed to give audible alarm in case of overloading.

6.1.10.6 15 ppm alarm

The oily water separator has been equipped with 15 ppm oily water content analyzer and shut off valve. In case the oil content exceeds (during overboard discharge) 15 ppm, an alarm will be activated and overboard valve is shut off by operator.

6.1.10.7 Fuel oil shut off valves

In case of fire in engine room, valves supplying fuel can be shut off from main deck. Please refer to JH316G-443-01_DIAGRAM OF QUICK CLOSING VALVE PIPING SYSTEM. The quick closing valve control panel is located outside the engine room on main deck.

6.1.10.8 Galley door shutter

The galley has been fitted with an automatic door shutter (activated by heat).

6.1.10.9 Engines auto shutdown

All 2 engines (WEICHAI CW16V200ZC) are provided with engine auto shutdown for usual low lube oil pressure, high cooling water temperature and over speed.

6.1.11 Relief valves

The air starting system has been fitted with six (6) relief valves as below:

6.1.11.1 Main air compressors – two (2) valves

Each main air compressor has been fitted with one (1) relief valve.

6.1.11.2 Air compressor for client use – one (1) valve

One (1) relief valve has been fitted on the air compressor for client use.

6.1.11.3 Main air receivers – two (2) valves

Each main air receiver has been fitted with one (1) relief valve.

6.1.11.4 Service air receiver – one (1) valve

One (1) relief valve has been fitted on the service air receiver.

6.2 Emergency operations

6.2.1 Deballasting or counter flooding

6.2.1.1 Tank distribution plan

Consideration shall be given to the tank distribution plan (as shown in section 7.6.4) that provides the location of the ballast, fuel, fresh water, dirty oil, lube oil and sewage tanks that may be utilized for deballasting or counter flooding actions. When deballasting, care should be taken to minimize free surface effect by keeping the number of slack tanks to a minimum.

6.2.1.2 Responsibilities

The Captain shall:

1) Perform the stability calculations utilizing the load calculation forms (as shown in section 7.3) to ensure that the liftboat maintains a minimum GM throughout any deballasting or counter flooding operation. Stability calculation worksheets are contained in the liftboat.

2) Ensure the effect of free surface is controlled, by keeping the number of slack tanks to a minimum.

NOTE

Additional guidance is provided as shown in section 6.2.2 - Guidance to determine the cause of unexpected heel or trim.

6.2.1.3 Watertight doors, openings and vents

Consideration shall be given to the relevant drawings (as shown in section 7.6.2 & section 7.6.3) that identify the doors, openings and vents that shall be closed to prevent progressive flooding should damage the liftboat.

6.2.2 Cause of unexpected heel or trim

6.2.2.1 Introduction

Whilst the liftboat is in the afloat condition the Captain shall continuously monitor the status of the liftboat to ensure that should flooding occur, it shall be detected and controlled at an early juncture.

6.2.2.2 Maintaining records

The details of any unexpected heel or trim shall be entered in the logbook. Specific information to be entered shall include the following:

1) Date
2) Time
3) Amount of heel or trim
4) Heading of the liftboat
5) Wind speed and direction
6) Sea state

7) Additional relevant observations

The record shall be updated at 10 minutes intervals until the liftboat has been stabilized, or the condition corrected.

NOTE

Maintaining an accurate record is imperative to be able to monitor the severity of the situation and analyze the effects of the corrective action.

6.2.2.3 Guidance

Should unexpected heel or trim be observed, the Captain shall instigate an investigative process as follows:

1) Verify whether the bilge alarm has been activated.

2) Ensure that a visual check is made of the compartments and that there is no ingress of water.

3) Ensure that all watertight openings to the compartments detailed in item 2 are closed.

4) Implement a thorough inspection of all machinery spaces.

5) Implement the sounding of all tanks and voids for unexpected changes in liquid levels.

6) Inspect the tie down arrangements of supplies and equipment for movement.

7) Instruct an attending vessel to circle the liftboat and inspect for damage.

8) Ensure that all watertight doors, valves, vents and other openings which may allow the ingress of water are closed.

6.2.2.4 Corrective actions

Internal valve or pipe failure

Should the unexpected heel or trim have been caused by the failure of an internal valve or pipe, the following actions shall be implemented:

1) Lower the water level by utilizing the bilge system.

2) Repair the valve or pipe.

Side shell or bottom plating failure

Should the unexpected heel or trim have been caused due to leakage through the side shell or bottom plating, the following actions shall be implemented:

1) Ascertain that the stability of the liftboat with regard to down flooding angle, angle of loll, load line mark, free surface effect and righting lever are within acceptable parameters (as shown in section 7.3).

2) Endeavour to lower the water level by utilizing the bilge system.

3) Consider trimming or heeling the liftboat to lift the area of leakage above the waterline.

4) Ascertain the extent of the leakage area and implement repairs when possible.

6.2.2.5 Emergency actions

Uncontrolled leakage

Should the leakage area not be easily repairable, actions shall be taken to minimize the ingress of water and maintain the requisite trim to enable the liftboat to move to the nearest designated safe jacking location where the hull may be elevated clear of water.

Uncontrolled or excessive flooding

Should the damage to the liftboat cause uncontrolled or excessive flooding and it is impossible to stabilize the condition, the liftboat shall move immediately to an area with a suitable water depth to enable the liftboat to be elevated clear of water.

WARNING

Should the Captain consider the liftboat to be in imminent danger of SINKING or CAPSIZING, preparations shall be implemented in accordance with the alarm signals (as per section 5.9.3) and emergency procedures (as shown in the QUALITY ASSURANCE SYSTEM MANUAL) to abandon the liftboat.

In order to assess the effect of any corrective measures taken, reference should be made to the liftboat stability booklet together with stability calculation sheets.

6.3 Uncontrolled escape of H_2S/ other gases

6.3.1 Introduction

This procedure shall be implemented whenever an uncontrolled gas escape has been confirmed by the appropriate announcement on the public address system by the Radio operator

6.3.2 Procedure

The Captain shall:

1) Raise alarm and make announcement as per muster list.
2) Ensure that all personnel don breathing apparatus.
3) Implement the emergency shutdown of operations.
4) Ascertain that all personnel report to the designated muster stations.
5) Implement a head count.
6) Instruct all vessels moored to the liftboat to cast off immediately.
7) Ensure that the air conditioning as well as ventilation systems are shutdown to prevent ingress of gas.
8) Ensure that all the air vents that may permit ingress of gas are closed.
9) Implement no smoking and naked light restrictions.

WARNING

Should the Captain feel necessary, he will instruct all personnel onboard the vessel to abandon the liftboat.

6.4 Restoring system after main power failure

6.4.1 Simulation of main power failure

The Chief engineer shall:

1) Advise the Captain and the duty Radio operator of the intended simulation and that a public address announcement shall be required accordingly.

2) Proceed to the main switchboard.

3) Alter the emergency switchboard breaker located on the 400 V main switchboard (marked 'TO BE LEFT ON AT ALL TIMES') to the 'OFF' position.

4) Ascertain that the emergency generator has started automatically and has successfully 'GONE ON LINE'.

5) Return the emergency switchboard breaker located on the 400 V main switchboard (MSB) to the 'ON' position.

6) Ascertain that the emergency generator has stopped.

7) Advise the Captain and the duty Radio operator that the simulation was successful and that a public address announcement shall be required accordingly.

8) Record the details of the main power failure simulation in the log book.

6.4.2 Restoring main power after black out

6.4.2.1 Responsibilities - Captain

The Captain shall:

1) Ascertain that the 'black out' incident has not occurred due to an emergency shutdown that has been activated by a gas detection or ventilation system.

2) Advise the Chief engineer accordingly.

3) Ensure that the 'black out' occurrence is recorded in the appropriate log books.

6.4.2.2 Responsibilities - Chief engineer

The Chief engineer shall:

1) Start all generators.

2) Bring all generators 'ON LINE'.

3) Ensure that the generator load is 'PARALLELED'.

4) Reset all circuit breakers on the 'BUS BAR' that may have 'TRIPPED'.

5) Ensure that the emergency generator has stopped.

6) Restart all essential equipment.

7) Advise the Captain

6.5 Computer system

The computer system on board, including LAN & AMS system is not be used in operation such as control of ballasting, anchoring, dynamic positioning and in trim and stability

calculation. The LAN system is used for people communication on board; The AMS system is used for monitoring and alarm of machinery and electric equipment.

7 APPENDICES

7.1 Hydrostatics properties from stability study

Legs no sink

1. Hydrostatic data (Legs No Sink)

T m	TK m	VOLM m3	VOLT m3	DISP t	LCF m	LCB m	VCB m	KMT m	KML m
1.500	1.508	3214.1	3235.4	3316.3	34.956	34.897	0.753	81.201	163.285
1.550	1.558	3317.6	3339.3	3422.8	34.941	34.897	0.777	75.825	153.857
1.600	1.608	3421.3	3443.1	3529.2	34.916	34.897	0.801	73.676	149.891
1.650	1.658	3525.1	3547.0	3635.7	34.891	34.896	0.825	71.651	146.169
1.700	1.708	3629.2	3652.9	3744.3	35.013	34.895	0.849	86.555	173.902
1.750	1.758	3744.6	3768.4	3862.6	35.003	34.897	0.876	84.062	169.429
1.800	1.808	3860.3	3884.3	3981.4	34.994	34.900	0.903	81.712	165.253
1.850	1.858	3976.7	4000.9	4100.9	35.012	34.906	0.930	79.543	161.732
1.900	1.908	4093.8	4118.1	4221.0	35.033	34.915	0.957	77.509	158.453
1.950	1.958	4211.3	4235.5	4341.4	35.001	34.923	0.983	75.392	154.558
2.000	2.008	4328.1	4352.4	4461.2	34.974	34.926	1.010	73.492	150.894
2.050	2.058	4444.9	4469.3	4581.1	34.946	34.928	1.037	71.690	147.420
2.100	2.108	4561.9	4586.4	4701.1	34.918	34.929	1.063	69.980	144.122
2.150	2.158	4679.1	4703.6	4821.2	34.890	34.929	1.090	68.355	140.986
2.200	2.208	4796.3	4820.9	4941.4	34.862	34.928	1.117	66.809	138.002
2.250	2.258	4913.6	4938.3	5061.7	34.834	34.927	1.143	65.336	135.158
2.300	2.308	5029.5	5054.5	5180.8	35.296	34.918	1.170	65.095	139.110
2.350	2.358	5148.9	5174.0	5303.3	35.269	34.926	1.197	63.704	136.332
2.400	2.408	5268.5	5293.6	5426.0	35.241	34.933	1.223	62.376	133.677
2.450	2.458	5388.1	5413.4	5548.7	35.213	34.940	1.250	61.107	131.139
2.500	2.508	5507.9	5533.2	5671.5	35.185	34.945	1.277	59.892	128.710
2.550	2.558	5627.8	5653.2	5794.5	35.157	34.950	1.303	58.729	126.383
2.600	2.608	5747.8	5773.3	5917.6	35.129	34.954	1.329	57.614	124.153
2.650	2.658	5868.0	5893.5	6040.8	35.101	34.958	1.356	56.545	122.012
2.700	2.708	5988.2	6013.8	6164.1	35.074	34.960	1.382	55.518	119.957
2.750	2.758	6108.5	6134.2	6287.5	35.046	34.962	1.409	54.532	117.981
2.800	2.808	6229.0	6254.7	6411.1	35.018	34.963	1.435	53.583	116.081
2.850	2.858	6349.6	6375.4	6534.8	35.103	34.965	1.461	52.847	115.525
2.900	2.908	6470.7	6496.6	6659.0	35.075	34.967	1.488	51.962	113.735
2.950	2.958	6592.0	6618.0	6783.4	35.047	34.969	1.514	51.109	112.010
3.000	3.008	6713.3	6739.4	6907.9	35.019	34.970	1.540	50.288	110.347
3.050	3.058	6835.1	6861.5	7033.0	34.491	34.968	1.567	50.293	114.163
3.100	3.108	6960.0	6987.0	7161.7	33.536	34.951	1.594	50.951	122.836
3.150	3.158	7088.7	7116.4	7294.4	32.604	34.916	1.622	51.457	131.509
3.200	3.208	7220.0	7247.8	7429.0	32.570	34.874	1.650	50.624	129.587
3.250	3.258	7351.3	7379.2	7563.7	32.570	34.833	1.678	49.780	127.337
3.300	3.308	7482.6	7510.6	7698.4	32.570	34.793	1.706	48.967	125.167
3.350	3.358	7614.0	7642.0	7833.0	32.570	34.755	1.734	48.182	123.072
3.400	3.408	7745.3	7773.4	7967.7	32.570	34.718	1.761	47.425	121.049
3.450	3.458	7876.7	7904.8	8102.4	32.570	34.682	1.789	46.693	119.094
3.500	3.508	8008.0	8036.2	8237.1	32.570	34.648	1.817	45.987	117.203
3.550	3.558	8139.3	8167.6	8371.7	32.570	34.614	1.844	45.304	115.375
3.600	3.608	8270.7	8298.9	8506.4	32.570	34.582	1.872	44.643	113.605
3.650	3.658	8402.0	8430.3	8641.1	32.570	34.551	1.899	44.004	111.891
3.700	3.708	8533.3	8561.7	8775.8	32.570	34.520	1.926	43.385	110.230
3.750	3.758	8664.7	8693.1	8910.4	32.570	34.491	1.953	42.785	108.620
3.800	3.808	8796.0	8824.5	9045.1	32.570	34.462	1.980	42.205	107.059
5.100	5.108	12209.2	12239.2	12545.2	32.505	33.930	2.669	31.671	77.940

T m	TK m	IY m4	MTC tm/cm	TPC t/cm	WLA m2	WSA m2	CB	CP	CM	CW
1.500	1.508	260285	83.2	21.6	2110.3	2653.0	0.8185	0.8185	1.0000	0.7905
1.550	1.558	250609	80.9	21.3	2077.3	2697.1	0.8176	0.8176	1.0000	0.7929
1.600	1.608	250916	81.2	21.3	2079.9	2705.8	0.8168	0.8168	1.0000	0.7939
1.650	1.658	251223	81.5	21.3	2082.6	2715.4	0.8161	0.8161	1.0000	0.7949
1.700	1.708	313079	100.0	23.7	2312.1	2950.0	0.8155	0.8155	1.0000	0.8825
1.750	1.758	313480	100.5	23.7	2315.8	2988.3	0.8173	0.8173	1.0000	0.8840
1.800	1.808	313887	101.0	23.8	2319.5	2998.4	0.8192	0.8192	1.0000	0.8854
1.850	1.858	314524	101.8	23.8	2325.3	3010.7	0.8211	0.8211	1.0000	0.8875
1.900	1.908	315247	102.6	23.9	2331.5	3023.1	0.8230	0.8230	1.0000	0.8898
1.950	1.958	315162	102.9	23.9	2333.2	3030.6	0.8249	0.8249	1.0000	0.8907
2.000	2.008	315469	103.2	23.9	2335.4	3039.1	0.8266	0.8266	1.0000	0.8916
2.050	2.058	315775	103.5	24.0	2337.7	3047.5	0.8282	0.8282	1.0000	0.8924
2.100	2.108	316082	103.8	24.0	2339.9	3055.9	0.8298	0.8298	1.0000	0.8933
2.150	2.158	316388	104.1	24.0	2342.2	3064.2	0.8313	0.8313	1.0000	0.8942
2.200	2.208	316694	104.4	24.0	2344.4	3072.6	0.8328	0.8328	1.0000	0.8950
2.250	2.258	317001	104.7	24.1	2346.7	3081.0	0.8342	0.8342	1.0000	0.8959
2.300	2.308	323108	110.3	24.5	2389.2	3129.7	0.8353	0.8353	1.0000	0.9121
2.350	2.358	323414	110.6	24.5	2391.4	3138.1	0.8369	0.8369	1.0000	0.9130
2.400	2.408	323721	110.9	24.5	2393.7	3145.7	0.8385	0.8385	1.0000	0.9138
2.450	2.458	324027	111.2	24.6	2395.9	3152.1	0.8401	0.8401	1.0000	0.9147
2.500	2.508	324334	111.5	24.6	2398.2	3158.8	0.8416	0.8416	1.0000	0.9155
2.550	2.558	324640	111.8	24.6	2400.4	3165.6	0.8430	0.8430	1.0000	0.9164
2.600	2.608	324946	112.2	24.6	2402.7	3172.5	0.8445	0.8445	1.0000	0.9173
2.650	2.658	325253	112.5	24.7	2404.9	3179.5	0.8458	0.8458	1.0000	0.9181
2.700	2.708	325559	112.8	24.7	2407.2	3186.6	0.8472	0.8472	1.0000	0.9190
2.750	2.758	325865	113.1	24.7	2409.4	3193.8	0.8485	0.8485	1.0000	0.9198
2.800	2.808	326172	113.4	24.7	2411.7	3201.0	0.8498	0.8498	1.0000	0.9207
2.850	2.858	327608	115.0	24.8	2423.1	3217.5	0.8510	0.8510	1.0000	0.9251
2.900	2.908	327914	115.3	24.9	2425.4	3224.9	0.8523	0.8523	1.0000	0.9259
2.950	2.958	328220	115.7	24.9	2427.6	3232.3	0.8536	0.8536	1.0000	0.9268
3.000	3.008	328527	116.0	24.9	2429.9	3239.7	0.8548	0.8548	1.0000	0.9276
3.050	3.058	334338	122.2	25.3	2472.6	3286.8	0.8560	0.8560	1.0000	0.9394
3.100	3.108	344859	134.0	26.1	2549.7	3381.6	0.8576	0.8576	1.0000	0.9688
3.150	3.158	354649	146.2	26.9	2625.0	3459.7	0.8596	0.8596	1.0000	0.9979
3.200	3.208	354959	146.7	26.9	2627.8	3483.0	0.8618	0.8618	1.0000	1.0034
3.250	3.258	354959	146.7	26.9	2627.8	3489.8	0.8640	0.8640	1.0000	1.0034
3.300	3.308	354959	146.7	26.9	2627.8	3496.6	0.8661	0.8661	1.0000	1.0034
3.350	3.358	354959	146.7	26.9	2627.8	3503.5	0.8682	0.8682	1.0000	1.0034
3.400	3.408	354959	146.7	26.9	2627.8	3510.3	0.8702	0.8702	1.0000	1.0034
3.450	3.458	354959	146.7	26.9	2627.8	3517.1	0.8721	0.8721	1.0000	1.0034
3.500	3.508	354959	146.7	26.9	2627.8	3524.0	0.8740	0.8740	1.0000	1.0034
3.550	3.558	354959	146.7	26.9	2627.8	3530.8	0.8758	0.8758	1.0000	1.0034
3.600	3.608	354959	146.7	26.9	2627.8	3537.7	0.8776	0.8776	1.0000	1.0034
3.650	3.658	354959	146.7	26.9	2627.8	3544.5	0.8793	0.8793	1.0000	1.0034
3.700	3.708	354959	146.7	26.9	2627.8	3551.3	0.8810	0.8810	1.0000	1.0034
3.750	3.758	354959	146.7	26.9	2627.8	3558.2	0.8826	0.8826	1.0000	1.0034
3.800	3.808	354959	146.7	26.9	2627.8	3565.0	0.8842	0.8842	1.0000	1.0034
5.100	5.108	354953	145.7	26.9	2622.9	3746.8	0.9145	0.9145	1.0000	1.0015

Legs sink 10 m

2. Hydrostatic data(Legs Sink 10m)

T m	TK m	VOLM m3	VOLT m3	DISP t	LCF m	LCB m	VCB m	KMT m	KML m
1.500	1.508	3550.6	3574.3	3663.7	34.960	34.773	-0.383	69.975	142.520
1.550	1.558	3654.3	3678.1	3770.0	34.935	34.776	-0.329	68.127	139.129
1.600	1.608	3758.1	3782.0	3876.6	34.910	34.779	-0.277	66.379	135.928
1.650	1.658	3862.2	3886.1	3983.3	34.889	34.780	-0.227	64.724	132.954
1.700	1.708	3966.4	3992.3	4092.1	35.015	34.783	-0.176	78.245	158.205
1.750	1.758	4081.9	4107.8	4210.5	35.006	34.789	-0.123	76.191	154.569
1.800	1.808	4197.7	4223.7	4329.3	34.998	34.794	-0.071	74.245	151.146
1.850	1.858	4314.1	4340.3	4448.8	35.012	34.803	-0.020	72.446	148.207
1.900	1.908	4431.2	4457.5	4568.9	35.033	34.814	0.030	70.753	145.533
1.950	1.958	4548.7	4575.0	4689.4	35.001	34.825	0.079	68.967	142.259
2.000	2.008	4665.5	4691.8	4809.1	34.974	34.830	0.126	67.364	139.166
2.050	2.058	4782.3	4808.8	4929.0	34.946	34.833	0.172	65.839	136.222
2.100	2.108	4899.3	4925.8	5049.0	34.918	34.837	0.218	64.385	133.417
2.150	2.158	5016.5	5043.0	5169.1	34.890	34.839	0.262	63.000	130.742
2.200	2.208	5133.7	5160.3	5289.3	34.862	34.840	0.306	61.677	128.187
2.250	2.258	5251.0	5277.7	5409.7	34.834	34.841	0.348	60.412	125.744
2.300	2.308	5366.9	5393.9	5528.8	35.296	34.834	0.391	60.293	129.650
2.350	2.358	5486.3	5513.4	5651.3	35.269	34.844	0.433	59.092	127.248
2.400	2.408	5605.9	5633.1	5773.9	35.241	34.853	0.474	57.942	124.946
2.450	2.458	5725.5	5752.8	5896.6	35.213	34.860	0.515	56.840	122.740
2.500	2.508	5845.3	5872.7	6019.5	35.185	34.867	0.555	55.782	120.623
2.550	2.558	5965.2	5992.6	6142.4	35.157	34.873	0.594	54.767	118.590
2.600	2.608	6085.2	6112.7	6265.5	35.129	34.879	0.633	53.792	116.636
2.650	2.658	6205.4	6232.9	6388.7	35.101	34.883	0.671	52.855	114.757
2.700	2.708	6325.6	6353.2	6512.0	35.074	34.887	0.709	51.953	112.949
2.750	2.758	6445.9	6473.6	6635.5	35.046	34.890	0.747	51.084	111.207
2.800	2.808	6566.4	6594.1	6759.0	35.018	34.893	0.784	50.248	109.529
2.850	2.858	6687.0	6714.9	6882.7	35.103	34.895	0.821	49.609	109.119
2.900	2.908	6808.1	6836.1	7007.0	35.075	34.899	0.857	48.825	107.531
2.950	2.958	6929.4	6957.4	7131.3	35.047	34.901	0.893	48.069	105.999
3.000	3.008	7050.7	7078.8	7255.8	35.019	34.904	0.929	47.339	104.518
3.050	3.058	7172.5	7200.9	7381.0	34.491	34.903	0.964	47.394	108.253
3.100	3.108	7297.4	7326.5	7509.6	33.536	34.888	1.001	48.071	116.625
3.150	3.158	7426.1	7455.9	7642.3	32.604	34.856	1.037	48.604	125.012
3.200	3.208	7557.4	7587.3	7777.0	32.570	34.817	1.074	47.858	123.288
3.250	3.258	7688.7	7718.7	7911.6	32.570	34.778	1.111	47.098	121.244
3.300	3.308	7820.1	7850.1	8046.3	32.570	34.741	1.147	46.365	119.270
3.350	3.358	7951.4	7981.4	8181.0	32.570	34.706	1.183	45.656	117.361
3.400	3.408	8082.7	8112.8	8315.7	32.570	34.671	1.219	44.971	115.515
3.450	3.458	8214.1	8244.2	8450.3	32.570	34.638	1.254	44.309	113.729
3.500	3.508	8345.4	8375.6	8585.0	32.570	34.605	1.289	43.669	111.999
3.550	3.558	8476.7	8507.0	8719.7	32.570	34.574	1.323	43.049	110.324
3.600	3.608	8608.1	8638.4	8854.4	32.570	34.543	1.357	42.448	108.700
3.650	3.658	8739.4	8769.8	8989.0	32.570	34.514	1.391	41.867	107.126
3.700	3.708	8870.7	8901.2	9123.7	32.570	34.485	1.425	41.303	105.599
3.750	3.758	9002.1	9032.6	9258.4	32.570	34.457	1.459	40.756	104.117
3.800	3.808	9133.4	9164.0	9393.0	32.570	34.430	1.492	40.226	102.678
5.100	5.108	12546.6	12578.7	12893.1	32.505	33.921	2.295	30.514	75.534

T m	TK m	IY m4	MTC tm/cm	TPC t/cm	WLA m2	WSA m2	CB	CP	CM	CW
1.500	1.508	251483	80.8	21.3	2078.7	2948.3	0.9042	0.9042	1.0000	0.7934
1.550	1.558	251790	81.1	21.3	2081.3	2956.9	0.9006	0.9006	1.0000	0.7944
1.600	1.608	252097	81.5	21.4	2084.0	2965.5	0.8972	0.8972	1.0000	0.7954
1.650	1.658	252404	81.9	21.4	2086.8	2974.5	0.8941	0.8941	1.0000	0.7965
1.700	1.708	313079	100.0	23.7	2312.3	3204.9	0.8912	0.8912	1.0000	0.8825
1.750	1.758	313481	100.5	23.7	2316.0	3243.8	0.8910	0.8910	1.0000	0.8841
1.800	1.808	313887	101.0	23.8	2319.8	3254.0	0.8908	0.8908	1.0000	0.8855
1.850	1.858	314524	101.8	23.8	2325.3	3266.2	0.8908	0.8908	1.0000	0.8875
1.900	1.908	315247	102.6	23.9	2331.5	3278.6	0.8909	0.8909	1.0000	0.8898
1.950	1.958	315162	102.9	23.9	2333.2	3286.1	0.8910	0.8910	1.0000	0.8907
2.000	2.008	315469	103.2	23.9	2335.4	3294.5	0.8911	0.8911	1.0000	0.8916
2.050	2.058	315775	103.5	24.0	2337.7	3302.9	0.8911	0.8911	1.0000	0.8924
2.100	2.108	316082	103.8	24.0	2339.9	3311.3	0.8912	0.8912	1.0000	0.8933
2.150	2.158	316388	104.1	24.0	2342.2	3319.7	0.8913	0.8913	1.0000	0.8942
2.200	2.208	316694	104.4	24.0	2344.4	3328.1	0.8914	0.8914	1.0000	0.8950
2.250	2.258	317001	104.7	24.1	2346.7	3336.5	0.8915	0.8915	1.0000	0.8959
2.300	2.308	323108	110.3	24.5	2389.2	3385.1	0.8913	0.8913	1.0000	0.9121
2.350	2.358	323414	110.6	24.5	2391.4	3393.6	0.8918	0.8918	1.0000	0.9130
2.400	2.408	323721	110.9	24.5	2393.7	3401.1	0.8922	0.8922	1.0000	0.9138
2.450	2.458	324027	111.2	24.6	2395.9	3407.6	0.8927	0.8927	1.0000	0.9147
2.500	2.508	324334	111.5	24.6	2398.2	3414.2	0.8931	0.8931	1.0000	0.9155
2.550	2.558	324640	111.8	24.6	2400.4	3421.0	0.8936	0.8936	1.0000	0.9164
2.600	2.608	324946	112.2	24.6	2402.7	3428.0	0.8940	0.8940	1.0000	0.9173
2.650	2.658	325253	112.5	24.7	2404.9	3435.0	0.8945	0.8945	1.0000	0.9181
2.700	2.708	325559	112.8	24.7	2407.2	3442.1	0.8949	0.8949	1.0000	0.9190
2.750	2.758	325865	113.1	24.7	2409.4	3449.3	0.8954	0.8954	1.0000	0.9198
2.800	2.808	326172	113.4	24.7	2411.7	3456.5	0.8958	0.8958	1.0000	0.9207
2.850	2.858	327608	115.0	24.8	2423.1	3473.0	0.8962	0.8962	1.0000	0.9251
2.900	2.908	327914	115.3	24.9	2425.4	3480.3	0.8968	0.8968	1.0000	0.9259
2.950	2.958	328220	115.7	24.9	2427.6	3487.7	0.8973	0.8973	1.0000	0.9268
3.000	3.008	328527	116.0	24.9	2429.9	3495.2	0.8978	0.8978	1.0000	0.9276
3.050	3.058	334338	122.2	25.3	2472.6	3542.2	0.8983	0.8983	1.0000	0.9394
3.100	3.108	344859	134.0	26.1	2549.7	3637.1	0.8992	0.8992	1.0000	0.9688
3.150	3.158	354649	146.2	26.9	2625.0	3715.1	0.9005	0.9005	1.0000	0.9979
3.200	3.208	354959	146.7	26.9	2627.8	3738.4	0.9021	0.9021	1.0000	1.0034
3.250	3.258	354959	146.7	26.9	2627.8	3745.3	0.9037	0.9037	1.0000	1.0034
3.300	3.308	354959	146.7	26.9	2627.8	3752.1	0.9052	0.9052	1.0000	1.0034
3.350	3.358	354959	146.7	26.9	2627.8	3758.9	0.9067	0.9067	1.0000	1.0034
3.400	3.408	354959	146.7	26.9	2627.8	3765.8	0.9081	0.9081	1.0000	1.0034
3.450	3.458	354959	146.7	26.9	2627.8	3772.6	0.9095	0.9095	1.0000	1.0034
3.500	3.508	354959	146.7	26.9	2627.8	3779.4	0.9108	0.9108	1.0000	1.0034
3.550	3.558	354959	146.7	26.9	2627.8	3786.3	0.9121	0.9121	1.0000	1.0034
3.600	3.608	354959	146.7	26.9	2627.8	3793.1	0.9134	0.9134	1.0000	1.0034
3.650	3.658	354959	146.7	26.9	2627.8	3800.0	0.9146	0.9146	1.0000	1.0034
3.700	3.708	354959	146.7	26.9	2627.8	3806.8	0.9158	0.9158	1.0000	1.0034
3.750	3.758	354959	146.7	26.9	2627.8	3813.6	0.9170	0.9170	1.0000	1.0034
3.800	3.808	354959	146.7	26.9	2627.8	3820.5	0.9181	0.9181	1.0000	1.0034
5.100	5.108	354953	145.7	26.9	2622.9	4002.3	0.9397	0.9397	1.0000	1.0015

7.2 Maximum allowable KG

Leg length = 90.0 m;

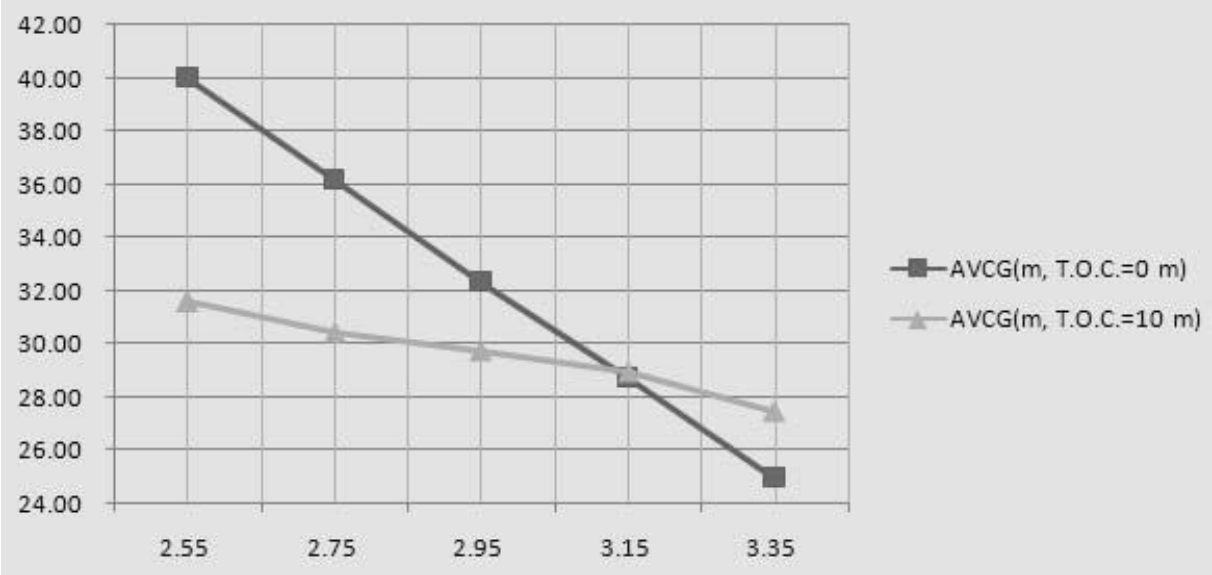
T.O.C. = 0 m below baseline for field move;

T.O.C. = 10 m below baseline for ocean move;

The unit's vertical center of gravity, corrected for free surface effects, shall not exceed the following allowable VCG (AVCG) in meters:

Allowable vertical center of gravity (AVCG)

Draft	Field move (70 knots) leg length = 90 m (T.O.C. = 0 m below baseline)		Ocean move (100 knots) leg length = 90 m (T.O.C. = 10 m below baseline)	
	Displacement	Legs no sink	Displacement	Legs sink 10 m
(m)	(t)	(m)	(t)	(m)
2.55	5794.5	40.01	6142.4	31.59
2.75	6287.5	36.15	6635.5	30.45
2.95	6783.4	32.31	7131.3	29.74
3.15	7294.4	28.72	7642.3	28.97
3.35	7833.0	24.98	8181.0	27.45



Intermediate values may be determined by linear interpolation

When operated in accordance with the above AVCG and the restrictions below, the unit will be in compliance with the intact stability requirements of the above Guide and Regulations for 100 knot winds for severe storm/ ocean moving and 70 knot winds for field move respectively, and the damage stability requirements with extends of damage as set forth by the same Guide and Regulations with a 50 knots wind superimposed.

No lifting operation shall be carried out during afloat condition.

7.3 Load condition and afloat/ elevated stability calculations

7.3.1 Weight calculation procedures

The load condition calculations shall determine the weight and centers of gravity for the loaded liftboat. LCG is measured from the stern (frame 0), TCG is measured from the hull centerline with PS positive and SB negative and VCG is measured from the hull baseline.

A load condition form shall be completed prior to any change of mode, including entering the afloat mode.

1) Ascertain the volume quantity of fluids in each tank and enter this information in the form.

2) Ascertain the weight of fluids in each tank, using the tank tables (as shown in section 7.4) and enter this information in the form.

3) Ascertain the free surface correction value of any slack tank, using the free surface correction table (as shown in section 7.4) and enter this information in the form.

4) For all load conditions, other than the elevated condition, the cranes shall be considered to be in the stowed position.

5) Calculate the total displacement of the liftboat. If the value as per hydrostatic data after applying the appendages is less than 7833.0 t, proceed to the afloat or preload condition forms. If the value is greater, reduce the variable load before proceeding.

6) The afloat stability form shall be used to ascertain the stability of the loaded liftboat during, or prior to any afloat operation. The calculated weight and centre of gravity information shown in the load condition weight summary shall be entered in the form. Ascertain the relevant hydrostatic data (as shown in section 7.1) and KG (as shown in section 7.2) and enter this information in the form.

7) The elevated stability form shall be used to ascertain the stability of the loaded liftboat during elevated operation. The calculated weight and center of gravity information shown in the load condition weight summary shall be entered in the form.

NOTE

The VCG calculation is not required in an elevated mode.

8) The predicted wind and wave conditions shall be monitored on an ongoing basis. The effect of wind and wave shall be ascertained using the table provided for the additional leg reaction due to these parameters. Utilize the leg reaction value from the table based on the next higher wind velocity or wave height.

9) Compare the calculated pinion load to the maximum allowable.

7.3.2 Loading condition calculation

Please use blank calculation sheets provided on the following pages. Sample load conditions are also provided for ready reference and ease of use/ familiarization.

7.3.2.1 Loading condition blank form/ transit or elevated

QMS BANI YAS INC.											
QMS BANI YAS										DATE:	
										PAGE:	
Operation: Afloat/Elevated				Main crane:		Angle/deg =		Reach/m =		Load/t =	
Bottom of spud can below baseline				Aux.crane:		Angle/deg =		Reach/m =		Load/t =	
TOC/m											
DESCRIPTION		Quantity	Weight	VCG to baseline	Vertical moment	LCG to frame 0	Longi. moment	TCG to CL +PS/ -SB	Trans. moment	Free surface correction	
										Trans.	Longi.
		(m^3)	(t)	(m)	(t-m)	(m)	(t-m)	(m)	(t-m)	(m)	(m)
		A	B	C	D = B*C	E	F = B*E	G	H = B*G	J	K
A: BALLAST WATER											
1	SW BALLAST TANK 1P		0.0		0.0		0.0		0.0	0.000	0.000
2	SW BALLAST TANK 1S		0.0		0.0		0.0		0.0	0.000	0.000
3	SW BALLAST TANK 2P		0.0		0.0		0.0		0.0	0.000	0.000
4	SW BALLAST TANK 2S		0.0		0.0		0.0		0.0	0.000	0.000
5	SW BALLAST TANK 3P		0.0		0.0		0.0		0.0	0.000	0.000
6	SW BALLAST TANK 3S		0.0		0.0		0.0		0.0	0.000	0.000
7	SW BALLAST TANK 4C		0.0		0.0		0.0		0.0	0.000	0.000
8	SW BALLAST TANK 4P		0.0		0.0		0.0		0.0	0.000	0.000
9	SW BALLAST TANK 4S		0.0		0.0		0.0		0.0	0.000	0.000
	TOTAL		0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.000
B: FRESH WATER											
1	POTABLE WATER TANK P		0.0		0.0		0.0		0.0	0.000	0.000
2	POTABLE WATER TANK S		0.0		0.0		0.0		0.0	0.000	0.000
	TOTAL		0.0	0.000	0.0	0.000	0.0		0.0	0.000	0.000
C: FUEL OIL											
1	FUEL OIL STORE TANK P		0.0		0.0		0.0		0.0	0.000	0.000
2	FUEL OIL STORE TANK S		0.0		0.0		0.0		0.0	0.000	0.000
3	FODT P		0.0		0.0		0.0		0.0	0.000	0.000
4	FODT S		0.0		0.0		0.0		0.0	0.000	0.000
5	EMER.GEN FO TANK		0.0		0.0		0.0		0.0	0.000	0.000
	TOTAL		0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.000
D: LUBE OIL											
1	LO STORAGE TANK		0.0		0.0		0.0		0.0	0.000	0.000
E: MISCELLANEOUS											
1	EMER.SEWAGE TANK		0.0		0.0		0.0		0.0	0.000	0.000
2	DIRTY OIL TANK		0.0		0.0		0.0		0.0	0.000	0.000
3	BILGE WATER TANK		0.0		0.0		0.0		0.0	0.000	0.000
	TOTAL		0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.000
F: BRINE											
1	BRINE TANK P		0.0		0.0		0.0		0.0	0.000	0.000
2	BRINE TANK S		0.0		0.0		0.0		0.0	0.000	0.000
	TOTAL		0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.000
G: BUFFER											
1	BUFFER TANK		0.0		0.0		0.0		0.0	0.000	0.000
H: MISCELLANEOUS ITEM											
1	CREWS AND EFFECTS				0.0		0.0		0.0		
2	PROVISIONS AND STORES				0.0		0.0		0.0		
	TOTAL		0.0	0.000	0.0	0.000	0.0	0.000	0.0		

QMS BANI YAS INC.											
QMS BANI YAS										DATE:	
										PAGE:	
Operation: Afloat/Elevated			Main crane:		Angle/deg =		Reach/m =			Load/t =	
Bottom of spud can below baseline			Aux.crane:		Angle/deg =		Reach/m =			Load/t =	
TOC/m											
DESCRIPTION	Quantity	Weight	VCG to baseline	Vertical moment	LCG to frame 0	Longi. moment	TCG to CL +PS/ -SB	Trans. moment	Free surface correction		
									Trans.	Longi.	
	(m^3)	(t)	(m)	(t-m)	(m)	(t-m)	(m)	(t-m)	(m)	(m)	
	A	B	C	D = B*C	E	F = B*E	G	H = B*G	J	K	
I: ROTATING CRANE WEIGHT											
1 MAIN CRANE DEAD WEIGHT				0.0		0.0		0.0			
2 MAIN CRANE HOOK LOAD				0.0		0.0		0.0			
3 AUX. CRANE DEAD WEIGHT				0.0		0.0		0.0			
4 AUX. CRANE HOOK LOAD				0.0		0.0		0.0			
TOTAL		0.0		0.0	0.000	0.0		0.0			
J: DECK CARGO											
1 DECK CARGO 1				0.0		0.0		0.0			
2 DECK CARGO 2				0.0		0.0		0.0			
3 DECK CARGO 3				0.0		0.0		0.0			
4 DECK CARGO 4				0.0		0.0		0.0			
5 DECK CARGO 5				0.0		0.0		0.0			
6 DECK CARGO 6				0.0		0.0		0.0			
7 DECK CARGO 7				0.0		0.0		0.0			
8 DECK CARGO 8				0.0		0.0		0.0			
9 DECK CARGO 9				0.0		0.0		0.0			
TOTAL		0.0	0.000	0.0	0.000	0.0	0.000	0.0			
K: LIGHTWEIGHT DATA											
1 LIGHTSHIP DISPLACEMENT				0.0		0.0		0.0			
2 HULL				0.0		0.0		0.0			
3 4 LEGS				0.0		0.0		0.0			
4 MAIN CRANE				0.0		0.0		0.0			
5 AUX. CRANE				0.0		0.0		0.0			
6 HULL W/O CRANES		0.0	0.000	0.0	0.000	0.0	0.000	0.0			
7 LIGHTSHIP W/O CRANES		0.0	0.000	0.0	0.000	0.0	0.000	0.0			
WEIGHT SUMMARY											
A BALLAST WATER		0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.000	
B FRESH WATER		0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.000	
C FUEL OIL		0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.000	
D LUBE OIL		0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.000	
E MISCELLANCEOUS		0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.000	
F BRINE		0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.000	
G BUFFER		0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.000	
H MISCELLANEOUS ITEM		0.0	0.000	0.0	0.000	0.0	0.000	0.0			
I ROTATING CRANE WEIGHT		0.0	0.000	0.0	0.000	0.0	0.000	0.0			
J DECK CARGO		0.0	0.000	0.0	0.000	0.0	0.000	0.0			
K LIGHTWEIGHT DATA		0.0	0.000	0.0	0.000	0.0	0.000	0.0			
TOTAL		0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.000	

CRANE LOAD CENTERS (SECTION I OF ABOVE FORM)						
MAIN CRANE	Angle =		deg	Angle is measured in degrees		
Dead Load Component	LCG=12+R1*cos(angle)			TCG=16.7-R1*sin(angle)		
	LCG=12+21.05*cos(angle)=	12.000	m	TCG=16.7-21.05*sin(angle)=	16.700	m
	R1 =		m			
Lifted Load	LCG=12+R*cos(angle)			TCG=16.7-R*sin(angle)		
	LCG=12+R*cos(angle)=	12.000	m	TCG=16.7-R*sin(angle)=	16.700	m
	R =		m			
AUX. CRANE	Angle =		deg	Angle is measured in degrees		
Dead Load Component	LCG=21+R1*cos(angle)			TCG=R1*sin(angle)-16.7		
	LCG=21+13.655*cos(angle)=	21.000	m	TCG=13.655*sin(angle)-16.7=	-16.700	m
	R1 =		m			
Lifted Load	LCG=21+R*cos(angle)			TCG=R*sin(angle)-16.7		
	LCG=21+R*cos(angle)=	21.000	m	TCG=R*sin(angle)-16.7=	-16.700	m
	R =		m			

7.3.2.2 Afloat stability blank form

QMS BANI YAS INC.												
QMS BANI YAS	AFLOAT STABILITY								DATE:			
Operation: Ocean move/ Field move			Main crane:		Angle/deg =		Reach/m =		Load/t =			
Bottom of spud can below baseline/m			Aux. crane:		Angle/deg =		Reach/m =		Load/t =			
DATA FROM LOADING SUMMARY TABLE												
1	Displacement						0.0	t				
1.1	Additional buoyancy due to leg below hull since hydrostatic table (legs no sink) = 4*8.553*TOC*1.025						0.0	t				
1.2	Displacement to be read from hydrostatic table			t	TRANSVERSE GM CALCULATION							
2	VCG above baseline = KG	0.000	m		20	KMT from line 11			0.000	m		
3	LCG from frame 0	0.000	m		21	KG from line 2			0.000	m		
4	TCG from centerline	0.000	m		22	GMT uncorrected for FS = line 20 - line 21			0.000	m		
5	Longitudinal free surface correction	0.000	m		23	Free surface correction from line 6			0.000	m		
6	Transverse free surface correction	0.000	m		24	GMT corrected for FS = line 22 - line 23			0.000	m		
DATA FROM HYDROSTATIC TABLE					MAX. ALLOWABLE KG CALCULATION							
7	Mean draft at calculated displacement		m		25	MAX allowable KG = line 14			0.000	m		
8	LCB from frame 0		m		26	KG corrected for FS			0.000	m		
9	LCF from frame 0		m		27	KG margin = line 25 - line 26 (must >0)			0.000	m		
10	KML		m		CALCULATION FOR CHANGE IN DRAFT DUE TO TRIM							
11	KMT		m		28	Triming arm = line 3 - line 8			0.000	m		
12	Moment to trim		tm/cm		29	Triming moment = line 1.2 * line 28			0.0	tm		
13	moment to heel		tm/cm		30	Trim value = line 29/ (line 12 * 100)			0.000	m		
14	Max.allowable KG transit (see section 7.2)		m		CALCULATION FOR CHANGE IN DRAFT DUE TO HEEL							
LONGITUDINAL GM CALCULATION					31	Heeling moment = line 1.2 * line 4			0.0	tm		
15	KML from line 10	0.000	m		32	Total heel = line 31/ (line 13 * 100)			0.000	m		
16	KG from line 2	0.000	m									
17	GML uncorrected for FS = line 15 - line 16	0.000	m									
18	Free surface correction from line 5	0.000	m									
19	GML corrected from FS = line 17 - line 18	0.000	m									
NOTE:												
1) The cranes are to be placed in a stowed position when in the afloat mode and are not to be used during the afloat operation;												
2) Prior to elevating, the displacement shall not exceed 7799.2 t. Off load all equipment, consumables, or liquids to clinet prior and balance unit about the rig center prior to elevating to preload.												

7.3.2.3 Elevated stability blank form

QMS BANI YAS INC.							
QMS BANI YAS	ELEVATED STABILITY					DATE:	
CRANE LOAD							
Operation: Normal operating/Survival		Crane	Angle/deg	Reach/m	Load/t		
		Main					
		Aux.					
ELEVALED WEIGHT CALCULATION							
	Description	Weight (t)	LCG (m)	Longi.moment (t-m)	TCG (m)	Trans.moment (t-m)	
	Weight at operating draft for jacking	0.0	0.000	0.0	0.000	0.0	
	Leg weight	0.0	0.000	0.0	0.000	0.0	
	Hull with variable	0.0	0.000	0.0	0.000	0.0	
	Note: If the "Hull with variable" exceeds 5652.5 t, do not elevate. Remove variable and balance rig.						
DATA FROM LOADING SUMMARY TABLE							
1	Calculated elevated weight (last line in table)				0.0	t	
2	LCG from frame 0 (last line in table)				0.000	m	
3	TCG from centerline (last line in table)				0.000	m	
LOCATION DATA							
4	Water depth at location (mean sea level)					m	
5	Penetration					m	
6	Total leg below water level (line 4 + line 5)				0.000	m	
SITE WEIGHTS WITH BUOYANCY							
7	Leg buoyancy (-8.553*line 6*4*1.025)				0.0	t	
8	Adjusted leg load (leg weight + line 7)				0.0	t	
9	Elevated weight without legs				0.0	t	
	Maximum preload capacity = 2800 + line 8/ 4	0.0	t				
REACTION AT PINIONS							
10	Bow port leg: line 1*((line 2 - 12)/43.2)*((16.7 - line 3)/33.4)				0.0	t	
11	Bow stbd leg: line 1*((line 2 - 12)/43.2)*((16.7 + line 3)/33.4)				0.0	t	
12	Aft port leg: line 1*((55.2 - line 2)/43.2)*((16.7 - line 3)/33.4)				0.0	t	
13	Aft stbd leg: line 1*((55.2 - line 2)/43.2)*((16.7 + line 3)/33.4)				0.0	t	
14	Total (sum line 10 to line 13)				0.0	t	
	Maximum allowable pinion loading (elevated) =		t				
	Maximum allowable pinion loading (preload) =		t				
STATIC REACTION DISTINCTION WITH NOMOGRAM AT SPUD CAN							
15	Bow port leg: line 10 - line 1/ 4				0.0	t	
16	Bow stbd leg: line 11 - line 1/ 4				0.0	t	
17	Aft port leg: line 12 - line 1/ 4				0.0	t	
18	Aft stbd leg: line 13 - line 1/ 4				0.0	t	
19	Total (sum line 15 to line 18)				0.0	t	

ADDITIONAL LEG REACTION FOR ELEVATED CONDITIONS							
	Choose the reaction from the environmental nomogram for the wind and wave conditions expected by selecting the reaction which corresponds to the next larger wind velocity or wave height.						
20	a) Water depth	0.000	m		b) Air gap		m
	c) Predicted wind velocity		m/s		d) Predicted wave height		m
21	Total reaction (maximum)		t	Data from nomogram sheet.			
CORRECTION FOR SPUD CAN REACTION (MAXIMUM)							
22	Bow port leg: line 15 + line 21				0.0	t	
23	Bow stbd leg: line 16 + line 21				0.0	t	
24	Aft port leg: line 17 + line 21				0.0	t	
25	Aft stbd leg: line 18 + line 21				0.0	t	
	Maximum load at the constraint point of spud can (data from FEA report for spud can structure)						t
	Maximum spud can reaction =	0.0	t				
	Maximum allowable spud can reaction =	0.0	t				

7.3.2.4 Example form for afloat stability (ocean move)

QMS BANI YAS INC.											
QMS BANI YAS										DATE:	
										PAGE:	
Operation: Ocean move				Main crane:		Angle/deg =	-9.5	Reach/m =	21.050	Load/t =	
Bottom of spud can below baseline				Aux.crane:		Angle/deg =	13.5	Reach/m =	13.655	Load/t =	
TOC/m		10.000									
DESCRIPTION	Quantity	Weight	VCG to baseline	Vertical moment	LCG to frame 0	Longi. moment	TCG to CL +PS/ -SB	Trans. moment	Free surface correction		
									Trans.	Longi.	
	(m^3)	(t)	(m)	(t-m)	(m)	(t-m)	(m)	(t-m)	(m)	(m)	
	A	B	C	D = B*C	E	F = B*E	G	H = B*G	J	K	
A: BALLAST WATER											
1 SW BALLAST TANK 1P	211.1	216.4	2.411	521.7	61.295	13264.2	7.500	1623.0	0.026	0.095	
2 SW BALLAST TANK 1S	106.7	109.4	1.493	163.3	60.818	6653.5	-7.500	-820.5	0.021	0.089	
3 SW BALLAST TANK 2P		0.0		0.0		0.0		0.0	0.000	0.000	
4 SW BALLAST TANK 2S		0.0		0.0		0.0		0.0	0.000	0.000	
5 SW BALLAST TANK 3P		0.0		0.0		0.0		0.0	0.000	0.000	
6 SW BALLAST TANK 3S		0.0		0.0		0.0		0.0	0.000	0.000	
7 SW BALLAST TANK 4C		0.0		0.0		0.0		0.0	0.000	0.000	
8 SW BALLAST TANK 4P	86.9	89.1	3.077	274.2	5.319	473.9	16.673	1485.6	0.043	0.030	
9 SW BALLAST TANK 4S	10.1	10.4	1.512	15.7	7.330	76.2	-16.700	-173.7	0.001	0.008	
TOTAL		425.3	2.292	975.0	48.126	20467.9	4.972	2114.4	0.091	0.223	
B: FRESH WATER											
1 POTABLE WATER TANK P	205.0	205.0	1.384	283.7	35.400	7257.0	16.700	3423.5	0.092	0.039	
2 POTABLE WATER TANK S	375.0	375.0	2.533	949.9	35.400	13275.0	-16.731	-6274.1	0.077	0.022	
TOTAL		580.0	2.127	1233.6	35.400	20532.0	-4.915	-2850.6	0.169	0.061	
C: FUEL OIL											
1 FUEL OIL STORE TANK P	200.4	170.3	2.923	497.8	23.088	3931.9	16.260	2769.1	0.054	0.015	
2 FUEL OIL STORE TANK S	200.4	170.3	2.923	497.8	23.088	3931.9	-16.260	-2769.1	0.054	0.015	
3 FODT P	16.2	13.8	3.475	48.0	19.200	265.0	14.100	194.6	0.001	0.000	
4 FODT S	16.2	13.8	3.475	48.0	19.200	265.0	-14.100	-194.6	0.001	0.000	
5 EMER.GEN FO TANK	2.1	1.8	13.250	23.9	41.700	75.1	-15.200	-27.4	0.000	0.000	
TOTAL		370.0	3.014	1115.3	22.889	8468.8	-0.074	-27.4	0.110	0.031	
D: LUBE OIL											
1 LO STORAGE TANK	1.9	1.7	3.240	5.5	10.054	17.1	12.716	21.6	0.000	0.000	
E: MISCELLANEOUS											
1 EMER.SEWAGE TANK	0.5	0.5	0.015	0.0	55.200	27.6	-3.000	-1.5	0.009	0.001	
2 DIRTY OIL TANK	0.2	0.2	0.009	0.0	10.350	2.1	1.850	0.4	0.002	0.002	
3 BILGE WATER TANK	0.2	0.2	0.009	0.0	10.350	2.1	-1.850	-0.4	0.002	0.002	
TOTAL		0.9	0.012	0.0	35.267	31.7	-1.667	-1.5	0.013	0.005	
F: BRINE											
1 BRINE TANK P		0.0		0.0		0.0		0.0	0.000	0.000	
2 BRINE TANK S		0.0		0.0		0.0		0.0	0.000	0.000	
TOTAL		0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.000	
G: BUFFER											
1 BUFFER TANK		0.0		0.0		0.0		0.0	0.000	0.000	
H: MISCELLANEOUS ITEM											
1 CREWS AND EFFECTS		36.0	12.000	432.0	51.200	1843.2	0.000	0.0			
2 PROVISIONS AND STORES		24.0	5.500	132.0	36.000	864.0	-5.600	-134.4			
TOTAL		60.0	9.400	564.0	45.120	2707.2	-2.240	-134.4			

QMS BANI YAS INC.

QMS BANI YAS										DATE:	
										PAGE:	
Operation: Ocean move			Main crane:		Angle/deg =	-9.5	Reach/m =	21.050	Load/t =		
Bottom of spud can below baseline			Aux.crane:		Angle/deg =	13.5	Reach/m =	13.655	Load/t =		
TOC/m		10.000									
DESCRIPTION	Quantity	Weight	VCG to baseline	Vertical moment	LCG to frame 0	Longi. moment	TCG to CL +PS/ -SB	Trans. moment	Free surface correction		
									Trans.	Longi.	
	(m^3)	(t)	(m)	(t-m)	(m)	(t-m)	(m)	(t-m)	(m)	(m)	
	A	B	C	D = B*C	E	F = B*E	G	H = B*G	J	K	
I: ROTATING CRANE WEIGHT											
1	MAIN CRANE DEAD WEIGHT		165.0	20.800	3432.0	26.000	4290.0	14.900	2458.5		
2	MAIN CRANE HOOK LOAD				0.0		0.0		0.0		
3	AUX. CRANE DEAD WEIGHT		60.0	18.750	1125.0	28.800	1728.0	-15.750	-945.0		
4	AUX. CRANE HOOK LOAD				0.0		0.0		0.0		
	TOTAL		225.0	20.253	4557.0	26.747	6018.0	6.727	1513.5		
J: DECK CARGO											
1	DECK CARGO 1		400.0	9.000	3600.0	20.600	8240.0	0.000	0.0		
2	DECK CARGO 2				0.0		0.0		0.0		
3	DECK CARGO 3				0.0		0.0		0.0		
4	DECK CARGO 4				0.0		0.0		0.0		
5	DECK CARGO 5				0.0		0.0		0.0		
6	DECK CARGO 6				0.0		0.0		0.0		
7	DECK CARGO 7				0.0		0.0		0.0		
8	DECK CARGO 8				0.0		0.0		0.0		
9	DECK CARGO 9				0.0		0.0		0.0		
	TOTAL		400.0	9.000	3600.0	20.600	8240.0	0.000	0.0		
K: LIGHTWEIGHT DATA											
1	LIGHTSHIP DISPLACEMENT		5995.1	15.671	93946.6	35.382	212118.6	0.137	821.3		
2	HULL		3982.9	7.345	29254.4	36.283	144511.6	0.206	820.5		
3	4 LEGS		2012.2	32.150	64692.2	33.600	67609.9	0.000	0.0		
4	MAIN CRANE		165.0	20.800	3432.0	26.000	4290.0	14.900	2458.5		
5	AUX. CRANE		60.0	18.750	1125.0	28.800	1728.0	-15.750	-945.0		
6	HULL W/O CRANES		3757.9	6.572	24697.4	36.854	138493.6	-0.184	-693.0		
7	LIGHTSHIP W/O CRANES		5770.1	15.492	89389.6	35.719	206100.6	-0.120	-692.2		
WEIGHT SUMMARY											
A	BALLAST WATER		425.3	2.292	975.0	48.126	20467.9	4.972	2114.4	0.091	0.223
B	FRESH WATER		580.0	2.127	1233.6	35.400	20532.0	-4.915	-2850.6	0.169	0.061
C	FUEL OIL		370.0	3.014	1115.3	22.889	8468.8	-0.074	-27.4	0.110	0.031
D	LUBE OIL		1.7	3.240	5.5	10.054	17.1	12.716	21.6	0.000	0.000
E	MISCELLANCEOUS		0.9	9.012	0.0	35.256	31.7	-1.667	-1.5	0.013	0.005
F	BRINE		0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.000
G	BUFFER		0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.000
H	MISCELLANEOUS ITEM		60.0	9.400	564.0	45.120	2707.2	-2.240	-134.4		
I	ROTATING CRANE WEIGHT		225.0	20.253	4557.0	26.747	6018.0	6.727	1513.5		
J	DECK CARGO		400.0	9.000	3600.0	20.600	8240.0	0.000	0.0		
K	LIGHTWEIGHT DATA		5770.1	15.492	89389.6	35.719	206100.6	-0.120	-692.2		
	TOTAL		7833.0	12.950	101440.0	34.799	272583.3	-0.007	-56.6	0.383	0.320

CRANE LOAD CENTERS (SECTION I OF ABOVE FORM)

MAIN CRANE	Angle =	-9.5	deg	Angle is measured in degrees		
Dead Load Component	LCG=12+R1*cos(angle)			TCG=16.7-R1*sin(angle)		
	LCG=12+21.05*cos(angle)=	32.761	m	TCG=16.7-21.05*sin(angle)=	20.174	m
	R1 =	21.050	m			
Lifted Load	LCG=12+R*cos(angle)			TCG=16.7-R*sin(angle)		
	LCG=12+R*cos(angle)=	51.451	m	TCG=16.7-R*sin(angle)=	23.302	m
	R =	40.000	m			
AUX. CRANE	Angle =	13.5	deg	Angle is measured in degrees		
Dead Load Component	LCG=21+R1*cos(angle)			TCG=R1*sin(angle)-16.7		
	LCG=21+13.655*cos(angle)=	34.278	m	TCG=13.655*sin(angle)-16.7=	-13.512	m
	R1 =	13.655	m			
Lifted Load	LCG=21+R*cos(angle)			TCG=R*sin(angle)-16.7		
	LCG=21+R*cos(angle)=	50.171	m	TCG=R*sin(angle)-16.7=	-9.697	m
	R =	30.000	m			

QMS BANI YAS INC.

QMS BANI YAS	AFLOAT STABILITY						DATE:	
Operation: Ocean move		Main crane:	Angle/deg =	-9.5	Reach/m =	21.050	Load/t =	
Bottom of spud can below baseline/m	10.000	Aux. crane:	Angle/deg =	13.5	Reach/m =	13.655	Load/t =	

DATA FROM LOADING SUMMARY TABLE							
1	Displacement from loading condition form (ocean move)			7833.0	t		
1.1	Additional buoyancy due to leg below hull since hydrostatic table (legs sink 10 m) = 4*8.553*TOC*1.025			350.7	t		
1.2	Displacement from line 1	7833.0	t				
2	VCG above baseline = KG	12.950	m				
3	LCG from frame 0	34.799	m				
4	TCG from centerline	-0.007	m				
5	Longitudinal free surface correction	0.320	m				
6	Transverse free surface correction	0.383	m				
DATA FROM HYDROSTATIC TABLE							
7	Mean draft at calculated displacement	3.221	m				
8	LCB from frame 0	34.801	m				
9	LCF from frame 0	32.570	m				
10	KML	122.430	m				
11	KMT	47.539	m				
12	Moment to trim	146.7	tm/cm				
13	moment to heel		tm/cm				
14	Max.allowable KG transit (see section 7.2)	28.430	m				
LONGITUDINAL GM CALCULATION							
15	KML from line 10	122.430	m				
16	KG from line 2	12.950	m				
17	GML uncorrected for FS = line 15 - line 16	109.480	m				
18	Free surface correction from line 5	0.320	m				
19	GML corrected from FS = line 17 - line 18	109.160	m				

TRANSVERSE GM CALCULATION			
20	KMT from line 11	47.539	m
21	KG from line 2	12.950	m
22	GMT uncorrected for FS = line 20 - line 21	34.589	m
23	Free surface correction from line 6	0.383	m
24	GMT corrected for FS = line 22 - line 23	34.205	m
MAX. ALLOWABLE KG CALCULATION			
25	MAX allowable KG = line 14	28.430	m
26	KG corrected for FS	13.334	m
27	KG margin = line 25 - line 26 (must >0)	15.096	m
CALCULATION FOR CHANGE IN DRAFT DUE TO TRIM			
28	Triming arm = line 3 - line 8	-0.002	m
29	Triming moment = line 1.2 * line 28	-12.9	tm
30	Trim value = line 29/ (line 12 * 100)	-0.001	m
CALCULATION FOR CHANGE IN DRAFT DUE TO HEEL			
31	Heeling moment = line 1.2 * line 4	-56.6	tm
32	Total heel = line 31/ (line 13 * 100)	0.000	m

NOTE:

1) The cranes are to be placed in a stowed position when in the afloat mode and are not to be used during the afloat operation;

2) Prior to elevating, the displacement shall not exceed 7833.0 t. Off load all equipment, consumables, or liquids to clinet prior and balance unit about the rig center prior to elevating to preload.

7.3.2.5 Example form for afloat stability (field move)

QMS BANI YAS INC.												
QMS BANI YAS											DATE:	
											PAGE:	
Operation: Field move				Main crane:		Angle/deg =	-9.5	Reach/m =	21.050		Load/t =	
Bottom of spud can below baseline				Aux.crane:		Angle/deg =	13.5	Reach/m =	13.655		Load/t =	
TOC/m		0.000										
DESCRIPTION		Quantity	Weight	VCG to baseline	Vertical moment	LCG to frame 0	Longi. moment	TCG to CL +PS/ -SB	Trans. moment	Free surface correction		
										Trans.	Longi.	
		(m^3)	(t)	(m)	(t-m)	(m)	(t-m)	(m)	(t-m)	(m)	(m)	
		A	B	C	D = B*C	E	F = B*E	G	H = B*G	J	K	
A: BALLAST WATER												
1	SW BALLAST TANK 1P	208.1	213.3	2.386	508.9	61.287	13072.5	7.500	1599.8	0.026	0.095	
2	SW BALLAST TANK 1S	103.7	106.3	1.463	155.5	60.796	6462.6	-7.500	-797.3	0.021	0.088	
3	SW BALLAST TANK 2P		0.0		0.0		0.0		0.0	0.000	0.000	
4	SW BALLAST TANK 2S		0.0		0.0		0.0		0.0	0.000	0.000	
5	SW BALLAST TANK 3P		0.0		0.0		0.0		0.0	0.000	0.000	
6	SW BALLAST TANK 3S		0.0		0.0		0.0		0.0	0.000	0.000	
7	SW BALLAST TANK 4C		0.0		0.0		0.0		0.0	0.000	0.000	
8	SW BALLAST TANK 4P	90.0	92.2	3.111	286.8	5.283	487.1	16.672	1537.2	0.043	0.030	
9	SW BALLAST TANK 4S	13.2	13.5	1.640	22.1	7.299	98.5	-16.700	-225.5	0.001	0.009	
	TOTAL		425.3	2.289	973.4	47.310	20120.8	4.971	2114.2	0.091	0.222	
B: FRESH WATER												
1	POTABLE WATER TANK P	205.0	205.0	1.384	283.7	35.400	7257.0	16.700	3423.5	0.092	0.039	
2	POTABLE WATER TANK S	375.0	375.0	2.533	949.9	35.400	13275.0	-16.731	-6274.1	0.077	0.022	
	TOTAL		580.0	2.127	1233.6	35.400	20532.0	-4.915	-2850.6	0.169	0.061	
C: FUEL OIL												
1	FUEL OIL STORE TANK P	200.4	170.3	2.923	497.8	23.088	3931.9	16.260	2769.1	0.054	0.015	
2	FUEL OIL STORE TANK S	200.4	170.3	2.923	497.8	23.088	3931.9	-16.260	-2769.1	0.054	0.015	
3	FODT P	16.2	13.8	3.475	48.0	19.200	265.0	14.100	194.6	0.001	0.000	
4	FODT S	16.2	13.8	3.475	48.0	19.200	265.0	-14.100	-194.6	0.001	0.000	
5	EMER.GEN FO TANK	2.1	1.8	13.250	23.9	41.700	75.1	-15.200	-27.4	0.000	0.000	
	TOTAL		370.0	3.014	1115.3	22.889	8468.8	-0.074	-27.4	0.110	0.031	
D: LUBE OIL												
1	LO STORAGE TANK	1.9	1.7	3.240	5.5	10.054	17.1	12.716	21.6	0.000	0.000	
E: MISCELLANEOUS												
1	EMER.SEWAGE TANK	0.5	0.5	0.015	0.0	55.200	27.6	-3.000	-1.5	0.009	0.001	
2	DIRTY OIL TANK	0.2	0.2	0.009	0.0	10.350	2.1	1.850	0.4	0.002	0.002	
3	BILGE WATER TANK	0.2	0.2	0.009	0.0	10.350	2.1	-1.850	-0.4	0.002	0.002	
	TOTAL		0.9	0.012	0.0	35.267	31.7	-1.667	-1.5	0.013	0.005	
F: BRINE												
1	BRINE TANK P		0.0		0.0		0.0		0.0	0.000	0.000	
2	BRINE TANK S		0.0		0.0		0.0		0.0	0.000	0.000	
	TOTAL		0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.000	
G: BUFFER												
1	BUFFER TANK		0.0		0.0		0.0		0.0	0.000	0.000	
H: MISCELLANEOUS ITEM												
1	CREWS AND EFFECTS		36.0	12.000	432.0	51.200	1843.2	0.000	0.0			
2	PROVISIONS AND STORES		24.0	5.500	132.0	36.000	864.0	-5.600	-134.4			
	TOTAL		60.0	9.400	564.0	45.120	2707.2	-2.240	-134.4			

QMS BANI YAS INC.

QMS BANI YAS										DATE:	
										PAGE:	
Operation: Field move			Main crane:		Angle/deg =	-9.5	Reach/m =	21.050	Load/t =		
Bottom of spud can below baseline			Aux.crane:		Angle/deg =	13.5	Reach/m =	13.655	Load/t =		
TOC/m		0.000									
DESCRIPTION	Quantity	Weight	VCG to baseline	Vertical moment	LCG to frame 0	Longi. moment	TCG to CL +PS/ -SB	Trans. moment	Free surface correction		
									Trans.	Longi.	
	(m^3)	(t)	(m)	(t-m)	(m)	(t-m)	(m)	(t-m)	(m)	(m)	
	A	B	C	D = B*C	E	F = B*E	G	H = B*G	J	K	
I: ROTATING CRANE WEIGHT											
1	MAIN CRANE DEAD WEIGHT		165.0	20.800	3432.0	26.000	4290.0	14.900	2458.5		
2	MAIN CRANE HOOK LOAD				0.0		0.0		0.0		
3	AUX. CRANE DEAD WEIGHT		60.0	18.750	1125.0	28.800	1728.0	-15.750	-945.0		
4	AUX. CRANE HOOK LOAD				0.0		0.0		0.0		
	TOTAL		225.0	20.253	4557.0	26.747	6018.0	6.727	1513.5		
J: DECK CARGO											
1	DECK CARGO 1		400.0	9.000	3600.0	20.600	8240.0	0.000	0.0		
2	DECK CARGO 2				0.0		0.0		0.0		
3	DECK CARGO 3				0.0		0.0		0.0		
4	DECK CARGO 4				0.0		0.0		0.0		
5	DECK CARGO 5				0.0		0.0		0.0		
6	DECK CARGO 6				0.0		0.0		0.0		
7	DECK CARGO 7				0.0		0.0		0.0		
8	DECK CARGO 8				0.0		0.0		0.0		
9	DECK CARGO 9				0.0		0.0		0.0		
	TOTAL		400.0	9.000	3600.0	20.600	8240.0	0.000	0.0		
K: LIGHTWEIGHT DATA											
1	LIGHTSHIP DISPLACEMENT		5995.1	19.027	114068.6	35.382	212118.6	0.137	821.3		
2	HULL		3982.9	7.345	29254.4	36.283	144511.6	0.206	820.5		
3	4 LEGS		2012.2	42.150	84814.2	33.600	67609.9	0.000	0.0		
4	MAIN CRANE		165.0	20.800	3432.0	26.000	4290.0	14.900	2458.5		
5	AUX. CRANE		60.0	18.750	1125.0	28.800	1728.0	-15.750	-945.0		
6	HULL W/O CRANES		3757.9	6.572	24697.4	36.854	138493.6	-0.184	-693.0		
7	LIGHTSHIP W/O CRANES		5770.1	18.979	109511.6	35.719	206100.6	-0.120	-692.2		
WEIGHT SUMMARY											
A	BALLAST WATER		425.3	2.289	973.4	47.310	20120.8	4.971	2114.2	0.091	0.222
B	FRESH WATER		580.0	2.127	1233.6	35.400	20532.0	-4.915	-2850.6	0.169	0.061
C	FUEL OIL		370.0	3.014	1115.3	22.889	8468.8	-0.074	-27.4	0.110	0.031
D	LUBE OIL		1.7	3.240	5.5	10.054	17.1	12.716	21.6	0.000	0.000
E	MISCELLANCEOUS		0.9	0.012	0.0	35.289	31.7	-1.667	-1.5	0.013	0.005
F	BRINE		0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.000
G	BUFFER		0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.000
H	MISCELLANEOUS ITEM		60.0	9.400	564.0	45.120	2707.2	-2.240	-134.4		
I	ROTATING CRANE WEIGHT		225.0	20.253	4557.0	26.747	6018.0	6.727	1513.5		
J	DECK CARGO		400.0	9.000	3600.0	20.600	8240.0	0.000	0.0		
K	LIGHTWEIGHT DATA		5770.1	18.979	109511.6	35.719	206100.6	-0.120	-692.2		
	TOTAL		7833.0	15.519	121560.5	34.755	272236.2	-0.007	-56.7	0.383	0.320

CRANE LOAD CENTERS (SECTION I OF ABOVE FORM)

MAIN CRANE	Angle =	-9.5	deg	Angle is measured in degrees		
Dead Load Component	LCG=12+R1*cos(angle)			TCG=16.7-R1*sin(angle)		
	LCG=12+21.05*cos(angle)=	32.761	m	TCG=16.7-21.05*sin(angle)=	20.174	m
	R1 =	21.050	m			
Lifted Load	LCG=12+R*cos(angle)			TCG=16.7-R*sin(angle)		
	LCG=12+R*cos(angle)=	51.451	m	TCG=16.7-R*sin(angle)=	23.302	m
	R =	40.000	m			
AUX. CRANE	Angle =	13.5	deg	Angle is measured in degrees		
Dead Load Component	LCG=21+R1*cos(angle)			TCG=R1*sin(angle)-16.7		
	LCG=21+13.655*cos(angle)=	34.278	m	TCG=13.655*sin(angle)-16.7=	-13.512	m
	R1 =	13.655	m			
Lifted Load	LCG=21+R*cos(angle)			TCG=R*sin(angle)-16.7		
	LCG=21+R*cos(angle)=	50.171	m	TCG=R*sin(angle)-16.7=	-9.697	m
	R =	30.000	m			

QMS BANI YAS INC.											
QMS BANI YAS		AFLOAT STABILITY							DATE:		
Operation: Field move			Main crane:		Angle/deg =	-9.5	Reach/m =	21.050	Load/t =		
Bottom of spud can below baseline/m	0.000		Aux. crane:		Angle/deg =	13.5	Reach/m =	13.655	Load/t =		
DATA FROM LOADING SUMMARY TABLE											
1	Displacement from loading condition form (field move)					7833.0	t				
1.1	Additional buoyancy due to leg below hull since hydrostatic table (legs no sink) = 4*8.553*TOC*1.025					0.0	t				
1.2	Displacement from line 1	7833.0	t	TRANSVERSE GM CALCULATION							
2	VCG above baseline = KG	15.519	m	20	KMT from line 11				48.182	m	
3	LCG from frame 0	34.755	m	21	KG from line 2				15.519	m	
4	TCG from centerline	-0.007	m	22	GMT uncorrected for FS = line 20 - line 21				32.663	m	
5	Longitudinal free surface correction	0.320	m	23	Free surface correction from line 6				0.383	m	
6	Transverse free surface correction	0.383	m	24	GMT corrected for FS = line 22 - line 23				32.280	m	
DATA FROM HYDROSTATIC TABLE				MAX. ALLOWABLE KG CALCULATION							
7	Mean draft at calculated displacement	3.350	m	25	MAX allowable KG = line 14				24.980	m	
8	LCB from frame 0	34.755	m	26	KG corrected for FS				15.902	m	
9	LCF from frame 0	32.570	m	27	KG margin = line 25 - line 26 (must >0)				9.078	m	
10	KML	123.072	m	CALCULATION FOR CHANGE IN DRAFT DUE TO TRIM							
11	KMT	48.182	m	28	Triming arm = line 3 - line 8				0.000	m	
12	Moment to trim	146.7	tm/cm	29	Triming moment = line 1.2 * line 28				0.3	tm	
13	moment to heel		tm/cm	30	Trim value = line 29/ (line 12 * 100)				0.000	m	
14	Max.allowable KG transit (see section 7.2)	24.980	m	CALCULATION FOR CHANGE IN DRAFT DUE TO HEEL							
LONGITUDINAL GM CALCULATION				31	Heeling moment = line 1.2 * line 4				-56.7	tm	
15	KML from line 10	123.072	m	32	Total heel = line 31/ (line 13 * 100)				0.000	m	
16	KG from line 2	15.519	m								
17	GML uncorrected for FS = line 15 - line 16	107.553	m								
18	Free surface correction from line 5	0.320	m								
19	GML corrected from FS = line 17 - line 18	107.233	m								
NOTE:											
1) The cranes are to be placed in a stowed position when in the afloat mode and are not to be used during the afloat operation;											
2) Prior to elevating, the displacement shall not exceed 7833.0 t. Off load all equipment, consumables, or liquids to clinet prior and balance unit about the rig center prior to elevating to preload.											

7.3.2.6 Example form for elevated (normal operating)

QMS BANI YAS INC.											
QMS BANI YAS										DATE:	
										PAGE:	
Operation: Normal operating			Main crane:		Angle/deg =	-9.5	Reach/m =	21.050		Load/t =	
Bottom of spud can below baseline			Aux.crane:		Angle/deg =	13.5	Reach/m =	13.655		Load/t =	
TOC/m		50.000									
DESCRIPTION	Quantity	Weight	VCG to baseline	Vertical moment	LCG to frame 0	Longi. moment	TCG to CL +PS/ -SB	Trans. moment	Free surface correction		
									Trans.	Longi.	
	(m^3)	(t)	(m)	(t-m)	(m)	(t-m)	(m)	(t-m)	(m)	(m)	
	A	B	C	D = B*C	E	F = B*E	G	H = B*G	J	K	
A: BALLAST WATER											
1	SW BALLAST TANK 1P	14.1	14.5	0.277	4.0	59.949	869.3	7.500	108.8	0.002	0.043
2	SW BALLAST TANK 1S		0.0		0.0		0.0		0.0	0.000	0.000
3	SW BALLAST TANK 2P		0.0		0.0		0.0		0.0	0.000	0.000
4	SW BALLAST TANK 2S		0.0		0.0		0.0		0.0	0.000	0.000
5	SW BALLAST TANK 3P		0.0		0.0		0.0		0.0	0.000	0.000
6	SW BALLAST TANK 3S		0.0		0.0		0.0		0.0	0.000	0.000
7	SW BALLAST TANK 4C		0.0		0.0		0.0		0.0	0.000	0.000
8	SW BALLAST TANK 4P	37.7	38.6	2.367	91.4	6.713	259.1	16.697	644.5	0.040	0.029
9	SW BALLAST TANK 4S	30.8	31.6	2.202	69.6	7.064	223.2	-16.700	-527.7	0.005	0.015
	TOTAL		84.7	1.948	165.0	15.958	1351.6	2.663	225.5	0.047	0.087
B: FRESH WATER											
1	POTABLE WATER TANK P	262.8	262.8	1.774	466.2	35.400	9303.1	16.700	4388.8	0.092	0.039
2	POTABLE WATER TANK S	317.2	317.2	2.141	679.1	35.400	11228.9	-16.700	-5297.2	0.092	0.039
	TOTAL		580.0	1.975	1145.3	35.400	20532.0	-1.566	-908.5	0.185	0.078
C: FUEL OIL											
1	FUEL OIL STORE TANK P	200.4	170.3	2.923	497.8	23.088	3931.9	16.260	2769.1	0.054	0.015
2	FUEL OIL STORE TANK S	200.4	170.3	2.923	497.8	23.088	3931.9	-16.260	-2769.1	0.054	0.015
3	FODT P	16.2	13.8	3.475	48.0	19.200	265.0	14.100	194.6	0.001	0.000
4	FODT S	16.2	13.8	3.475	48.0	19.200	265.0	-14.100	-194.6	0.001	0.000
5	EMER.GEN FO TANK		0.0		0.0		0.0		0.0	0.000	0.000
	TOTAL		368.2	2.964	1091.5	22.797	8393.7	0.000	0.0	0.110	0.031
D: LUBE OIL											
1	LO STORAGE TANK		0.0		0.0		0.0		0.0	0.000	0.000
E: MISCELLANEOUS											
1	EMER.SEWAGE TANK	0.5	0.5	0.015	0.0	55.200	27.6	-3.000	-1.5	0.009	0.001
2	DIRTY OIL TANK	0.2	0.2	0.009	0.0	10.350	2.1	1.850	0.4	0.002	0.002
3	BILGE WATER TANK	0.2	0.2	0.009	0.0	10.350	2.1	-1.850	-0.4	0.002	0.002
	TOTAL		0.9	0.012	0.0	35.267	31.7	-1.667	-1.5	0.013	0.005
F: BRINE											
1	BRINE TANK P		0.0		0.0		0.0		0.0	0.000	0.000
2	BRINE TANK S		0.0		0.0		0.0		0.0	0.000	0.000
	TOTAL		0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.000
G: BUFFER											
1	BUFFER TANK	171.9	176.2	0.369	65.0	23.700	4175.9	0.000	0.0	0.207	1.777
H: MISCELLANEOUS ITEM											
1	CREWS AND EFFECTS		36.0	12.000	432.0	51.200	1843.2	0.000	0.0		
2	PROVISIONS AND STORES		24.0	5.500	132.0	36.000	864.0	-5.600	-134.4		
	TOTAL		60.0	9.400	564.0	45.120	2707.2	-2.240	-134.4		

QMS BANI YAS INC.											
QMS BANI YAS										DATE:	
										PAGE:	
Operation: Normal operating			Main crane:		Angle/deg =	-9.5	Reach/m =	21.050	Load/t =		
Bottom of spud can below baseline			Aux.crane:		Angle/deg =	13.5	Reach/m =	13.655	Load/t =		
TOC/m		50.000									
DESCRIPTION	Quantity	Weight	VCG to baseline	Vertical moment	LCG to frame 0	Longi. moment	TCG to CL +PS/ -SB	Trans. moment	Free surface correction		
									Trans.	Longi.	
	(m^3)	(t)	(m)	(t-m)	(m)	(t-m)	(m)	(t-m)	(m)	(m)	
	A	B	C	D = B*C	E	F = B*E	G	H = B*G	J	K	
I: ROTATING CRANE WEIGHT											
1	MAIN CRANE DEAD WEIGHT		165.0	20.800	3432.0	26.000	4290.0	14.900	2458.5		
2	MAIN CRANE HOOK LOAD				0.0		0.0		0.0		
3	AUX. CRANE DEAD WEIGHT		60.0	18.750	1125.0	28.800	1728.0	-15.750	-945.0		
4	AUX. CRANE HOOK LOAD				0.0		0.0		0.0		
	TOTAL		225.0	20.253	4557.0	26.747	6018.0	6.727	1513.5		
J: DECK CARGO											
1	DECK CARGO 1		400.0	9.000	3600.0	20.600	8240.0	0.000	0.0		
2	DECK CARGO 2				0.0		0.0		0.0		
3	DECK CARGO 3				0.0		0.0		0.0		
4	DECK CARGO 4				0.0		0.0		0.0		
5	DECK CARGO 5				0.0		0.0		0.0		
6	DECK CARGO 6				0.0		0.0		0.0		
7	DECK CARGO 7				0.0		0.0		0.0		
8	DECK CARGO 8				0.0		0.0		0.0		
9	DECK CARGO 9				0.0		0.0		0.0		
	TOTAL		400.0	9.000	3600.0	20.600	8240.0	0.000	0.0		
K: LIGHTWEIGHT DATA											
1	LIGHTSHIP DISPLACEMENT		5995.1	19.027	114068.6	35.382	212118.6	0.137	821.3		
2	HULL		3982.9	7.345	29254.4	36.283	144511.6	0.206	820.5		
3	4 LEGS		2012.2	42.150	84814.2	33.600	67609.9	0.000	0.0		
4	MAIN CRANE		165.0	20.800	3432.0	26.000	4290.0	14.900	2458.5		
5	AUX. CRANE		60.0	18.750	1125.0	28.800	1728.0	-15.750	-945.0		
6	HULL W/O CRANES		3757.9	6.572	24697.4	36.854	138493.6	-0.184	-693.0		
7	LIGHTSHIP W/O CRANES		5770.1	18.979	109511.6	35.719	206100.6	-0.120	-692.2		
WEIGHT SUMMARY											
A	BALLAST WATER		84.7	1.948	165.0	15.958	1351.6	2.663	225.5	0.047	0.087
B	FRESH WATER		580.0	1.975	1145.3	35.400	20532.0	-1.566	-908.5	0.185	0.078
C	FUEL OIL		368.2	2.964	1091.5	22.797	8393.7	0.000	0.0	0.110	0.031
D	LUBE OIL		0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.000
E	MISCELLANCEOUS		0.9	0.012	0.0	35.267	31.7	-1.667	-1.5	0.013	0.005
F	BRINE		0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.000
G	BUFFER		176.2	0.369	65.0	23.700	4175.9	0.000	0.0	0.207	1.777
H	MISCELLANEOUS ITEM		60.0	9.400	564.0	45.120	2707.2	-2.240	-134.4		
I	ROTATING CRANE WEIGHT		225.0	20.253	4557.0	26.747	6018.0	6.727	1513.5		
J	DECK CARGO		400.0	9.000	3600.0	20.600	8240.0	0.000	0.0		
K	LIGHTWEIGHT DATA		5770.1	18.979	109511.6	35.719	206100.6	-0.120	-692.2		
	TOTAL		7665.1	15.747	120699.4	33.600	257550.8	0.000	2.5	0.561	1.978

CRANE LOAD CENTERS (SECTION I OF ABOVE FORM)						
MAIN CRANE	Angle =	-9.5	deg	Angle is measured in degrees		
Dead Load Component	LCG=12+R1*cos(angle)			TCG=16.7-R1*sin(angle)		
	LCG=12+21.05*cos(angle)=	32.761	m	TCG=16.7-21.05*sin(angle)=	20.174	m
	R1 =	21.050	m			
Lifted Load	LCG=12+R*cos(angle)			TCG=16.7-R*sin(angle)		
	LCG=12+R*cos(angle)=	51.451	m	TCG=16.7-R*sin(angle)=	23.302	m
	R =	40.000	m			
AUX. CRANE	Angle =	13.5	deg	Angle is measured in degrees		
Dead Load Component	LCG=21+R1*cos(angle)			TCG=R1*sin(angle)-16.7		
	LCG=21+13.655*cos(angle)=	34.278	m	TCG=13.655*sin(angle)-16.7=	-13.512	m
	R1 =	13.655	m			
Lifted Load	LCG=21+R*cos(angle)			TCG=R*sin(angle)-16.7		
	LCG=21+R*cos(angle)=	50.171	m	TCG=R*sin(angle)-16.7=	-9.697	m
	R =	30.000	m			

QMS BANI YAS INC.						
QMS BANI YAS	ELEVATED STABILITY					DATE:
CRANE LOAD						
Operation: Normal operating		Crane	Angle/deg	Reach/m	Load/t	
		Main	-9.5	21.050		
		Aux.	13.5	13.655		
ELEVALED WEIGHT CALCULATION						
	Description	Weight (t)	LCG (m)	Longi.moment (t-m)	TCG (m)	Trans.moment (t-m)
	Displacement at operating draft for jacking	7665.1	33.600	257550.8	0.000	2.5
	Leg weight	2012.2	33.600	67609.9	0.000	0.0
	Hull with variable	5652.9	33.601	189940.9	0.000	2.5
	Note: If the "Hull with variable" exceeds 5682.9 t, do not elevate. Remove variable and balance rig.					

DATA FROM LOADING SUMMARY TABLE			
1	Calculated elevated weight (last line in table)	5652.9	t
2	LCG from frame 0 (last line in table)	33.601	m
3	TCG from centerline (last line in table)	0.000	m
LOCATION DATA			
4	Water depth at location (mean sea level)	30.000	m
5	Penetration	3.000	m
6	Total leg below water level (line 4 + line 5)	33.000	m
SITE WEIGHTS WITH BUOYANCY			
7	Leg buoyancy (-8.553*line 6*4*1.025)	-1157.2	t
8	Adjusted leg load (leg weight + line 7)	855.0	t
9	Elevated weight without legs	5652.9	t
	Maximum preload capacity = 2800 + line 8/ 4	3013.7 t	
REACTION AT PINIONS			
10	Bow port leg: line 1*((line 2 - 12)/43.2)*((16.7 - line 3)/33.4)	1413.2	t
11	Bow stbd leg: line 1*((line 2 - 12)/43.2)*((16.7 + line 3)/33.4)	1413.3	t
12	Aft port leg: line 1*((55.2 - line 2)/43.2)*((16.7 - line 3)/33.4)	1413.1	t
13	Aft stbd leg: line 1*((55.2 - line 2)/43.2)*((16.7 + line 3)/33.4)	1413.2	t
14	Total (sum line 10 to line 13)	5652.9	t
	Maximum allowable pinion loading (elevated) = 1540.0 t		
	Maximum allowable pinion loading (preload) = 2800.0 t		
STATIC REACTION DISTINCTION WITH NOMOGRAM AT SPUD CAN			
15	Bow port leg: line 10 - line 1/ 4	0.0	t
16	Bow stbd leg: line 11 - line 1/ 4	0.1	t
17	Aft port leg: line 12 - line 1/ 4	-0.1	t
18	Aft stbd leg: line 13 - line 1/ 4	0.0	t
19	Total (sum line 15 to line 18)	0.0	t

ADDITIONAL LEG REACTION FOR ELEVATED CONDITIONS						
	Choose the reaction from the environmental nomogram for the wind and wave conditions expected by selecting the reaction which corresponds to the next larger wind velocity or wave height.					
20	a) Water depth	30.000	m	b) Air gap	20.000	m
	c) Predicted wind velocity	36.0	m/s	d) Predicted wave height	6.300	m
21	Total reaction (maximum)	2330.6	t	Data from nomogram sheet.		
CORRECTION FOR SPUD CAN REACTION (MAXIMUM)						
22	Bow port leg: line 15 + line 21				2330.6	t
23	Bow stbd leg: line 16 + line 21				2330.7	t
24	Aft port leg: line 17 + line 21				2330.5	t
25	Aft stbd leg: line 18 + line 21				2330.6	t
	Maximum load at the constraint point of spud can (data from FEA report for spud can structure)				2762.5	t
	Maximum spud can reaction = 2330.7 t					
	Maximum allowable spud can reaction = 2762.5 t					

7.3.2.7 Example form for elevated (survival)

QMS BANI YAS INC.											
QMS BANI YAS										DATE:	
										PAGE:	
Operation: Survival				Main crane:		Angle/deg =	-9.5	Reach/m =	21.050	Load/t =	
Bottom of spud can below baseline				Aux.crane:		Angle/deg =	13.5	Reach/m =	13.655	Load/t =	
TOC/m		45.000									
DESCRIPTION	Quantity	Weight	VCG to baseline	Vertical moment	LCG to frame 0	Longi. moment	TCG to CL +PS/ -SB	Trans. moment	Free surface correction		
									Trans.	Longi.	
	(m^3)	(t)	(m)	(t-m)	(m)	(t-m)	(m)	(t-m)	(m)	(m)	
	A	B	C	D = B*C	E	F = B*E	G	H = B*G	J	K	
A: BALLAST WATER											
1 SW BALLAST TANK 1P		0.0		0.0		0.0		0.0	0.000	0.000	
2 SW BALLAST TANK 1S		0.0		0.0		0.0		0.0	0.000	0.000	
3 SW BALLAST TANK 2P		0.0		0.0		0.0		0.0	0.000	0.000	
4 SW BALLAST TANK 2S		0.0		0.0		0.0		0.0	0.000	0.000	
5 SW BALLAST TANK 3P		0.0		0.0		0.0		0.0	0.000	0.000	
6 SW BALLAST TANK 3S		0.0		0.0		0.0		0.0	0.000	0.000	
7 SW BALLAST TANK 4C		0.0		0.0		0.0		0.0	0.000	0.000	
8 SW BALLAST TANK 4P	142.5	146.1	3.649	533.1	4.905	716.6	16.665	2434.8	0.043	0.030	
9 SW BALLAST TANK 4S	175.2	179.6	3.961	711.4	4.785	859.4	-16.663	-2992.7	0.043	0.030	
TOTAL		325.7	3.821	1244.5	4.839	1576.0	-1.713	-557.9	0.086	0.060	
B: FRESH WATER											
1 POTABLE WATER TANK P	20.5	20.5	0.139	2.8	35.400	725.7	16.700	342.4	0.092	0.039	
2 POTABLE WATER TANK S	1.3	1.3	0.010	0.0	35.400	46.0	-16.685	-21.7	0.092	0.039	
TOTAL		21.8	0.131	2.9	35.400	771.7	14.709	320.7	0.185	0.078	
C: FUEL OIL											
1 FUEL OIL STORE TANK P	2.4	2.0	1.220	2.4	22.800	45.6	16.100	32.2	0.065	0.019	
2 FUEL OIL STORE TANK S	35.3	30.0	1.488	44.6	22.800	684.0	-16.100	-483.0	0.065	0.019	
3 FODT P	16.2	13.8	3.475	48.0	19.200	265.0	14.100	194.6	0.001	0.000	
4 FODT S	16.2	13.8	3.475	48.0	19.200	265.0	-14.100	-194.6	0.001	0.000	
5 EMER.GEN FO TANK		0.0		0.0		0.0		0.0	0.000	0.000	
TOTAL		59.6	2.399	143.0	21.133	1259.5	-7.564	-450.8	0.132	0.038	
D: LUBE OIL											
1 LO STORAGE TANK		0.0		0.0		0.0		0.0	0.000	0.000	
E: MISCELLANEOUS											
1 EMER.SEWAGE TANK	0.5	0.5	0.015	0.0	55.200	27.6	-3.000	-1.5	0.009	0.001	
2 DIRTY OIL TANK	0.2	0.2	0.009	0.0	10.350	2.1	1.850	0.4	0.002	0.002	
3 BILGE WATER TANK	0.2	0.2	0.009	0.0	10.350	2.1	-1.850	-0.4	0.002	0.002	
TOTAL		0.9	0.012	0.0	35.267	31.7	-1.667	-1.5	0.013	0.005	
F: BRINE											
1 BRINE TANK P		0.0		0.0		0.0		0.0	0.000	0.000	
2 BRINE TANK S		0.0		0.0		0.0		0.0	0.000	0.000	
TOTAL		0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.000	
G: BUFFER											
1 BUFFER TANK	128.8	132.0	0.277	36.6	23.700	3128.4	0.000	0.0	0.207	1.777	
H: MISCELLANEOUS ITEM											
1 CREWS AND EFFECTS		36.0	12.000	432.0	51.200	1843.2	0.000	0.0			
2 PROVISIONS AND STORES		24.0	5.500	132.0	36.000	864.0	-5.600	-134.4			
TOTAL		60.0	9.400	564.0	45.120	2707.2	-2.240	-134.4			

QMS BANI YAS INC.											
QMS BANI YAS										DATE:	
										PAGE:	
Operation: Survival			Main crane:		Angle/deg =	-9.5	Reach/m =	21.050	Load/t =		
Bottom of spud can below baseline			Aux.crane:		Angle/deg =	13.5	Reach/m =	13.655	Load/t =		
TOC/m		45.000									
DESCRIPTION	Quantity	Weight	VCG to baseline	Vertical moment	LCG to frame 0	Longi. moment	TCG to CL +PS/ -SB	Trans. moment	Free surface correction		
									Trans.	Longi.	
	(m^3)	(t)	(m)	(t-m)	(m)	(t-m)	(m)	(t-m)	(m)	(m)	
	A	B	C	D = B*C	E	F = B*E	G	H = B*G	J	K	
I: ROTATING CRANE WEIGHT											
1	MAIN CRANE DEAD WEIGHT		165.0	20.800	3432.0	26.000	4290.0	14.900	2458.5		
2	MAIN CRANE HOOK LOAD				0.0		0.0		0.0		
3	AUX. CRANE DEAD WEIGHT		60.0	18.750	1125.0	28.800	1728.0	-15.750	-945.0		
4	AUX. CRANE HOOK LOAD				0.0		0.0		0.0		
	TOTAL		225.0	20.253	4557.0	26.747	6018.0	6.727	1513.5		
J: DECK CARGO											
1	DECK CARGO 1				0.0		0.0		0.0		
2	DECK CARGO 2				0.0		0.0		0.0		
3	DECK CARGO 3				0.0		0.0		0.0		
4	DECK CARGO 4				0.0		0.0		0.0		
5	DECK CARGO 5				0.0		0.0		0.0		
6	DECK CARGO 6				0.0		0.0		0.0		
7	DECK CARGO 7				0.0		0.0		0.0		
8	DECK CARGO 8				0.0		0.0		0.0		
9	DECK CARGO 9				0.0		0.0		0.0		
	TOTAL		0.0	0.000	0.0	0.000	0.0	0.000	0.0		
K: LIGHTWEIGHT DATA											
1	LIGHTSHIP DISPLACEMENT		5995.1	19.027	114068.6	35.382	212118.6	0.137	821.3		
2	HULL		3982.9	7.345	29254.4	36.283	144511.6	0.206	820.5		
3	4 LEGS		2012.2	42.150	84814.2	33.600	67609.9	0.000	0.0		
4	MAIN CRANE		165.0	20.800	3432.0	26.000	4290.0	14.900	2458.5		
5	AUX. CRANE		60.0	18.750	1125.0	28.800	1728.0	-15.750	-945.0		
6	HULL W/O CRANES		3757.9	6.572	24697.4	36.854	138493.6	-0.184	-693.0		
7	LIGHTSHIP W/O CRANES		5770.1	18.979	109511.6	35.719	206100.6	-0.120	-692.2		
WEIGHT SUMMARY											
A	BALLAST WATER		325.7	3.821	1244.5	4.839	1576.0	-1.713	-557.9	0.086	0.060
B	FRESH WATER		21.8	0.131	2.9	35.400	771.7	14.709	320.7	0.185	0.078
C	FUEL OIL		59.6	2.899	148.0	21.133	1259.5	-7.564	-450.8	0.132	0.038
D	LUBE OIL		0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.000
E	MISCELLANCEOUS		0.9	0.012	0.0	35.267	31.7	-1.667	-1.5	0.013	0.005
F	BRINE		0.0	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.000
G	BUFFER		132.0	0.277	36.6	23.700	3128.4	0.000	0.0	0.207	1.777
H	MISCELLANEOUS ITEM		60.0	9.400	564.0	45.120	2707.2	-2.240	-134.4		
I	ROTATING CRANE WEIGHT		225.0	20.253	4557.0	26.747	6018.0	6.727	1513.5		
J	DECK CARGO		0.0	0.000	0.0	0.000	0.0	0.000	0.0		
K	LIGHTWEIGHT DATA		5770.1	18.979	109511.6	35.719	206100.6	-0.120	-692.2		
	TOTAL		6595.1	17.598	116059.6	33.600	221593.2	0.000	-2.6	0.621	1.958

CRANE LOAD CENTERS (SECTION I OF ABOVE FORM)						
MAIN CRANE	Angle =	-9.5	deg	Angle is measured in degrees		
Dead Load Component	LCG=12+R1*cos(angle)			TCG=16.7-R1*sin(angle)		
	LCG=12+21.05*cos(angle)=	32.761	m	TCG=16.7-21.05*sin(angle)=	20.174	m
	R1 =	21.050	m			
Lifted Load	LCG=12+R*cos(angle)			TCG=16.7-R*sin(angle)		
	LCG=12+R*cos(angle)=	51.451	m	TCG=16.7-R*sin(angle)=	23.302	m
	R =	40.000	m			
AUX. CRANE	Angle =	13.5	deg	Angle is measured in degrees		
Dead Load Component	LCG=21+R1*cos(angle)			TCG=R1*sin(angle)-16.7		
	LCG=21+13.655*cos(angle)=	34.278	m	TCG=13.655*sin(angle)-16.7=	-13.512	m
	R1 =	13.655	m			
Lifted Load	LCG=21+R*cos(angle)			TCG=R*sin(angle)-16.7		
	LCG=21+R*cos(angle)=	50.171	m	TCG=R*sin(angle)-16.7=	-9.697	m
	R =	30.000	m			

QMS BANI YAS INC.						
QMS BANI YAS	ELEVATED STABILITY					DATE:
CRANE LOAD						
Operation: Survival		Crane	Angle/deg	Reach/m	Load/t	
		Main	-9.5	21.050		
		Aux.	13.5	13.655		

ELEVALED WEIGHT CALCULATION						
	Description	Weight (t)	LCG (m)	Longi.moment (t-m)	TCG (m)	Trans.moment (t-m)
	Displacement at operating draft for jacking	6595.1	33.600	221593.2	0.000	-2.6
	Leg weight	2012.2	33.600	67609.9	0.000	0.0
	Hull with variable	4582.9	33.600	153983.3	-0.001	-2.6
	Note: If the "Hull with variable" exceeds 4582.9 t, do not elevate. Remove variable and balance rig.					

DATA FROM LOADING SUMMARY TABLE			
1	Calculated elevated weight (last line in table)	4582.9	t
2	LCG from frame 0 (last line in table)	33.600	m
3	TCG from centerline (last line in table)	-0.001	m
LOCATION DATA			
4	Water depth at location (mean sea level)	35.000	m
5	Penetration	3.000	m
6	Total leg below water level (line 4 + line 5)	38.000	m
SITE WEIGHTS WITH BUOYANCY			
7	Leg buoyancy (-8.553*line 6*4*1.025)	-1332.6	t
8	Adjusted leg load (leg weight + line 7)	679.6	t
9	Elevated weight without legs	4582.9	t
	Maximum preload capacity = 2800 + line 8/ 4	2969.9	t
REACTION AT PINIONS			
10	Bow port leg: line 1*((line 2 - 12)/43.2)*((16.7 - line 3)/33.4)	1145.7	t
11	Bow stbd leg: line 1*((line 2 - 12)/43.2)*((16.7 + line 3)/33.4)	1145.7	t
12	Aft port leg: line 1*((55.2 - line 2)/43.2)*((16.7 - line 3)/33.4)	1145.8	t
13	Aft stbd leg: line 1*((55.2 - line 2)/43.2)*((16.7 + line 3)/33.4)	1145.7	t
14	Total (sum line 10 to line 13)	4582.9	t
	Maximum allowable pinion loading (elevated) =	1540.0	t
	Maximum allowable pinion loading (preload) =	2800.0	t
STATIC REACTION DISTINCTION WITH NOMOGRAM AT SPUD CAN			
15	Bow port leg: line 10 - line 1/ 4	0.0	t
16	Bow stbd leg: line 11 - line 1/ 4	-0.1	t
17	Aft port leg: line 12 - line 1/ 4	0.1	t
18	Aft stbd leg: line 13 - line 1/ 4	0.0	t
19	Total (sum line 15 to line 18)	0.0	t

ADDITIONAL LEG REACTION FOR ELEVATED CONDITIONS							
	Choose the reaction from the environmental nomogram for the wind and wave conditions expected by selecting the reaction which corresponds to the next larger wind velocity or wave height.						
20	a) Water depth	35.000	m		b) Air gap	10.000	m
	c) Predicted wind velocity	51.5	m/s		d) Predicted wave height	10.200	m
21	Total reaction (maximum)	2140.4	t	Data from nomogram sheet.			

CORRECTION FOR SPUD CAN REACTION (MAXIMUM)			
22	Bow port leg: line 15 + line 21	2140.4	t
23	Bow stbd leg: line 16 + line 21	2140.3	t
24	Aft port leg: line 17 + line 21	2140.5	t
25	Aft stbd leg: line 18 + line 21	2140.4	t
	Maximum load at the constraint point of spud can (data from FEA report for spud can structure)	2762.5	t
	Maximum spud can reaction =	2140.5	t
	Maximum allowable spud can reaction =	2762.5	t

7.4 Capacity plan, free surface and capacity data

Item	Net volume (m^3)	ρ (t/m^3)	Weight (t)	LCG (m)	TCG (m)	VCG (m)	FSMT (t-m)	FSML (t-m)
WBT1P	336.5	1.025	344.9	61.483	7.5	3.4	206.1	744.2
WBT1S	336.5	1.025	344.9	61.483	-7.5	3.4	206.1	744.2
WBT2P	215.3	1.025	220.7	46.034	16.7	1.521	738.1	310.1
WBT2S	215.3	1.025	220.7	46.034	-16.7	1.521	738.1	310.1
WBT3P	187.3	1.025	192.0	14.227	7.134	0.75	1155.3	1712.9
WBT3S	187.3	1.025	192.0	14.227	-7.134	0.75	1155.3	1712.9
WBT4C	247.3	1.025	253.5	4.776	0	4.076	416.8	416.8
WBT4P	197.3	1.025	202.2	4.725	16.662	4.168	334.2	232.8
WBT4S	197.3	1.025	202.2	4.725	-16.662	4.168	334.2	232.8
SUBTOTAL-BW	2120.2		2173.1					
POT.WTP	429.3	1	429.3	35.4	16.803	2.915	720.1	302.5
POT.WTS	429.3	1	429.3	35.4	-16.803	2.915	720.1	302.5
SUBTOTAL-FW	858.6		858.6					
FO.STO.TP	204.5	0.85	173.8	23.091	16.261	2.96	507.2	146.3
FO.STO.TS	204.5	0.85	173.8	23.091	-16.261	2.96	507.2	146.3
FODTP	16.5	0.85	14.0	19.2	14.1	3.5	5.9	1.4
FODTS	16.5	0.85	14.0	19.2	-14.1	3.5	5.9	1.4
EMER.GEN.FOT	2.1	0.85	1.8	41.7	-15.2	13.25	0.3	0.1
SUBTOTAL-FO	444.1		377.5					
LO.STO.T	2	0.9	1.8	10.054	12.716	3.265	0.1	0.1
EMER.SW.TK	50.8	1	50.8	55.2	-3	1.5	73.2	8.1
DIR.OIL.TK	19.1	1	19.1	10.35	1.85	0.75	13.4	16.0
BIL.WT	19.1	1	19.1	10.35	-1.85	0.75	13.4	16.0
SUBTOTAL-MIS	88.9		89.0					
BRINE TP	165.1	1.3	214.6	55.2	9.3	1.5	309.1	362.7
BRINE TS	190.5	1.3	247.7	55.2	-8.7	1.5	356.6	557.3

SUBTOTAL-BRINE	355.6		462.3					
BUFFER TK	349.3	1.025	358.0	23.7	0	0.75	1611.0	13861.9

7.5 List of drawings

7.5.1 WMMP/Jacking drawing list

Please refer to a separated file named “JACKING SYSTEM OPERATION AND MAINTENANCE MANUAL” for more information.

7.5.2 General drawing list

7.5.2.1 List of NA & OU

No.	Drawing No.	Drawing Description
1	JH316G-100-03TM	AS BUILT DRAWING LIST OF OUTFITTING PART
2	JH316G-100-04	GENERAL ARRANGEMENT
3	JH316G-102-06	WATERTIGHT SUBDIVISION PLAN
4	JH316G-103-01	TANK CAPACITY PLAN
5	JH316G-103-04	FIRE CONTROL & SAFETY PLAN
6	JH316G-103-05	FIRE PROOF DIVISION PLAN
7	JH316G-103-06	DAMAGE CONTROL PLAN
8	JH316G-103-08	VISIBILITY PLAN
9	JH316G-103-09	DECK LOADING PLAN
10	JH316G-103-10	PSPC AREA DEFINITION
11	JH316G-103-11	HAZARDOUS ZONE PLAN
12	JH316G-109-03	DOCKING PLAN
13	JH316G-208-03MX	LIST OF INVENTORY FOR HULL
14	JH316G-212-01	ARRANGEMENT OF POSITIONING ANCHOR EQUIPMENT
15	JH316G-212-02	ANCHOR RACK DETAIL
16	JH316G-212-04	ANCHOR WINCH INSTALLATION
17	JH316G-213-01	JACKING SYSTEM ARRANGEMENT
18	JH316G-220-01	MOORING EQUIPEMENT ARRANGEMENT
19	JH316G-222-01	TOWING & FITTINGS PLAN
20	JH316G-222-02	SMIT BRACKET
21	JH316G-222-03	DELTA PLATE
22	JH316G-222-04JS	TOWING EQUIPMENT CALCULATION
23	JH316G-240-01	SIGNAL EQUIPMENT ARRANGEMENT
24	JH316G-242-02	SIGNAL MAST CONSTRUCTION
25	JH316G-243-01	SIDE LIGHT SEAT
26	JH316G-243-02	STERN LIGHT POLE

27	JH316G-248-01	MAIN CRANE ARRANGEMENT
28	JH316G-248-02	AUXILIARY CRANE ARRANGEMENT
29	JH316G-261-01	WINDOW ARRANGEMENT
30	JH316G-262-01	STEEL DOOR ARRANGEMENT
31	JH316G-265-01	SMALL HATCH AND MANHOLE COVER ARRANGEMENT
32	JH316G-265-02	FLAT TYPE WATERTIGHT HATCH COVER
33	JH316G-266-01	STRUCTURE ACCESS ARRANGEMENT
34	JH316G-267-01	HAND RAIL ARRANGEMENT
35	JH316G-267-02	VERTICAL LADDER ARRANGEMENT
36	JH316G-267-03	INCLINED LADDER ARRANGEMENT
37	JH316G-267-04	LEG LADDER ARRANGEMENT
38	JH316G-270-01	LIFE SAVING EQUIPMENT ARRANGEMENT
39	JH316G-270-03	MEANS OF ESCAPE ARRANGEMENT
40	JH316G-271-01	ARRANGEMENT OF LIFEBOAT AND DAVIT
41	JH316G-275-01	FIREFIGHTING EQUIPMENT ARRANGEMENT
42	JH316G-286-01	HELIDECK ARRANGEMENT
43	JH316G-286-06	ROUTES FOR HELIDECK
44	JH316G-300-01	CABIN EQUIPMENT ARRANGEMENT
45	JH316G-308-01MX	LIST OF CABIN EQUIPMENT
46	JH316G-310-01	CABIN DOOR ARRANGEMENT
47	JH316G-310-02	INTERNAL STAIRWAY ARRANGEMENT
48	JH316G-326-01	GALLEY ARRANGEMENT
49	JH316G-355-01	FIRE PROOF STRUCTURE PLAN
50	JH316G-392-01	INSULATION ARRANGEMENT
51	JH316G-392-02	DECK COVERING ARRANGEMENT
52	JH316G-394-01	DRAFT MARK AND LOAD LINE PLAN
53	JH316G-394-02	MARK OF SHIP NAME & HABOUR NAME
54	JH316G-394-06	HULL MARK
55	JH316G-394-07	LEG MARK
56	JH316G-394-08	LIST OF WARNING AND INDICATING MARK
57	JH316G-395-02	SACRIFICIAL ANODE ARRANGEMENT
58	JH316G-399-01	BOTTOM PLUGS ARRAGEMENT
59		MUSTER LIST FOR QMS BANI YAS

7.5.2.2 List of ST

No.	Drawing No.	Drawing Description
1	JH316G-110-01TM	AS BUILT DRAWING LIST OF STRUCTURE PART
2	JH316G-110-04	HULL SCANTLINGS BOTTOM PLATING AND FRAMING

3	JH316G-110-05	HULL SCANTLINGS INNER BOTTOM PLATING AND FRAMING
4	JH316G-110-06	HULL SCANTLINGS MEZZANINE DECK PLATING AND FRAMING
5	JH316G-110-07	HULL SCANTLINGS MAIN DECK PLATING AND FRAMING
6	JH316G-110-08	CONSTRUCTIONS UNDER MAIN DECK
7	JH316G-110-09	HULL SCANTLINGS LONGITUDINAL BULKHEAD & GIRDERS
8	JH316G-110-10	HULL SCANTLIGNS TRANSVERSE BULKHEAD & SECTIONS
9	JH316G-110-12	FRAME LINES
10	JH316G-110-13	MOULD LINE PLAN
11	JH316G-110-14	TYPICAL NODES DETAILS
12	JH316G-110-15	GRADES OF STRUCTURE ARRANGEMENT
13	JH316G-110-16	LOCATION OF FULL PENETRATION ON WELDING PLAN
14	JH316G-110-17	SAFEHULL CONSTRUCTION MONITORING PLAN
15	JH316G-110-19	CRITICAL STRUCTURE AREA
16	JH316G-111-01	GEAR CASE SUPPORT BULKHEADS AND LEG WELL STRUCTURE (FORE)
17	JH316G-111-02	GEAR CASE SUPPORT BULKHEADS AND LEG WELL STRUCTURE (AFT)
18	JH316G-141-01	DECK HOUSE CONSTRUCTION
19	JH316G-141-02	HELIDECK SUPPORT STRUCTURE FRAMING PLAN
20	JH316G-151-01	MAIN ENGIN FOUNDATION AND REINFORCEMENT STRUCTURE
21	JH316G-151-02	MAIN ELECTRIC GENERATOR FOUNDATION AND REINFORCEMENT STRUCTURE
22	JH316G-151-03	EMERGENCY GENERATOR FOUNDATION AND REINFORCEMENT STRUCTURE
23	JH316G-151-04	MAIN CRANE FOUNDATION STRUCTURE
24	JH316G-151-05	CRANE BOOM REST STRUCTURE
25	JH316G-151-06	CONSTRUCTION PLAN AUXILIARY CRANE FOUNDATION
26	JH316G-151-07	LIFEBOAT DAVIT FOUNDATION STRUCTURE
27	JH316G-151-08	RESCUE BOAT DAVIT FOUNDATION STRUCTURE
28	JH316G-151-09	LIFE RAFT DAVIT FOUNDATION STRUCTURE
29	JH316G-151-10	REINFORCEMENT FOR ANCHOR EQUIPMENT (AFT)
30	JH316G-151-11	REINFORCEMENT FOR ANCHOR EQUIPMENT (FORE)
31	JH316G-151-12	REINFORCEMENT FOR MOORING EQUIPMENTS

32	JH316G-151-13	REINFORCEMENT FOR TOWAGE OUTFITTING
33	JH316G-151-14	STERN THRUSTER REINFORCEMENT STRUCTURE
34	JH316G-151-15	BOW THRUSTER REINFORCEMENT STRUCTURE
35	JH316G-151-16	HOSE REEL FOUNDATION AND REINFORCEMENT STRUCTURE
36	JH316G-151-18	REINFORCEMENT FOR INTERMEDIATE BEARING
37	JH316G-151-19	RETRIEVING FOUNDATION AND REINFORCEMENT STRUCTURE
38	JH316G-160-01	LEG STRUCTURE
39	JH316G-160-02	SPUDCAN CONSTRUCTION
40	JH316G-190-01	SCHEME OF WELDING

7.5.2.3 List of MA & PI

No.	Drawing No.	Drawing Description
1	JH316G-400-02TM	AS BUILT DRAWING LIST OF MACHINERY PART
2	JH316G-212-05	DIAGRAM OF WINCH HYDRAULIC PIPING SYSTEM
3	JH316G-213-03	DIAGRAM OF JACKING UNIT HYDRAULIC PIPING SYSTEM
4	JH316G-400-05	LAYOUT OF ENGINE ROOM & RUDDER PROPELLER ROOM
5	JH316G-400-06	LAYOUT OF BOW THRUSTER ROOM
6	JH316G-400-07	LAYOUT OF EMERGENCY FIRE FIGHTING PUMP ROOM
7	JH316G-400-08	LAYOUT OF 1# & 2# PUMP ROOM
8	JH316G-400-09	LAYOUT OF CHILLER ROOM
9	JH316G-408-01MX	LIST OF MAIN MACHINERY EQUIPMENT
10	JH316G-420-01	INSTALLATION OF PROPULSION DIESEL ENGINE
11	JH316G-420-02	INSTALLATION OF MAIN DIESEL GENERATOR SETS
12	JH316G-421-03	DIAGRAM OF BOW THRUSTER HYDRAULIC PIPING SYSTEM
13	JH316G-422-03	DIAGRAM OF RUDDER PROPELLER HYDRAULIC PIPING SYSTEM
14	JH316G-422-04	DIAGRAM OF MAIN ENGINE CLUTCH HYDRAULIC PIPING SYSTEM
15	JH316G-424-01	LAYOUT OF ENGING ROOM & RUBBER PROPELLER ROOM VENTILATION
16	JH316G-424-02	LAYOUT OF SEA CHEST
17	JH316G-425-01	LAYOUT OF PROPULSION SHAFTING
18	JH316G-430-01	LAYOUT OF EMERGENCY GENERATOR ROOM
19	JH316G-443-01	DIAGRAM OF QUICK CLOSING VALVE PIPING SYSTEM
20	JH316G-461-01	DIAGRAM OF FUEL OIL PIPING SYSTEM

21	JH316G-462-01	DIAGRAM OF LUBE OIL PIPING SYSTEM
22	JH316G-462-02	DIAGRAM OF DIRTY OIL PIPING SYSTEM
23	JH316G-463-01	DIAGRAM OF WATER COOLING PIPING SYSTEM
24	JH316G-464-01	DIAGRAM OF EXHAUST GAS PIPING SYSTEM
25	JH316G-464-02	EXHAUST GAS PIPING ARRANGEMENT
26	JH316G-465-01	DIAGRAM OF COMPRESSED AIR PIPING SYSTEM
27	JH316G-503-01	LAYOUT OF OVERBOARD OPENING AND CONSTRUCTION
28	JH316G-510-01	DIAGRAM OF BILGE PIPING SYSTEM
29	JH316G-512-01	DIAGRAM OF BALLAST PIPING SYSTEM
30	JH316G-513-01	DIAGRAM OF BRINE TRANSFER PIPING SYSTEM
31	JH316G-514-01	DIAGRAM OF TANK VENT & SOUNDING AND FILLING PIPI NG SYSTEM
32	JH316G-521-01	DIAGRAM OF FIRE MAIN PIPING SYSTEM
33	JH316G-521-03	DIAGRAM OF DECK WATER CURTAIN PROTECTION SYSTEM
34	JH316G-526-02	DIAGRAM OF CO2 FIRE EXTINGUISH PIPING SYSTEM
35	JH316G-526-05	DIAGRAM OF GALLEY FIRE EXTINGUISHING SYSTEM
36	JH316G-526-06	DIAGRAM OF FOAM FIREFIGHTING PIPING SYSTEM FOR H ELIDECK
37	JH316G-526-07	DIAGRAM OF SPRINKLER PIPING SYSTEM
38	JH316G-531-01	DIAGRAM OF ER WATER SUPPLY PIPING SYSTEM
39	JH316G-531-02	DIAGRAM OF WATER SUPPLY PIPING FOR ACCOMMODATION
40	JH316G-533-01	DIAGRAM OF WEATHER DECK SCUPPER PIPING SYSTEM
41	JH316G-533-02	DIAGRAM OF SEWAGE DRAIN PIPING SYSTEM
42	JH316G-541-02	LAYOUT OF BOW THRUSTER ROOM VENTILATION
43	JH316G-541-03	LAYOUT OF 1# & 2# PUMP ROOM VENTILATION
44	JH316G-541-04	LAYOUT OF EMERGENCY FIRE FIGHTING PUMP ROOM VENTILATION
45	JH316G-541-05	LAYOUT OF GALLEY VENTILATION
46	JH316G-541-06	LAYOUT OF EMERGENCY ENGINE GENERATOR ROOM VENTILATION
47	JH316G-541-07	LAYOUT OF JACKING HOUSE VENTILATION
48	JH316G-541-08	LAYOUT OF DECK HOUSE VENTILATION
49	JH316G-541-09	LAYOUT OF BATTERY ROOM VENTILATION
50	JH316G-541-10	LAYOUT OF CHILLER ROOM VENTLATION
51	JH316G-542-01	LAYOUT OF ACCOMMODATION AIR-CONDITION VENT

		DUCT AND MECHANICAL VENTILATION
52	JH316G-542-02	DIAGRAM OF AIR-CONDITION UNIT PIPING & INSTRUMENT
53	JH316G-542-03	DIAGRAM OF REFRIGERATION UNIT PIPING & INSTRUMENT
54	JH316G-542-04	DIAGRAM OF CHILLER FREEZER WATER PIPING SYSTEM
55	JH316G-559-01	DIAGRAM OF JETTING PIPING SYSTEM

7.5.2.4 List of EL

No.	Drawing No.	Drawing Description
1	JH316G-056-01TM	AS BUILT DRAWING LIST OF ELECTRIC PART
2	JH316G-601-01JS	ELECTRICAL LOAD BALANCE CALCULATION
3	JH316G-604-01	MAIN CABLE ROUTING ARRANGEMENT
4	JH316G-604-02	ANTENNA ARRANGEMENT
5	JH316G-604-03	ELECTRICAL POWER EQUIPMENT ARRANGEMENT
6	JH316G-604-04	LIGHTING EQUIPMENT ARRANGEMENT
7	JH316G-604-05	NAVIGATION & RADIO EQUIPMENT ARRANGEMENT
8	JH316G-604-06	INTERIOR COMMUNICATION & ALARM EQUIPMENT ARRANGEMENT
9	JH316G-604-07	ARRANGEMENT OF FIRE & GAS DETECTION ALARM EQUIPMENT
10	JH316G-604-08	ARRANGEMENT OF PUBLIC ADDRESS & GENERAL ALARM EQUIPMENT
11	JH316G-604-09	NAVIGATION BRIDGE ARRANGEMENT
12	JH316G-604-10	SWITCHBOARD ROOM ARRANGEMENT
13	JH316G-604-11	ELECTRICAL EQUIPMENT ROOM ARRANGEMENT
14	JH316G-608-02MX	LIST OF MONITORING & ALARM ITEMS
15	JH316G-611-01	PRIMARY POWER SYSTEM DIAGRAM
16	JH316G-611-02	SECONDARY POWER SYSTEM DIAGRAM
17	JH316G-611-03	CHARGING & DISCHARGING PANEL SYSTEM DIAGRAM
18	JH316G-622-01	PURIFIER ELECTRIC SYSTEM DIAGRAM
19	JH316G-622-02	AIR COMPRESSOR ELECTRIC SYSTEM DIAGRAM
20	JH316G-622-03	FRESH WATER GENERATOR ELECTRIC SYSTEM DIAGRAM
21	JH316G-622-04	OILY WATER SEPARATOR ELECTRIC SYSTEM DIAGRAM
22	JH316G-622-05	SEWAGE TREATMENT PLANT ELECTRIC SYSTEM DIAGRAM
23	JH316G-622-06	ANTI-FOULING DEVECE SYSTEM DIAGRAM
24	JH316G-622-07	POSITIONING WINCH ELECTRIC SYSTEM DIAGRAM

25	JH316G-622-08	AIR CONDITION ELECTRIC SYSTEM DIAGRAM
26	JH316G-622-09	REFRIGERATE PROVISION PLANT ELECTRIC SYSTEM DIAGRAM
27	JH316G-622-10	RETRIEVING WINCH ELECTRIC SYSTEM DIAGRAM
28	JH316G-624-01	MAIN PROPULSION ELECTRIC SYSTEM DIAGRAM
29	JH316G-624-02	BOW THRUSTER ELECTRIC SYSTEM DIAGRAM
30	JH316G-624-03	DP SYSTEM DIAGRAM
31	JH316G-624-04	AMS SYSTEM DIAGRAM
32	JH316G-624-05	JACKING SYSTEM ELECTRIC SYSTEM DIAGRAM
33	JH316G-624-06	SUBMERGED PUMP ELECTRIC SYSTEM DIAGRAM
34	JH316G-624-07	ENGINE ROOM UPS SYSTEM DIAGRAM
35	JH316G-624-08	LIFEBOAT DAVIT ELECTRIC SYSTEM DIAGRAM
36	JH316G-624-10	HELIDECK FIRE FIGHTING ELECTRIC SYSTEM DIAGRAM
37	JH316G-631-01	NORMAL LIGHTING SYSTEM DIAGRAM
38	JH316G-631-02	EMERGENCY LIGHTING SYSTEM DIAGRAM
39	JH316G-631-03	TEMPORARY EMERGENCY LIGHTING SYSTEM DIAGRAM
40	JH316G-631-04	NAVIGATION & SIGNAL LIGHT ARRANGEMENT AND SYSTEM DIAGRAM
41	JH316G-631-05	HELIDECK LAND AID LIGHTING ARRANGEMENT AND SYSTEM DIAGRAM
42	JH316G-631-06	OBSTRUCTION BEACON ARRANGEMENT AND SYSTEM DIAGRAM
43	JH316G-641-02	EMERGENCY SHUTDOWN SYSTEM DIAGRAM
44	JH316G-646-01	NAVIGETION BRIDGE CONSOLE SYSTEM DIAGRAM
45	JH316G-646-02	ENGINE CONTROL CONSOLE SYSTEM DIAGRAM
46	JH316G-651-01	MAGNETIC COMPASS SYSTEM DIAGRAM
47	JH316G-651-02	GYRO COMPASS SYSTEM DIAGRAM
48	JH316G-651-03	SPEED LOG SYSTEM DIAGRAM
49	JH316G-651-04	ECHO SOUNDER SYSTEM DIAGRAM
50	JH316G-651-05	RADAR SYSTEM DIAGRAM
51	JH316G-651-06	VDR SYSTEM DIAGRAM
52	JH316G-651-07	AIS SYSTEM DIAGRAM
53	JH316G-651-08	DGPS SYSTEM DIAGRAM
54	JH316G-651-09	ANEMOMETER SYSTEM DIAGRAM
55	JH316G-651-10	WEATHER FACSIMILE RECEIVER SYSTEM DIAGRAM
56	JH316G-651-11	ECDIS SYSTEM DIAGRAM
57	JH316G-651-12	BRIDGE NAVIGATION WATCH ALARM SYSTEM DIAGRAM

58	JH316G-651-13	EXTERNAL SOUND SIGNAL RECEPTION SYSTEM DIAGRAM
59	JH316G-651-14	FOG HORN CONTROL SYSTEM DIAGRAM
60	JH316G-651-15	WIPER & GLASS HEATER SYSTEM DIAGRAM
61	JH316G-651-16	AUTO PILOT SYSTEM DIAGRAM
62	JH316G-651-17	BRIDGE VISIBILITY REMOTE CAMERA SYSTEM & ARR. DIAGRAM
63	JH316G-652-01	AUTO TELEPHONE SYSTEM DIAGRAM
64	JH316G-652-02	COMMAND SOUND POWERED TELEPHONE SYSTEM DIAGRAM
65	JH316G-652-03	COMPUTER LOCAL AREA NETWORK ARRANGEMENT AND SYSTEM DIAGRAM
66	JH316G-652-04	SATELLITE TV ARRANGEMENT AND SYSTEM DIAGRAM
67	JH316G-652-05	CCTV ARRANGEMENT AND SYSTEM DIAGRAM
68	JH316G-652-06	PUBLIC ADDRESS & GENERAL ALARM SYSTEM DIAGRAM
69	JH316G-652-07	EMERGENCY TELEGRAGH SYSTEM DIAGRAM
70	JH316G-662-01	FIRE AND GAS DETECTION ALARM SYSTEM DIAGRAM
71	JH316G-662-02	CO2 RELEASE ALARM SYSTEM DIAGRAM
72	JH316G-662-03	HOSPITAL & REFRIGERATOR ALARM SYSTEM DIAGRAM
73	JH316G-662-05	AUDIO VISUAL ALARM COLUMN SYSTEM DIAGRAM
74	JH316G-662-06	WATERTIGHT DOOR ALARM ELECTRIC SYSTEM DIAGRAM
75	JH316G-662-07	ACCOMMODATION WATER SPRINKLER ELECTRIC EQUIPMENT ARRANGEMENT AND SYSTEM DIAGRAM
76	JH316G-662-08	HELIDECK MONITORING ARRANGEMENT AND SYSTEM DIAGRAM
77	JH316G-662-09	WEATHER DOOR INDICATION ARRANGEMENT AND SYSTEM DAIGRAM
78	JH316G-662-10	FIRE DAMPER ELECTRIC ARRANGEMENT AND SYSTEM DIAGRAM
79	JH316G-662-11	ENGINEER CALL ALARM SYSTEM DIAGRAM
80	JH316G-662-12	TANK GAUGING ELECTRIC SYSTEM DIAGRAM
81	JH316G-671-01	RADIO CONSOLE SYSTEM DIAGRAM
82	JH316G-671-02	VHF TELEPHONE SYSTEM DIAGRAM
83	JH316G-671-03	NAVTEX RECEIVER SYSTEM DIAGRAM
84	JH316G-671-04	V-SAT SYSTEM DIAGRAM
85	JH316G-671-05	HELICOPER AVIATION HOMING BEACON SYSTEM DIAGRAM
86	JH316G-671-06	AIRBAND VHF RADIO STATION SYSTEM DIAGRAM

7.5.3 Propulsion drawing list

Please refer to a separated file named “WSP240-FP AZIMUTHING THRUSTER (COMPLETED DOCUMENTS)” for more information.

7.5.4 Bow thruster drawing list

Please refer to a separated file named “FINISHED DRAWING OF KAWASAKI-KWJKT-88B3 BOW THRUSTER” for more information.

7.5.5 Main diesel generator drawing list

Please refer to a separated file named “MAIN ENGINE MANUAL INSTRUCTION AND DRAWINGS” and “FINAL DOCUMENTS FOR MAIN GENERATOR” for more information.

7.5.6 Emergency generator drawing list

Please refer to a separated file named “EMERGENCY GENERATOR MANUAL INSTRUCTION AND DRAWINGS” for more information.

7.6 Plans - drawing copied

7.6.1 General arrangement plan

Please refer to the attached file.

REV 版本号	DATE 日期	DESCRIPTION 描述	DESIGNED 设计	CHECKED 校对	VERIFIED 审核	APPROVED 审定
Z	2018.04.27	AS BUILT DRAWING	张鑫斌	唐山	姚俊卿	李兵

SIGN
会 签

PROFILE

主钩负载曲线
Main Hook Rated loads of various operating conditions

起吊载荷 unit: tonne
Lift rated load unit: tonne

起吊载荷 Lift rated load unit: tonne

起吊载荷 Lift rated load unit: tonne

辅钩负载曲线
Auxiliary Hook Rated loads of various operating conditions

起吊载荷 Lift rated load unit: tonne

C DECK

HELIDECK

TOP VIEW

DOUBLE BOTTOM

B DECK

MAIN DECK

TANK TOP & TWEEN DECK

A DECK

MAIN PARTICULARS

LOA	~87.00 m
LENGTH	64.80 m
BREADTH	40.40 m
DEPTH	6.00 m
SUMMER DRAFT	3.35 m
DECK AREA	~1440 m^2
VARIABLE LOAD	1670 t
MAX. DECK LOAD	5 t/m^2
ACCOMMODATION	150 P
BOW THRUSTER	600kW x2
MAIN DIESEL GENERATOR	830kW x4
EMERGENCY GENERATOR	250kW x1
MAIN CRANE CAPACITY	190t @ R=9.5m(MIN)
	38t @ R=40m(MAX)
AUX. CRANE CAPACITY	20t @ R=20m
	3t @ R=33m
CLASS NOTATION	
ABS	✠ A1, Self Elevating Unit,
	✠AMS, CRC, CPS, DPS-1, HELIDK

CRANE WORK CONDITION

MAX WATER DEPTH	60 m
WAVE HEIGHT	6 m
CURRENT	0.77 m/s
WIND SPEED	15.5 m/s

WORKING CONDITION

MAX WATER DEPTH	60 m
WAVE HEIGHT	6.3 m
CURRENT	0.77 m/s
WIND SPEED	25.7 m/s

JACKUP CHARACTERISTICS

LEGS	O.D. 3.3m
LEG LENGTH	90 m
TOTAL LIFTING CAPACITY	1540x4=6160 t
LIFTING SPEED	36 m/h

	1P	2P	4P	ROOM NO.	PERSON
MAIN DECK	-	-	-	-	-
A DECK	-	3	25	28	106
B DECK	16	14	-	30	44
ROOM NO.	16	17	25	58	-
PERSON	16	34	100	-	150

OWNER 船东	QMS BANI YAS INC.	HULL NO. 工程号	HXLB3007
BUILDER 船厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD 青岛海西重机有限责任公司	CLASS 船级社	ABS
TITLE 船名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图名	GENERAL ARRANGEMENT 总布置图	DWG. NO. 图号	JH316G-100-04
		SCALE 比例	WEIGHT 重量 / PAGE 页数 / DATE 日期
		1:200	" 1/1

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7.6.2 Tank capacity plan

Please refer to the attached file.

JH316G-103-01

REV 版本号	DATE 日期	DESCRIPTION 描述	DESIGNED 设绘	CHECKED 校对	VERIFIED 审核	APPROVED 审定
Z	2018.04.27	AS BUILT DRAWING	张鑫斌	张彩华	高慧	李兵

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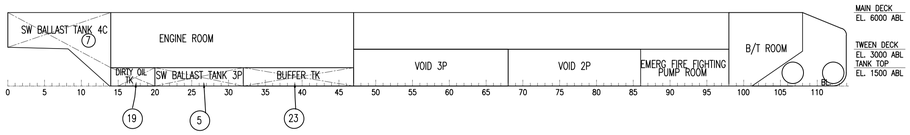
会 签

LONGITUDINAL SECTION (CL)



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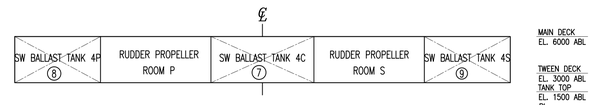

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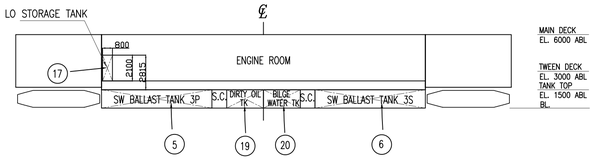

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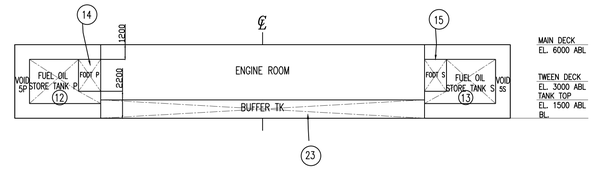

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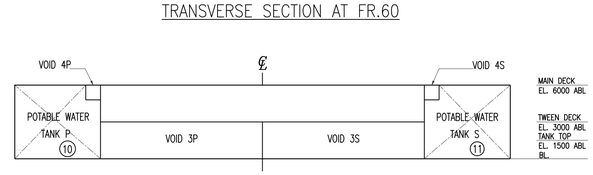

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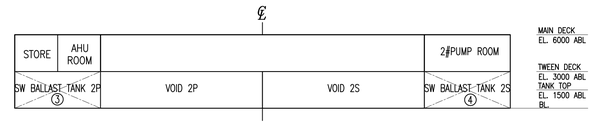

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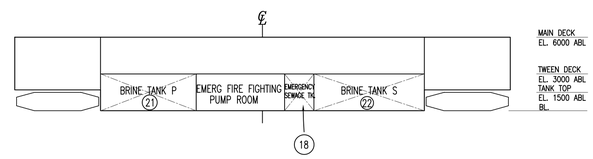

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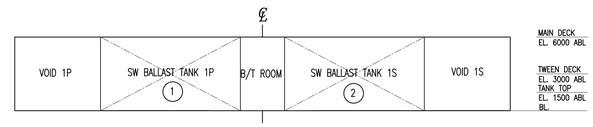
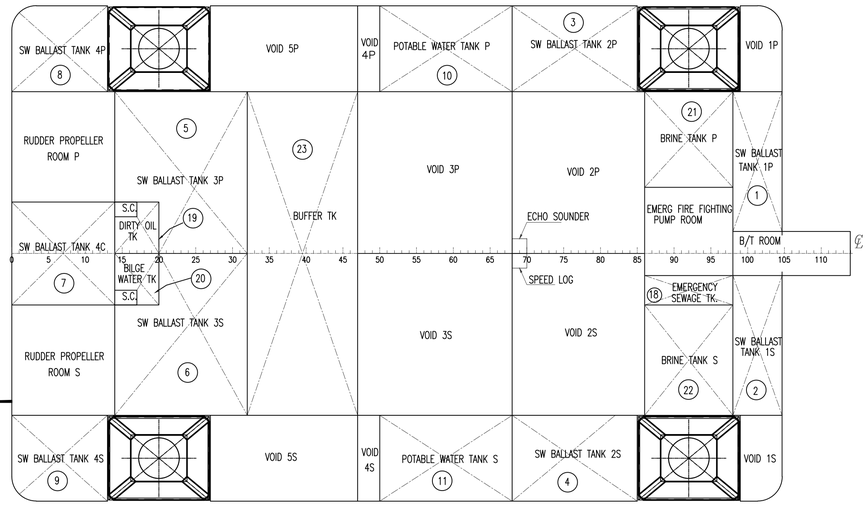
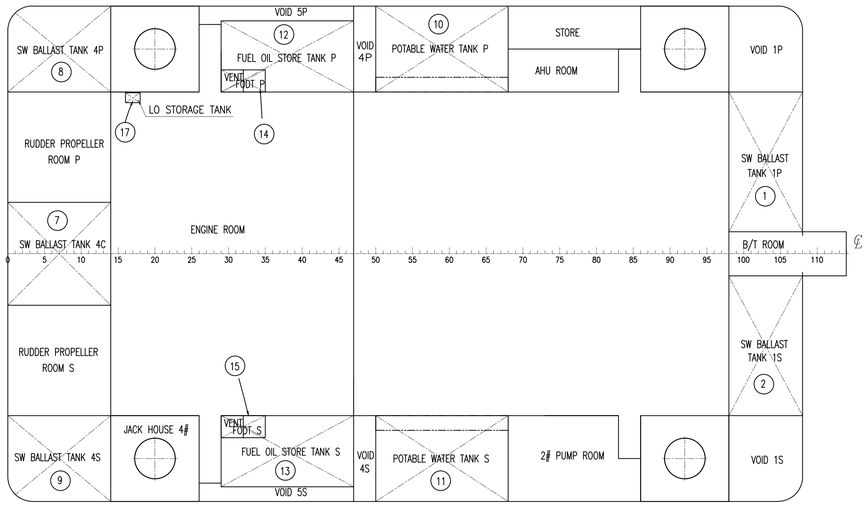


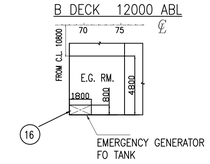
DOUBLE BOTTOM

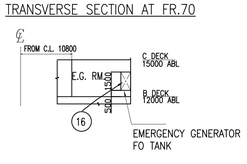


TANK TOP & TWEEN DECK



EMERGENCY GENERATOR FUEL TANK





MAIN PARTICULARS

LOA	87.00 m
LENGTH	64.80 m
BREADTH	40.40 m
DEPTH	6.00 m
SUMMER DRAFT	3.35 m

NO.	TANK NAME	LOCATION FR.MIN	LOCATION FR.MAX	VOLM m3	VNET m3	L.C.G m	T.C.G m	V.C.G m	IXMAX m4	IYMAX m4
BALLAST WATER: REDUCTION = 0.02 DENSITY=1.025										
1	SW BALLAST TANK 1P	98	108	343.4	336.5	61.483	7.500	3.400	726	201.1
2	SW BALLAST TANK 1S	98	108	343.4	336.5	61.483	−7.500	3.400	726	201.1
3	SW BALLAST TANK 2P	68	86	219.7	215.3	46.034	16.700	1.521	302.5	720.1
4	SW BALLAST TANK 2S	68	86	219.7	215.3	46.034	−16.700	1.521	302.5	720.1
5	SW BALLAST TANK 3P	14	32	191.2	187.3	14.227	7.134	0.750	1671.1	1127.1
6	SW BALLAST TANK 3S	14	32	191.2	187.3	14.227	−7.134	0.750	1671.1	1127.1
7	SW BALLAST TANK 4C	0	14	252.3	247.3	4.776	0	4.076	406.6	406.6
8	SW BALLAST TANK 4P	0	14	201.4	197.3	4.725	16.662	4.168	227.1	326.0
9	SW BALLAST TANK 4S	0	14	201.4	197.3	4.725	−16.662	4.168	227.1	326.0
	TOTAL−BALLAST TANK			2163.5	2120.2	32.816	0	2.772		
FRESH WATER: REDUCTION = 0.02 DENSITY=1										
10	POTABLE WATER TANK P	50	68	438.0	429.3	35.4	16.803	2.915	302.5	720.1
11	POTABLE WATER TANK S	50	68	438.0	429.3	35.4	−16.803	2.915	302.5	720.1
	TOTAL−POTABLE WATER TK			876.1	858.6	35.4	0	2.915		
FUEL OIL: REDUCTION = 0.02 DENSITY=0.85										
12	FUEL OIL STORE TANK P	29	47	208.7	204.5	23.091	16.261	2.960	172.1	596.7
13	FUEL OIL STORE TANK S	29	47	208.7	204.5	23.091	−16.261	2.960	172.1	596.7
14	FODT P	29	35	16.8	16.5	19.200	14.100	3.500	1.7	6.9
15	FODT S	29	35	16.8	16.5	19.200	−14.100	3.500	1.7	6.9
16	EMERNENCY GENERATOR FO TANK	68	71	2.2	2.1	41.700	−15.200	13.250	0.1	0.4
	TOTAL−FUEL OIL TANK			453.2	444.1	22.890	−0.072	3.049		
LUBRICATING OIL: REDUCTION = 0.02 DENSITY=0.9										
17	LO STORAGE TANK	16	18	2.0	2.0	10.054	12.716	3.265	0.1	0.1
MISCELLANEOUS: REDUCTION = 0.02 DENSITY=1										
18	EMERGENCY SEWAGE TK.	86	98	51.8	50.8	55.200	−3.000	1.500	8.1	73.2
19	DIRTY OIL TK	14	20	19.4	19.1	10.350	1.850	0.750	16	13.4
20	BILGE WATER TK	14	20	19.4	19.1	10.350	−1.850	0.750	16	13.4
	TOTAL			90.7	88.90	35.979	−1.714	1.179		
BRINE: REDUCTION = 0.02 DENSITY=1.3										
21	BRINE TANK P	86	98	168.5	165.1	55.200	9.300	1.500	279.0	237.8
22	BRINE TANK S	86	98	194.4	190.5	55.200	−8.700	1.500	428.7	274.3
	TOTAL−BRINE TANK			362.9	355.6	55.200	−0.343	1.500		
BUFFER: REDUCTION = 0.02 DENSITY=1.025										
23	BUFFER TK	32	47	356.4	349.3	23.700	0	0.750	13523.8	1571.7

VOLM: VOLUME MOULDED
VNET: NET VOLUME.
L.C.G: LONGITUDINAL CENTER OF GRAVITY
T.C.G: TRANSVERSE CENTER OF GRAVITY
V.C.G: VERTICAL CENTER OF GRAVITY
IXMAX: TRANSVERSE MOMENT OF INERTIA
IYMAX: LONGITUDINAL MOMENT OF INERTIA

LONGITUDINAL DISTANCE FROM #0
TRANSVERSE DISTANCE FROM CENTERLINE
VERTICAL DISTANCE FROM BASELINE

OWNER 船东	QMS BANI YAS INC.	HULL NO. 工程号	HXLB3007
BUILDER 船厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD 青岛海西重机有限责任公司	CLASS 船级社	ABS
TITLE 船名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图名	TANK CAPACITY PLAN 舱容图	DWG. NO. 图号	JH316G-103-01
		SCALE 比例 1:250 / WEIGHT 重量 - / PAGE 页数 1/1 / DATE 日期	

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A1:0.5m²

7.6.3 Fire proof division plan

Please refer to the attached file.

JH316G-103-05

REV 版本号	DATE 日期	DESCRIPTION 描述	DESIGNED 设 经	CHECKED 校 对	VERIFIED 审 核	APPROVED 审 定
Z	2018.04.27	AS BUILT DRAWING	张鑫斌	唐山	姚俊卿	李兵

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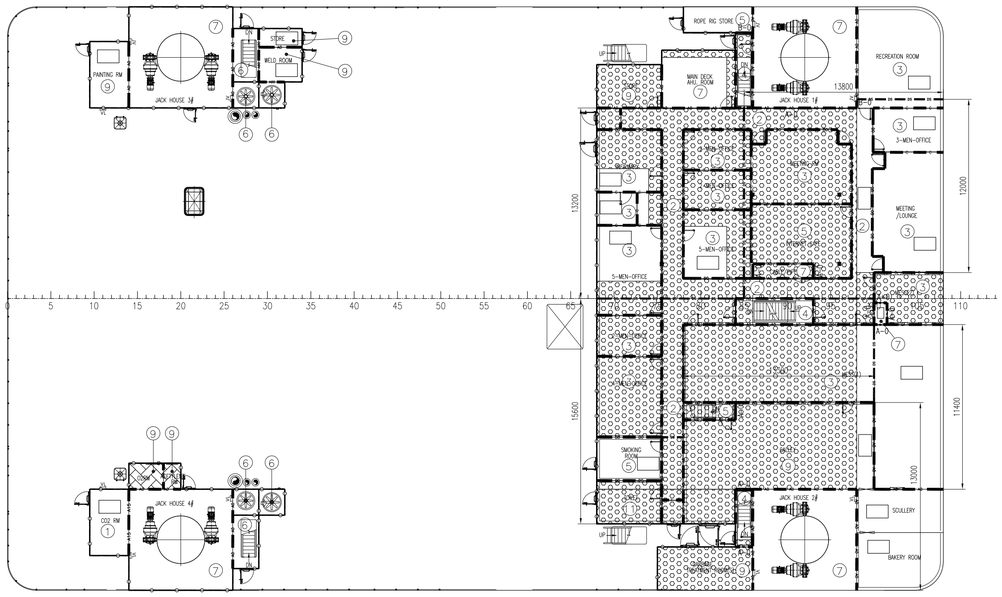
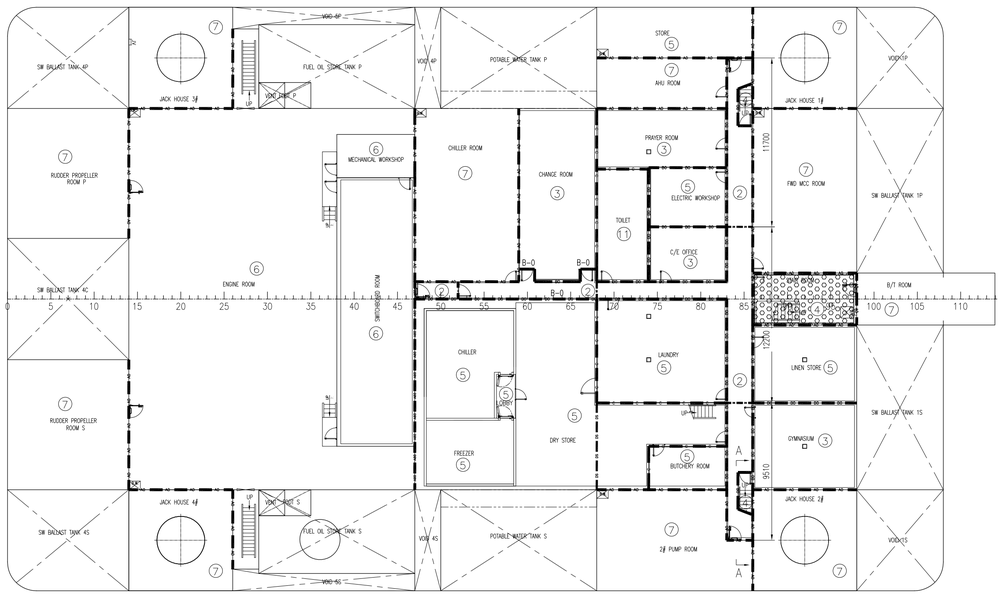
会 签

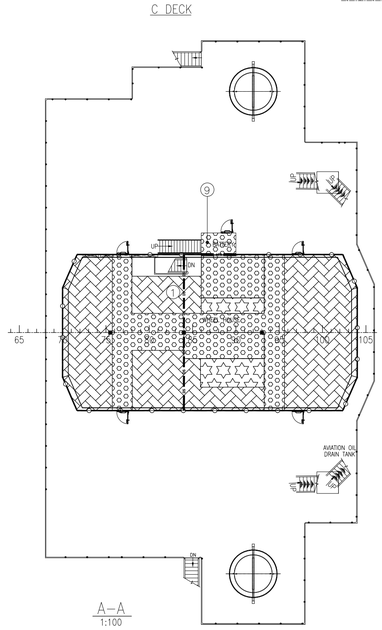
MAIN DECK



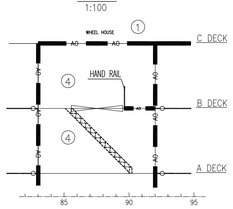
TANK TOP & TWEEN DECK



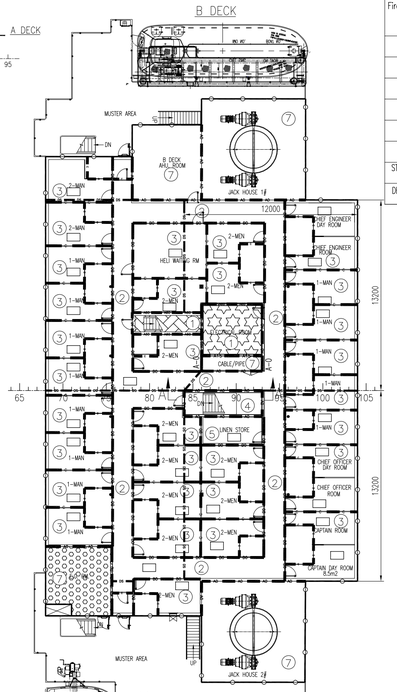
C DECK



A–A
1:100

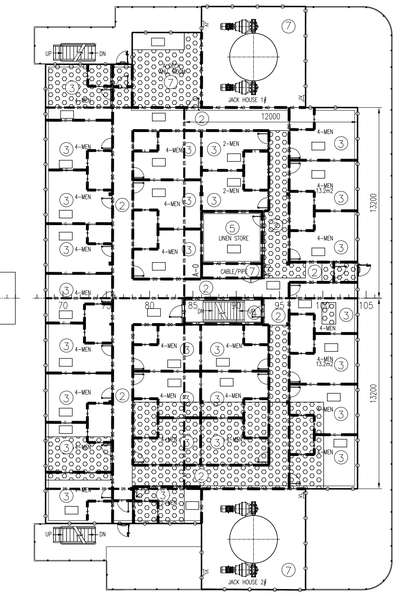


B DECK

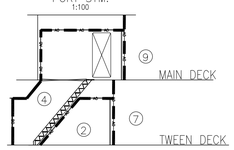


A DECK

DOUBLE BOTTOM



A–A
PORT SYM.
1:100



Fire proof structure

Fire proof class	Bulkheads not bounding either main vertical zones or horizontal	Decks not forming steps in main vertical zones nor bounding horizontal zones
A–60	A60 A60 A60	
A–15	A15 A15 A15	
A–0	A0 A0 A0	
B–15	B15 B15 B15	
B–0	B0 B0 B0	
C	C C C	
STEEL BULKHEAD		
DRAUGHT STOPS		

CATEGORY SPACES
Acc.to MODU Code 2009 Chapt.9

POS. NO.	CATEGORY SPACE
(1)	Control Stations
(2)	Corridors
(3)	Accommodation Spaces
(4)	Stairways
(5)	Service Spaces (low risk)
(6)	Machinery Spaces of Category A
(7)	Other Machinery Spaces
(8)	Hazardous Areas
(9)	Service Spaces (high risk)
(10)	Open Decks
(11)	Sanitary and Similar Spaces

STRUCTURAL FIRE PROTECTION ACC. TO MODU CODE 2009 CHAPT.9

TABLE 1
FIRE INTEGRITY OF BULKHEADS SEPARATING ADJACENT SPACES

Spaces		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Control Stations	(1)	A–0[N]	A–0	A–60	A–0	A–15	A–60	A–15	A–60[N]	A–60	*	A–0
Corridors	(2)		C	B–0	B–0 A–0[N]	B–0	A–60	A–0	A–0[N]	A–0	*	B–0
Accommodation Spaces	(3)			C	B–0 A–0[N]	B–0	A–60	A–0	A–0[N]	A–0	*	C
Stairways	(4)				B–0 A–0[N]	B–0 A–0[N]	A–60	A–0	A–0[N]	A–0	*	B–0 A–0[N]
Service Spaces (low risk)	(5)					C	A–60	A–0	A–0	A–0	*	B–0
Machinery Spaces of Category A	(6)						*Note 1	A–0[N]	A–60	A–60	*	A–0
Other Machinery Spaces	(7)							A–0[N]	A–0	A–0	*	A–0
Hazardous Areas	(8)								–	A–0	–	A–0
Service Spaces (high risk)	(9)									A–0[N]	*	A–0
Open Decks	(10)										–	*
Sanitary and Similar Spaces	(11)											C

TABLE 2
FIRE INTEGRITY OF DECKS SEPARATING ADJACENT SPACES

Spaces Below ▼ Spaces → Above		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Control Stations	(1)	A–0	A–0	A–0	A–0	A–0	A–60	A–0	A–0[N]	A–0	*	A–0
Corridors	(2)	A–0	*	*	A–0	*	A–60	A–0	A–0[N]	A–0	*	*
Accommodation Spaces	(3)	A–60	A–0	*	A–0	*	A–60	A–0	A–0[N]	A–0	*	*
Stairways	(4)	A–0	A–0	A–0	*	A–0	A–60	A–0	A–0[N]	A–0	*	A–0
Service Spaces (low risk)	(5)	A–15	A–0	A–0	A–0	*	A–60	A–0	A–0	A–0	*	A–0
Machinery Spaces of Category A	(6)	A–60	A–60	A–60	A–60	A–60	*Note 1	A–60	A–60	A–60	*	A–0
Other Machinery Spaces	(7)	A–15	A–0	A–0	A–0	A–0	*Note 1	A–0	A–0	A–0	*	A–0
Hazardous Areas	(8)	A–60[N]	A–0[N]	A–0[N]	A–0[N]	A–0	A–60	A–0	–	A–0	*	A–0
Service Spaces (high risk)	(9)	A–60	A–0	A–0	A–0	A–0	A–60	A–0	A–0	A–0[N]	*	A–0
Open Decks	(10)	*	*	*	*	*	*	*	–	*	–	*
Sanitary and Similar Spaces	(11)	A–0	A–0	*	A–0	*	A–0	A–0	A–0	A–0	*	*

Notes: To be applied to both Table 1 and Table 2, as appropriate.

1. Where the space contains an emergency power source or components of an emergency power source that adjoins a space containing a unit's service generator or the components of a unit's service generator, the boundary bulkhead or deck between those spaces is to be an "A–60" Class division.

2. For clarification as to which note applies, see paragraphs 9.3.3 and 9.3.5 MODU CODE 2009.

3. Where spaces are of the same numerical category and superscript "3" appears, a bulkhead or deck of the rating shown in the tables is only required when the adjacent spaces are for a different purpose, e.g., in category (9), A galley next to a galley does not require a bulkhead, but a galley next to a paint room requires an "A–0" bulkhead (except for spaces separated for redundancy in units with DPS–3 notation, where the separating bulkhead is to be "A–60" rating).

4. Bulkheads separating the navigation bridge, chart room and radio from each other may be "B–0" rating.

5. An engineering evaluation should be conducted in accordance with paragraph 9.3.1. In no case should the bulkhead or deck rating be less than the value indicated in the table.

* When an asterisk appears in the tables, the division is required to be of steel or equivalent material but is not required to be of "A" Class standard. However, where a deck is penetrated for the passage of electric cables, pipes and vent ducts, such penetrations should be made tight to prevent the passage of flame and smoke.

REMARK:

1. The materials used for construction, give the applicable building method, although the fire detection may be in excess of the minimum requirements. As the restriction of Min. "C" applies and as long as there is no combustible bulkheads(plywood or equivalent) in the construction, the details, materials and method of construction should be in accordance with MODU 2014 CHAPT.1.5.3, and Resolution MSC.61(67)(FTP code), as applicable, and SOLAS Regulations II–2/5.3 and II–2/6, as applicable.

2. Air spaces enclosed behind ceilings, panellings, or linings are to be divided by close fitting draft stops spaces not more than 14 m(46 ft) apart. In the vertical direction, such enclosed air spaces, including those behind linings of stairways, trunks, etc., are to be closed at each deck. According to SOLAS 2009, CHAPT.II–2, PART C, REG. 8.4 and with MODU 2014 REG. 5, CHAPT.1, PART 5.

3. Doors in corridor BHDS to have same fire integrity as BHDS fitted. According to MODU 2014 REG.3.17, CHAPT.1, PART 5.

4. All bulkheads forming "B" class divisions should extend from deck to deck and to the deckhouse side or other boundaries, unless continuous "B" class ceiling or linings are fitted on both sides of the bulkhead, in which case the bulkhead may terminate at the continuous ceiling or lining.

OWNER 船 东	QMS BANI YAS INC.	HULL NO. 工程号	HXLB3007
BUILDER 船 厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD 青岛海西重机有限责任公司	CLASS 船级社	ABS
TITLE 船 名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图 名	FIRE PROOF DIVISION PLAN 防火区域划分图	DWG. NO. 图 号	JH316G-103-05
		SCALE 比 例	1:150
		WEIGHT 重 量	*
		PAGE 页 数	1/1
		DATE 日 期	

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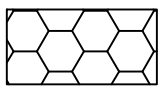
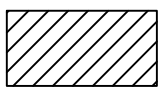
7.6.4 Deck loading plan

Please refer to the attached file.

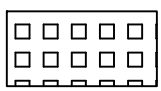
REV 版本号	DATE 日 期	DESCRIPTION 描 述	DESIGNED 设 绘	CHECKED 校 对	VERIFIED 审 核	APPROVED 审 定
Z	2018.04.27	AS BUILT DRAWING	张鑫斌	唐山	姚俊卿	李兵



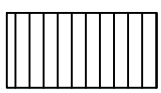
= MAIN DECK AREA: 5.0 t/m^2



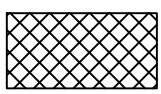
= WEATHER DECK AREA: 2.5 t/m^2



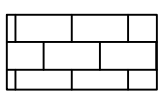
= STORAGE AREA: 1.33 t/m^2



= MACHINERY AREA: 2.0 t/m^2



= MUSTER AREA/TOP OF ACCOMMODATION: 1.0 t/m^2



= ACCOMMODATION AREA/PASSAGE & WALKWAYS: 0.5 t/m^2

NOTE:
1. DECK LOADING OF PLATFORM WITHIN JACK HOUSE: 0.5 t/m^2
2. DECK LOADING OF JACK HOUSE ROOF: 1.0 t/m^2

SIGN 会 签

OWNER 船 东	QMS BANI YAS INC.	HULL NO. 工 程 号	HXLB3007
BUILDER 船 厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD 青岛海西重机有限责任公司	CLASS 船 级 社	ABS
TITLE 船 名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图 名	DECK LOADING PLAN 甲板载荷图	DWG. NO. 图 号	JH316G-103-09
		SCALE 比 例: 1:200 / WEIGHT 重 量: - / PAGE 页 数: 1/5 / DATE 日 期	

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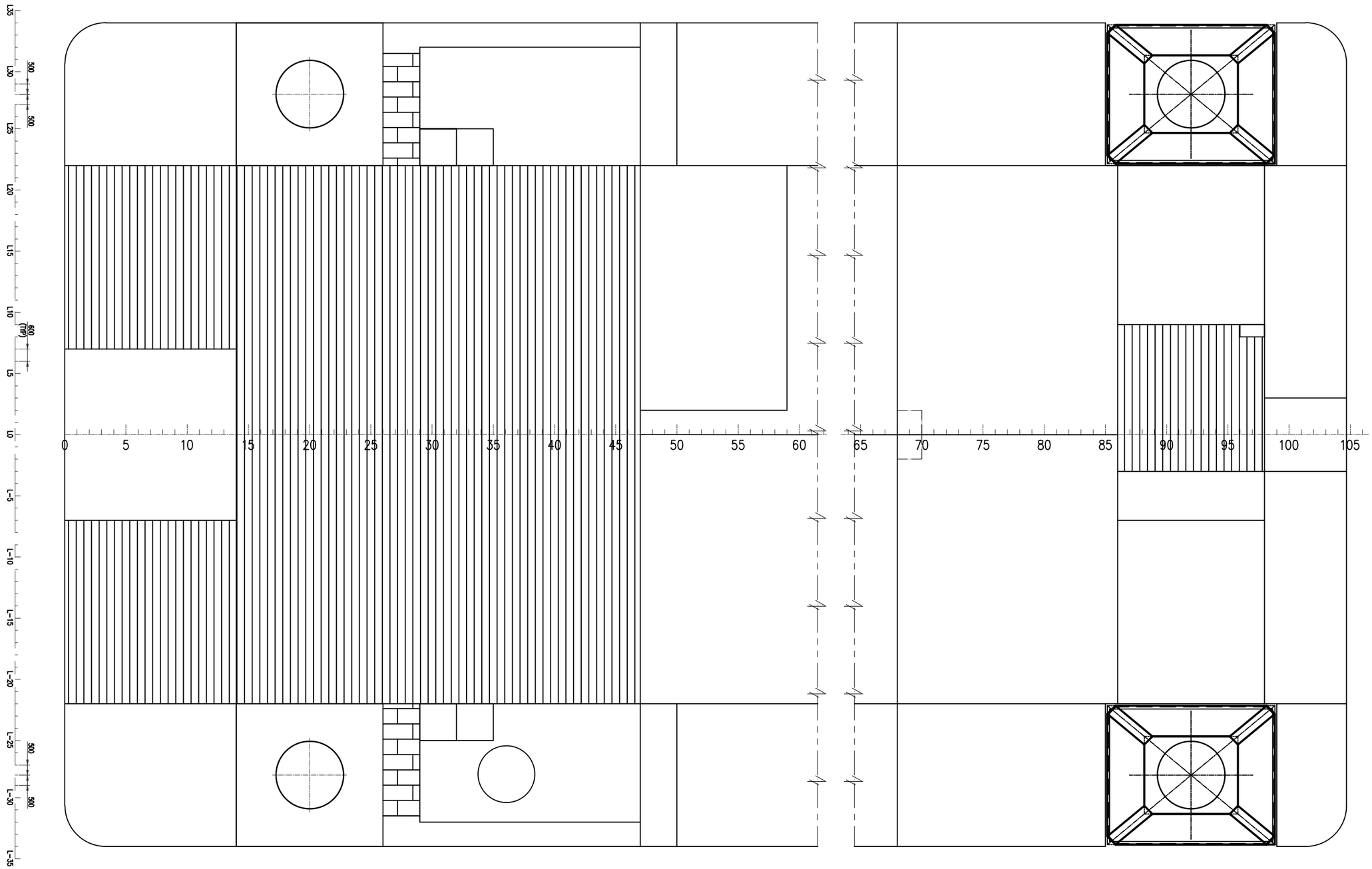
Tel : 86-21-6085 9800 Fax : 86-21-6085 9842

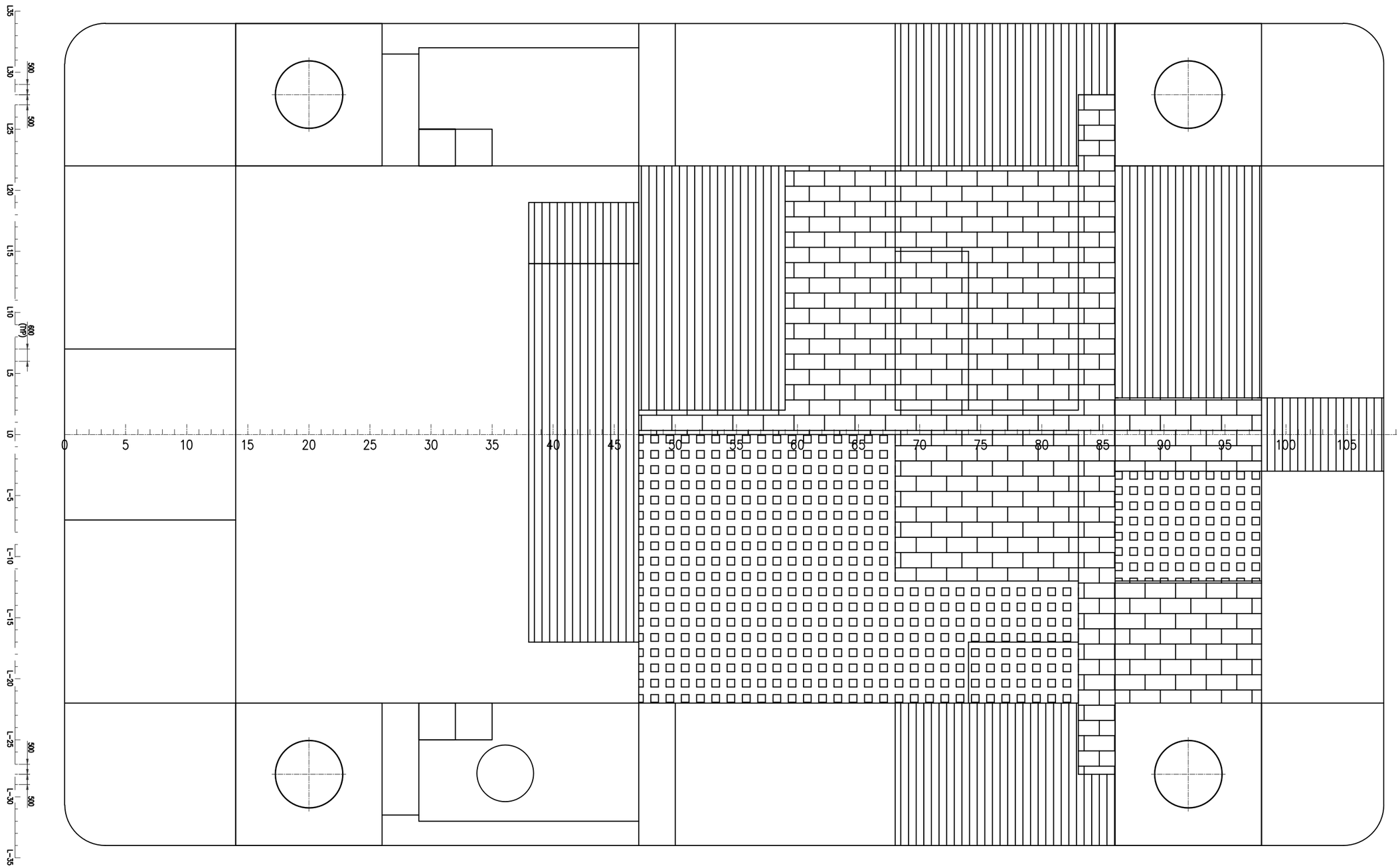
A4:0.0625m^2

TANK TOP
EL 1500 ABL

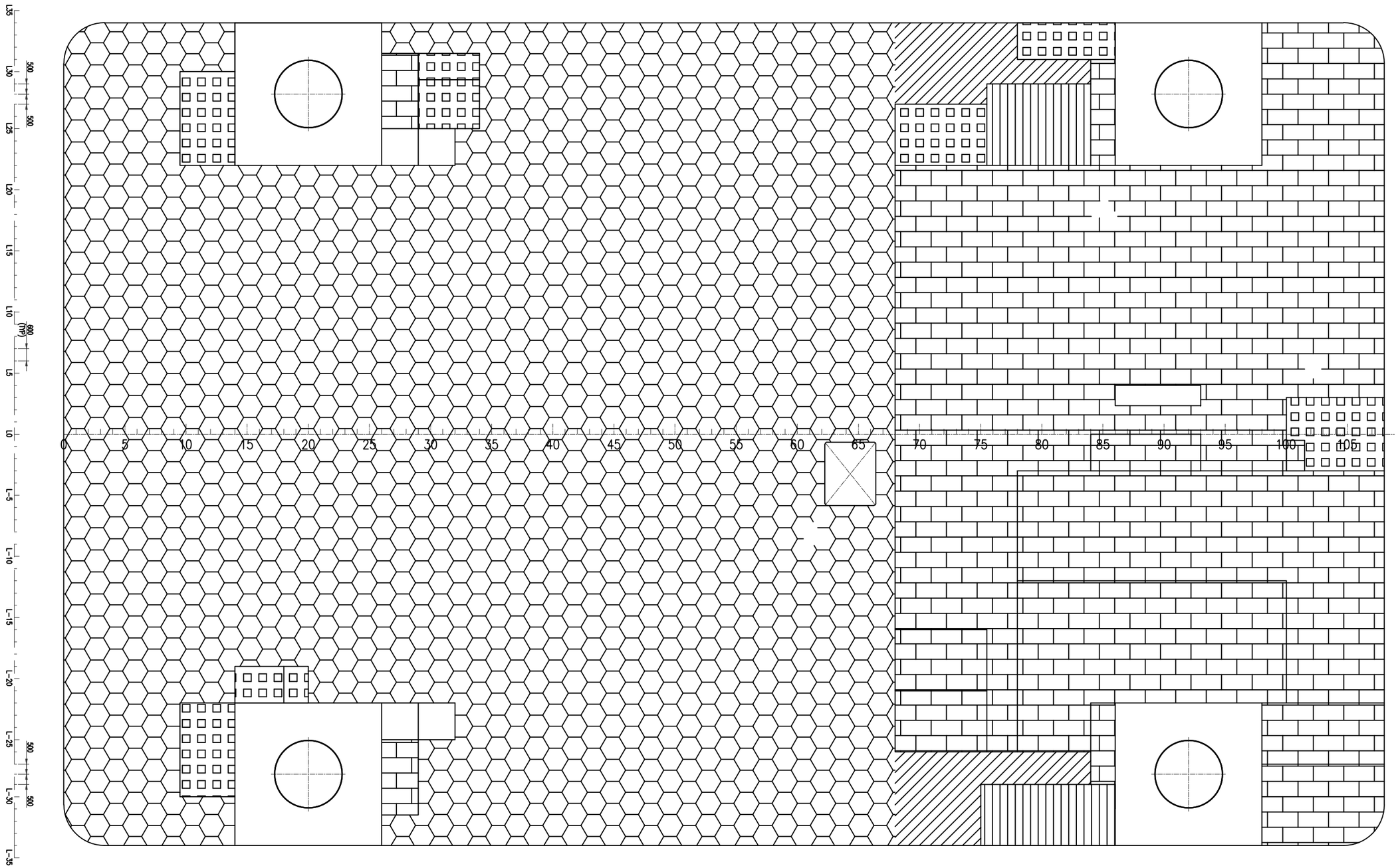
DOUBLE BOTTOM



TWEEN DECK
EL 3000 ABL

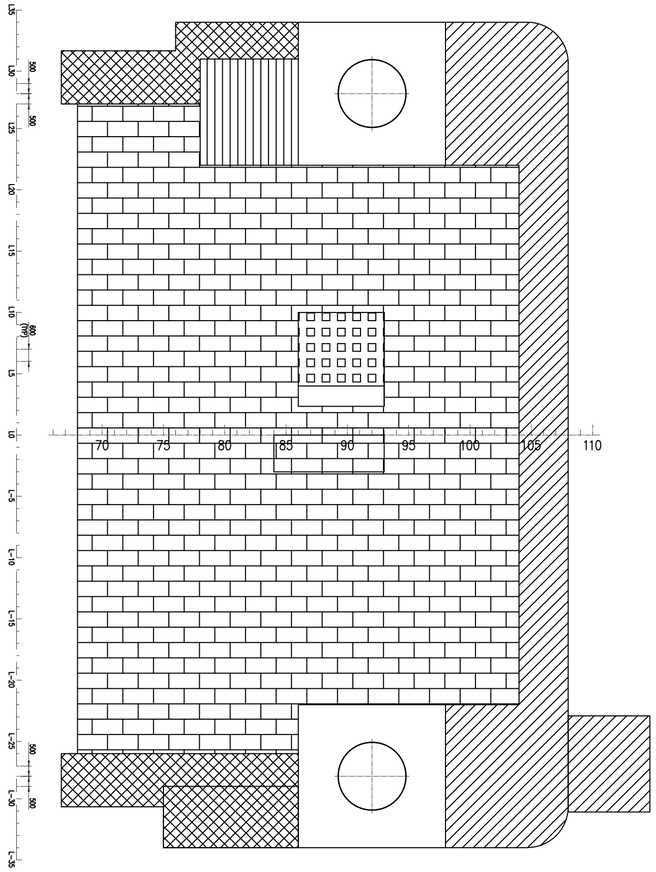


MAIN DECK
EL 6000 ABL

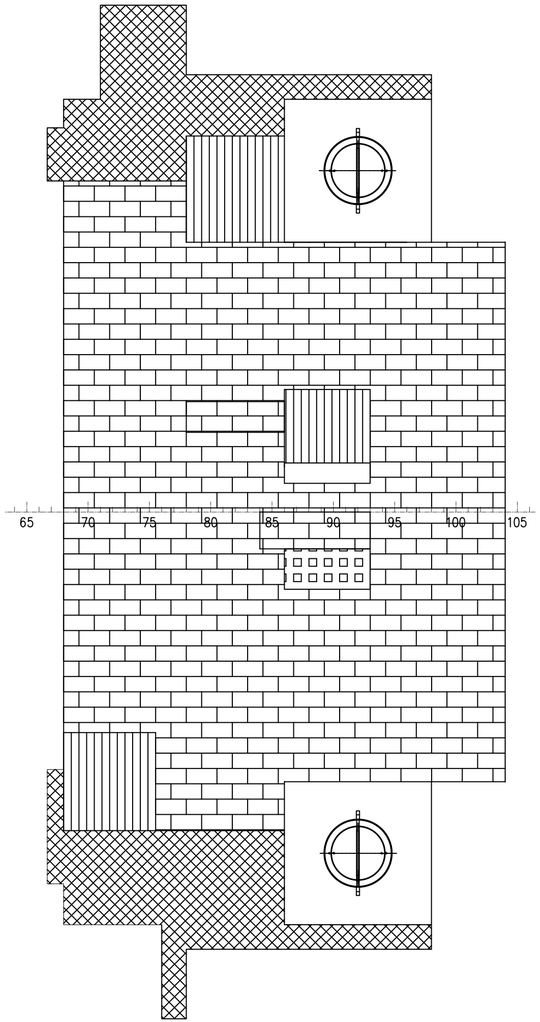


DECK LOADING PLAN 甲板载荷图	JH316G-103-09 RevZ	PAGE 页数	5/5

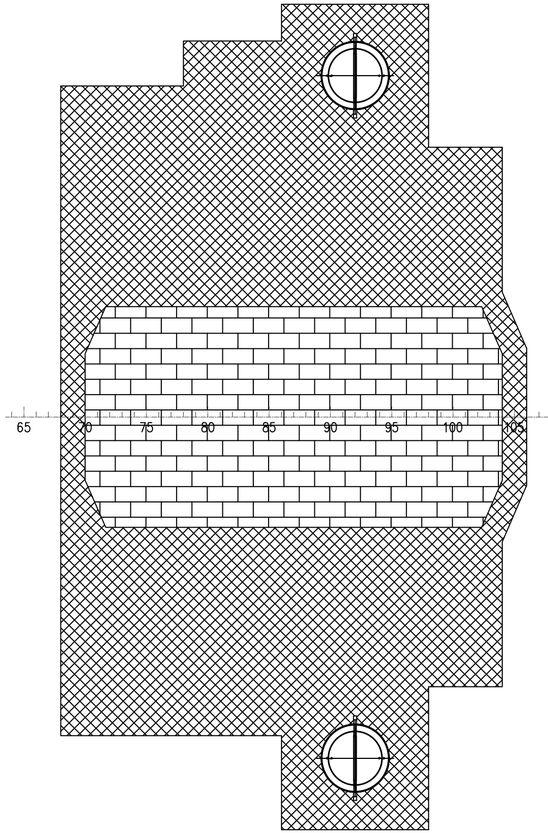
A DECK
EL 9000 ABL



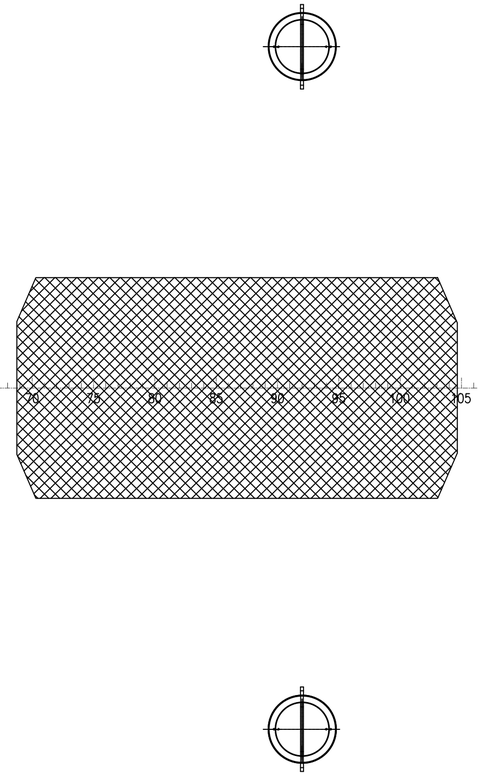
B DECK
EL 12000 ABL



C DECK
EL 15000 ABL



TOP DECK
EL 18000 ABL



A3+:0.1875m²

7.6.5 Hazardous zone plan

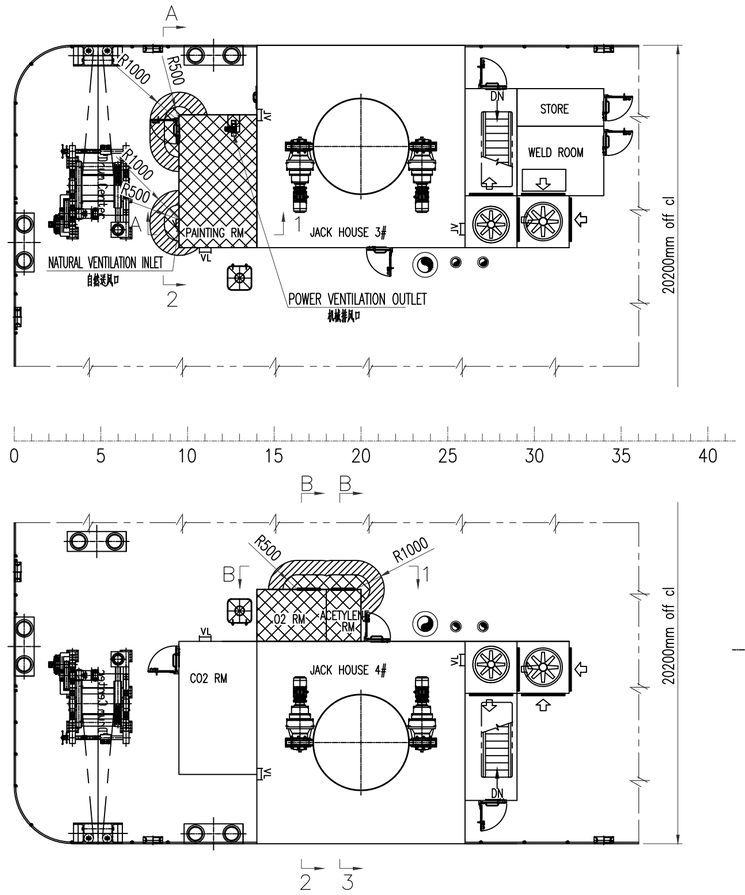
Please refer to the attached file.

JH316G-103-11

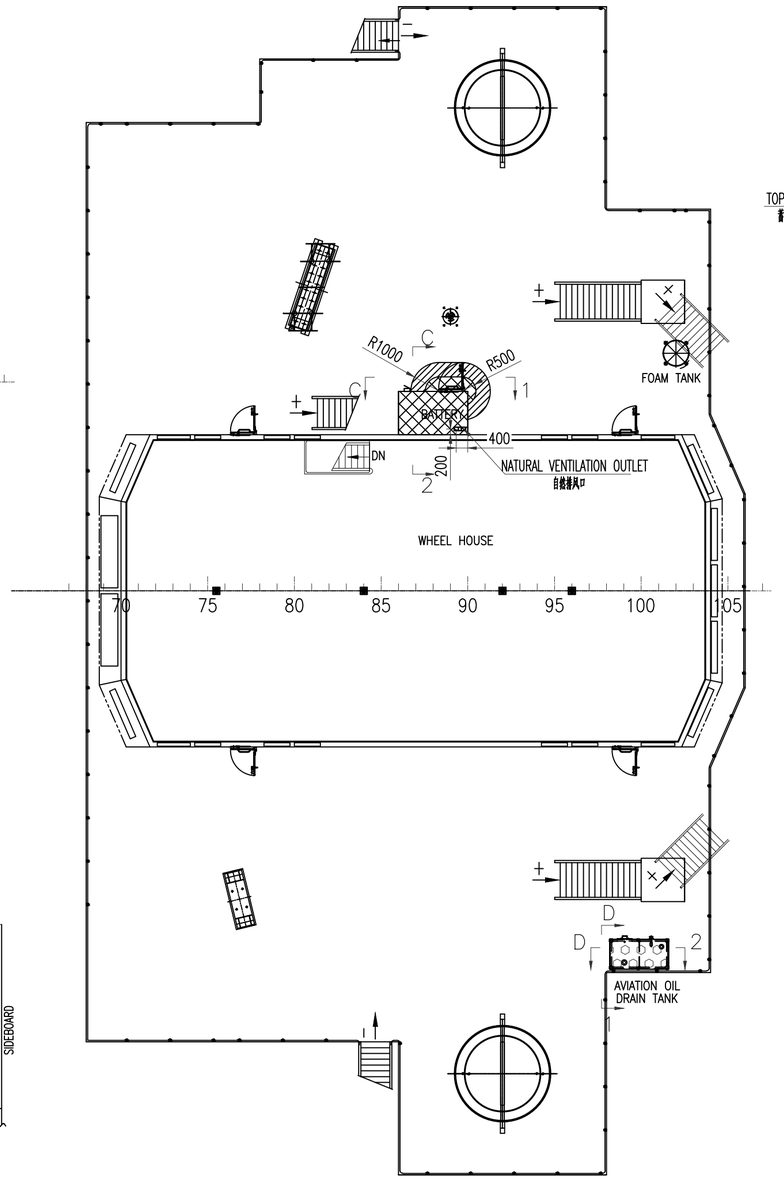
REV 版本号	DATE 日期	DESCRIPTION 描述	DESIGNED 设绘	CHECKED 校对	VERIFIED 审核	APPROVED 审定
Z	2018.04.27	AS BUILT DRAWING	魏玉玲	林玉璋	孙丽霞	李兵

SIGN
会 签
电 气
赵 宁

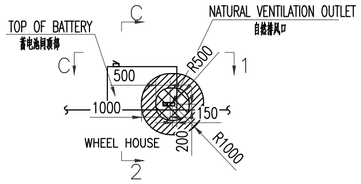
MAIN DECK



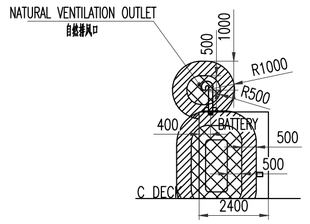
C DECK



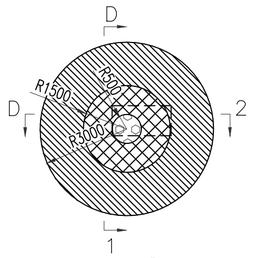
TOP VIEW OF BATTERY RM
蓄电池间顶视图



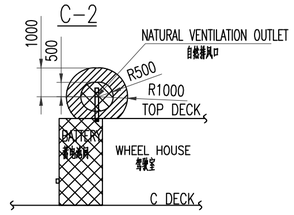
C-1



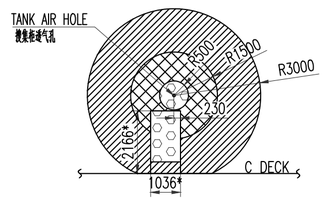
TOP VIEW OF AVIATION OIL DRAIN TANK
漏油搜集舱顶视图



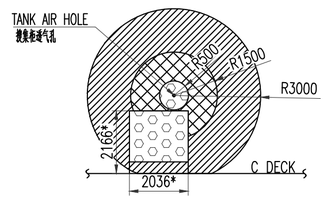
C-2



D-1



D-2



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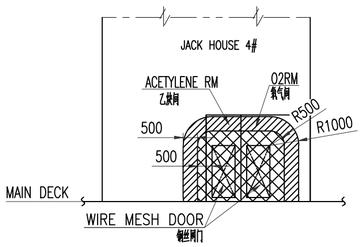
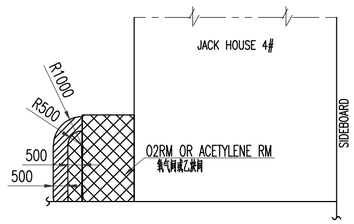
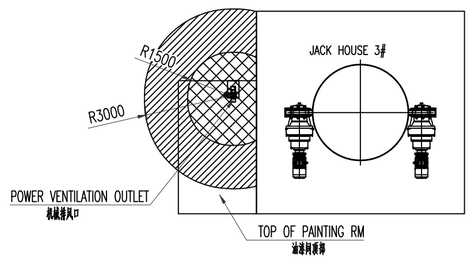


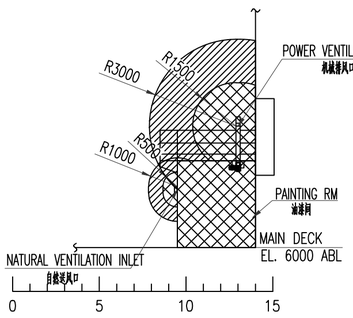
B-2 & B-3



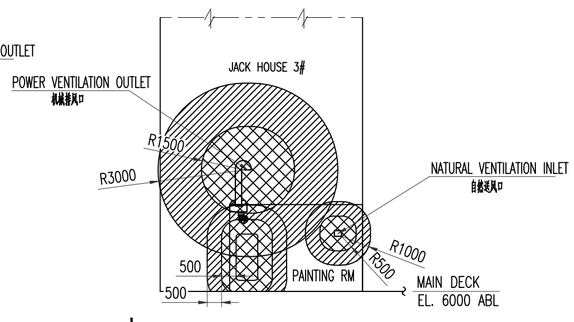
TOP VIEW OF PAINTING RM
油漆间顶视图



A-1



A-2



HAZARDOUS ZONE PLAN
危险区域划分图

HAZARDOUS AREAS ZONE 0
0类危险区域

HAZARDOUS AREAS ZONE 1
1类危险区域

HAZARDOUS AREAS ZONE 2
2类危险区域

NOTE:
THIS DRAWING IS ACCORDING TO :
ABS MOU GUIDE (2008), AS AMENDED; ABS MODU RULE (2016), AS AMENDED; 2009 MODU CODE.
本图设绘参考:
ABS MOU GUIDE (2008), AS AMENDED; ABS MODU RULE (2016), AS AMENDED; 2009 MODU CODE.

OWNER 船东	QMS BANI YAS INC.	HULL NO. 工程号	HXLB3007
BUILDER 船厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD 青岛海西重机有限责任公司	CLASS 船级社	ABS
TITLE 船名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图名	HAZARDOUS ZONE PLAN 危险区域划分图	DWG. NO. 图号	JH316G-103-11
		SCALE 比例	1:150
		WEIGHT 重量	-
		PAGE 页数	1/1
		DATE 日期	

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A2:0.25m²

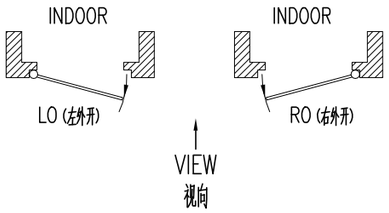
7.6.6 Watertight doors

Please refer to the attached file.

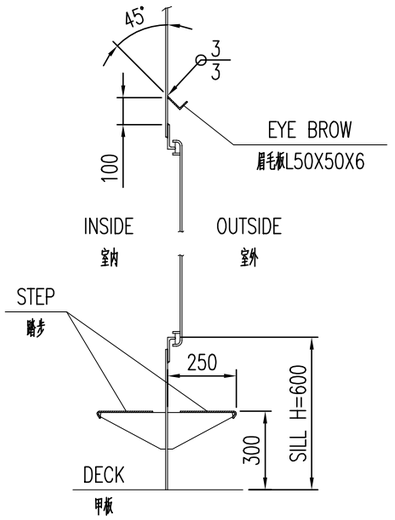
JH316G-262-01

REV 版本号	DATE 日期	DESCRIPTION 描述	DESIGNED 设绘	CHECKED 校对	VERIFIED 审核	APPROVED 审定
Z	2018.04.27	AS BUILT DRAWING	张鑫斌	唐山	姚俊卿	李兵

DOOR OPENING DIRECTION
门开启方向



INSTALLATION DETAIL
门框安装详图



NOTE:
1. AN INDICATING SYSTEM IS TO BE ARRANGED FOR QUICK-ACTING WATERTIGHT DOORS, SHOWING PERSONNEL, BOTH LOCALLY AND AT A NORMALLY MANNED CENTRAL POSITION, WHETHER THE DOORS IN QUESTION ARE OPEN OR SECURED CLOSED;
2. WATERTIGHT DOORS SHOULD BE KEPT CLOSED WHILE AFLOAT, AND A WARNING BOARD WILL BE FITTED ON DOORS;
3. THE QUALITIES OF STEEL DOORS ARE TO BE SATISFACTORY OF THE ATTENDING SURVEYOR;
4. SHIPYARD SHALL ENSURE THE HEIGHT OF SILL AND THE HEIGHT OF OPENING INDICATED HEREIN AS A MINIMUM REQUIREMENT;
5. FOR STEEL DOORS WHICH ARE NOT CLOAKED, EYE BROW SHALL BE FITTED ABOVE;
6. ALL DOORS' HINGE TO BE MADE OF STAINLESS STEEL(1Cr18Ni9Ti);
7. STIFFENERS ON WEATHER TIGHT DOOR TO BE DOUBLE-SIDE CONTINUOUS WELDING;
8. SELF-CLOSING DOORS IN FIRE RATED BULKHEADS SHOULD NOT FITTED WITH HOLD-BACK HOOKS. HOWEVER, HOLD-BACK ARRANGEMENT INCORPORATING REMOTE RELEASE FITTINGS OF THE FAIL-SAFE TYPE MAY BE UTILIZED;
9. FOR DOORS WITH A SILL OF 600MM HEIGHT, STEPS SHALL BE FITTED AS SHOWN IN THE DETAIL;
10. THE OPENING SIZE OF WALL IS FOR REFERENCE ONLY.

说明:
1. 快开式水密门应就地或在其遥控操纵位置设有显示这些门是否开启的指示设施;
2. 水密门在水面漂浮时应保持关闭,并在门上配以警告牌;
3. 钢质门的质量应令现场验船师满意;
4. 本图门槛高和开口高为关键尺寸,务必保证(不得小于要求尺寸);
5. 凡是门框没有遮盖物的,均设眉毛板;
6. 所有门的铰链轴的材料为不锈钢(1Cr18Ni9Ti);
7. 所有风雨密门上的加强筋均需双面连续焊;
8. 耐火舱壁上的自闭门不应装设背钩,但可以使用设有故障安全性遥控释放装置的背钩;
9. 门槛高度为600mm的,在门下方设踏步,参照门框安装详图;
10. 结构开口尺寸仅供参考,具体尺寸以船厂订货为准.

NUM. 序号	STANDARD 标准	NAME 名称	QTY. 数量	OPENING 开孔尺寸	SILL门槛 HEIGHT高度(mm)	OPEN开孔	SINGLE单件 WEIGHT重量(kg)	TOTAL总重	REMARKS 备注
13a	1600X1200 IMIT.CB/T 3234-2011	A0-FP STEEL WEATHER TIGHT DOOR(SELF CLOSING) A0级钢质风雨密防火门(自闭式)	1	1700X1300 R150	600	550	277.6	277.6	RO 右外开
12a	AZ 1800X750 IMIT.CB/T 3217-84	A0-FP STEEL GAS TIGHT DOOR(SELF CLOSING) A0级钢质隔吉坦气门(自闭式)	1	1900X850	200	150	74.7	74.7	RO 右外开
12	AZ 1800X750 IMIT.CB/T 3217-84	A0-FP STEEL GAS TIGHT DOOR(SELF CLOSING) A0级钢质隔吉坦气门(自闭式)	1	1900X850	200	150	74.7	149.4	LO 左外开
11	1850X800 IMIT.CB/T 3234-2011	A0-FP STEEL WATERTIGHT HINGED DOOR A0级铰链式钢质水密防火门	1	1950X900 R150	230	180	289.3	289.3	LO,QUICK ACTING TYPE 右外开,快开式
10	1600X1100 IMIT.CB/T 3234-2011	A0-FP STEEL WEATHER TIGHT DOOR(SELF CLOSING) A0级钢质风雨密防火门(自闭式)	1	1700X1200 R150	380	330	254.5	254.5	LO 左外开
9a	1800X800 IMIT.CB/T 3234-2011	A0-FP STEEL WEATHER TIGHT DOOR(SELF CLOSING) A0级钢质风雨密防火门(自闭式)	2	1900X900 R150	380	330	208.2	416.4	RO 右外开
9	1800X800 IMIT.CB/T 3234-2011	A0-FP STEEL WEATHER TIGHT DOOR(SELF CLOSING) A0级钢质风雨密防火门(自闭式)	2	1900X900 R150	380	330	208.2	416.4	LO 左外开
8a	1600X800 IMIT.CB/T 3234-2011	A0-FP STEEL WEATHER TIGHT DOOR(SELF CLOSING) A0级钢质风雨密防火门(自闭式)	5	1700X900 R150	600/380	550/330	185.1	925.5	RO 右外开
8	1600X800 IMIT.CB/T 3234-2011	A0-FP STEEL WEATHER TIGHT DOOR(SELF CLOSING) A0级钢质风雨密防火门(自闭式)	3	1700X900 R150	600	550	185.1	555.3	LO 左外开
7	1800X750 IMIT.CB/T 3234-2011	A0-FP STEEL WEATHER TIGHT DOOR(SELF CLOSING) A0级钢质风雨密防火门(自闭式)	1	1900X850 R150	230	180	195.2	195.2	LO 左外开
6a	1800X750 IMIT.CB/T 3234-2011	A0-FP STEEL WEATHER TIGHT DOOR(SELF CLOSING) A0级钢质风雨密防火门(自闭式)	2	1900X850 R150	230	180	195.2	390.4	RO,Φ250mm ROUND WINDOW 右外开,带Φ250mm窗
6	1800X750 IMIT.CB/T 3234-2011	A0-FP STEEL WEATHER TIGHT DOOR(SELF CLOSING) A0级钢质风雨密防火门(自闭式)	2	1900X850 R150	230	180	195.2	390.4	LO,Φ250mm ROUND WINDOW 左外开,带Φ250mm窗
5a	1800X750 IMIT.CB/T 3234-2011	A0-FP STEEL WEATHER TIGHT DOOR(SELF CLOSING) A0级钢质风雨密防火门(自闭式)	1	1900X850 R150	380	330	195.2	195.2	RO 右外开
4	1600X900 IMIT.CB/T 3234-2011	A0-FP STEEL WEATHER TIGHT DOOR(SELF CLOSING) A0级钢质风雨密防火门(自闭式)	1	1700X1000 R150	600	550	202.5	202.5	LO 左外开
3a	1600X750 IMIT.CB/T 3234-2011	A0-FP STEEL WEATHER TIGHT DOOR(SELF CLOSING) A0级钢质风雨密防火门(自闭式)	6	1700X850 R150	600/380	550/330	173.5	1041	RO 右外开
3	1600X750 IMIT.CB/T 3234-2011	A0-FP STEEL WEATHER TIGHT DOOR(SELF CLOSING) A0级钢质风雨密防火门(自闭式)	2	1700X850 R150	380	330	173.5	347	LO 左外开
2	B800X1800 IMIT.CB* 452-81	WIRE MESH DOOR 钢丝网门	3	840X1840	140	100	43.9	87.8	LO 左外开
1a	1850X750 IMIT.CB/T 3234-2011	A0-FP STEEL WATERTIGHT HINGED DOOR A0级铰链式钢质水密防火门	2	1950X850 R150	230	180	271.2	542.4	RO,QUICK ACTING TYPE 右外开,快开式
1	1850X750 IMIT.CB/T 3234-2011	A0-FP STEEL WATERTIGHT HINGED DOOR A0级铰链式钢质水密防火门	3	1950X850 R150	230	180	271.2	813.6	LO,QUICK ACTING TYPE 左外开,快开式

OWNER 船东	QMS BANI YAS INC.	HULL NO. 工程号	HXLB3007
BUILDER 船厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD 青岛海西重机有限责任公司	CLASS 船级社	ABS
TITLE 船名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图名	STEEL DOOR ARRANGEMENT 钢质门布置图	DWG. NO. 图号	JH316G-262-01
		SCALE 比例	1:200
		WEIGHT 重量	~7.2t
		PAGE 页数	1/5
		DATE 日期	

BESTWAY WMMP 上海佳豪船海工程研究设计有限公司
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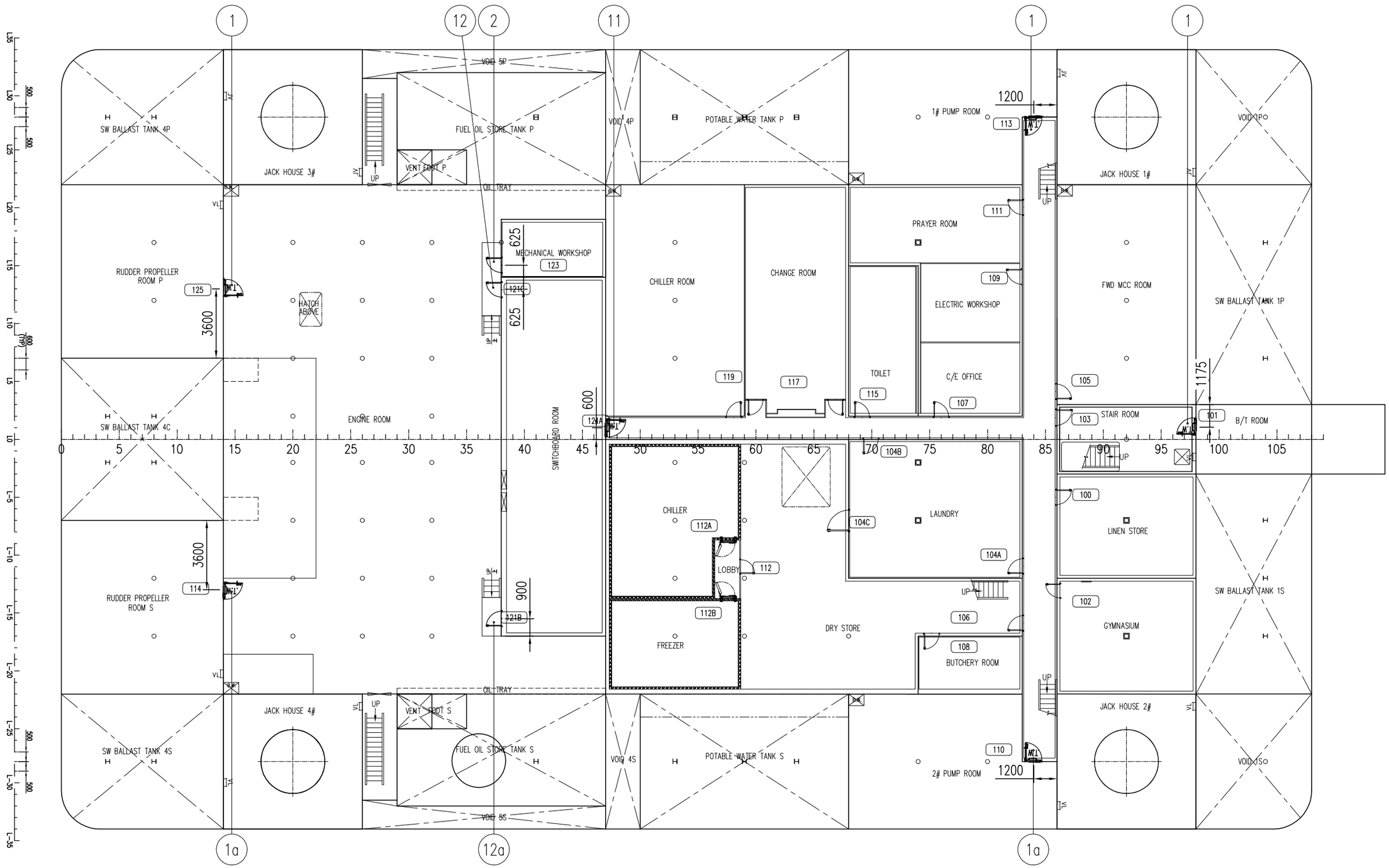
Tel : 86-21-6085 9800 Fax : 86-21-6085 9842

SIGN
会 签

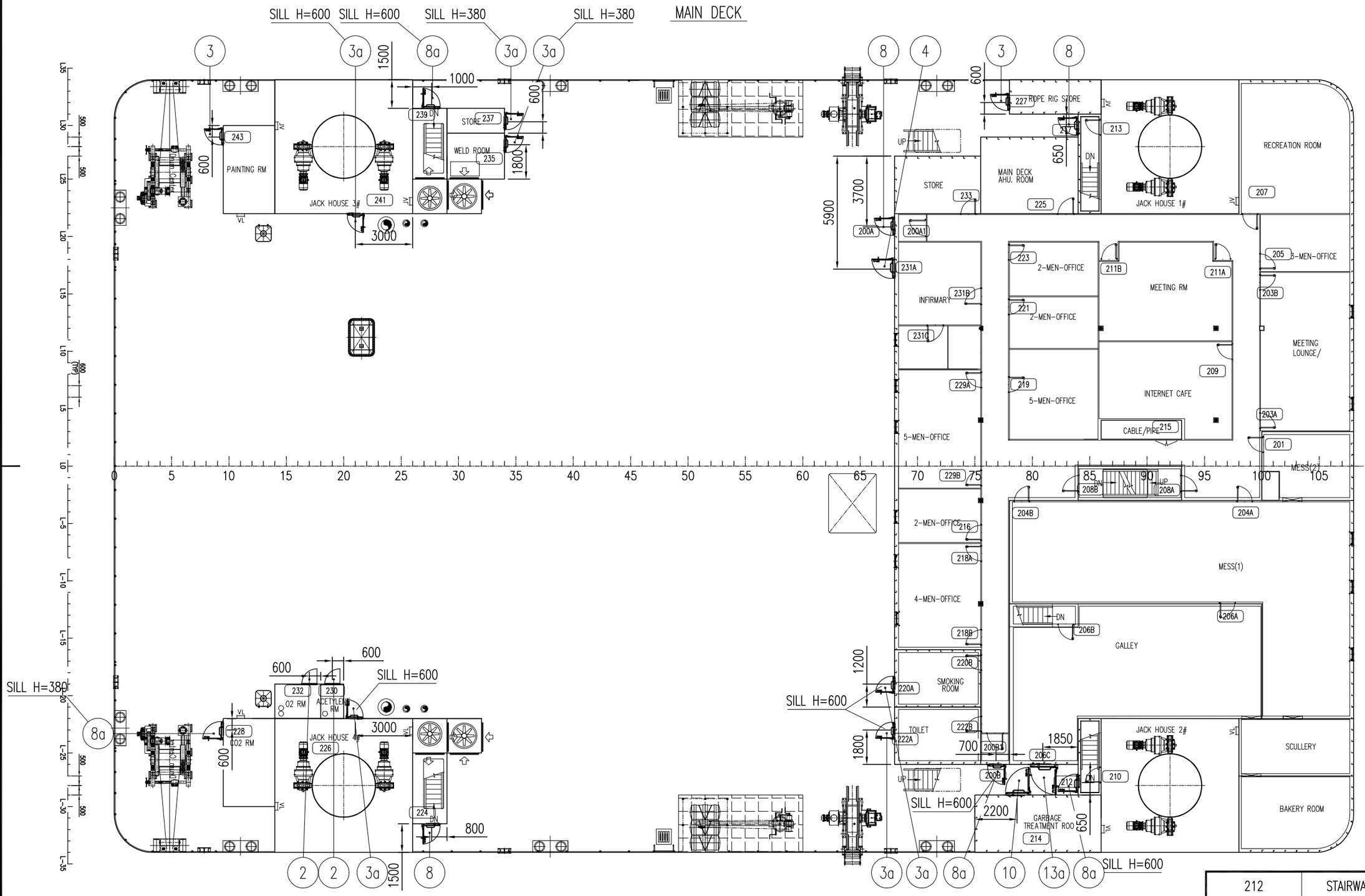
A3:0.125m²

TANK TOP & TWEEN DECK



			121C	SWITCHBOARD ROOM	12	113	1# PUMP ROOM	1
			121B	SWITCHBOARD ROOM	12a	110	2# PUMP ROOM	1a
125	RUDDER PROPELLER ROOM P	1	121A	SWITCHBOARD ROOM	11	101	B/T ROOM	1
123	MECHANICAL WORKSHOP	2	114	RUDDER PROPELLER ROOM S	1a	DOOR No.	ROOM NAME	ITEM No.

A3:0.125m²

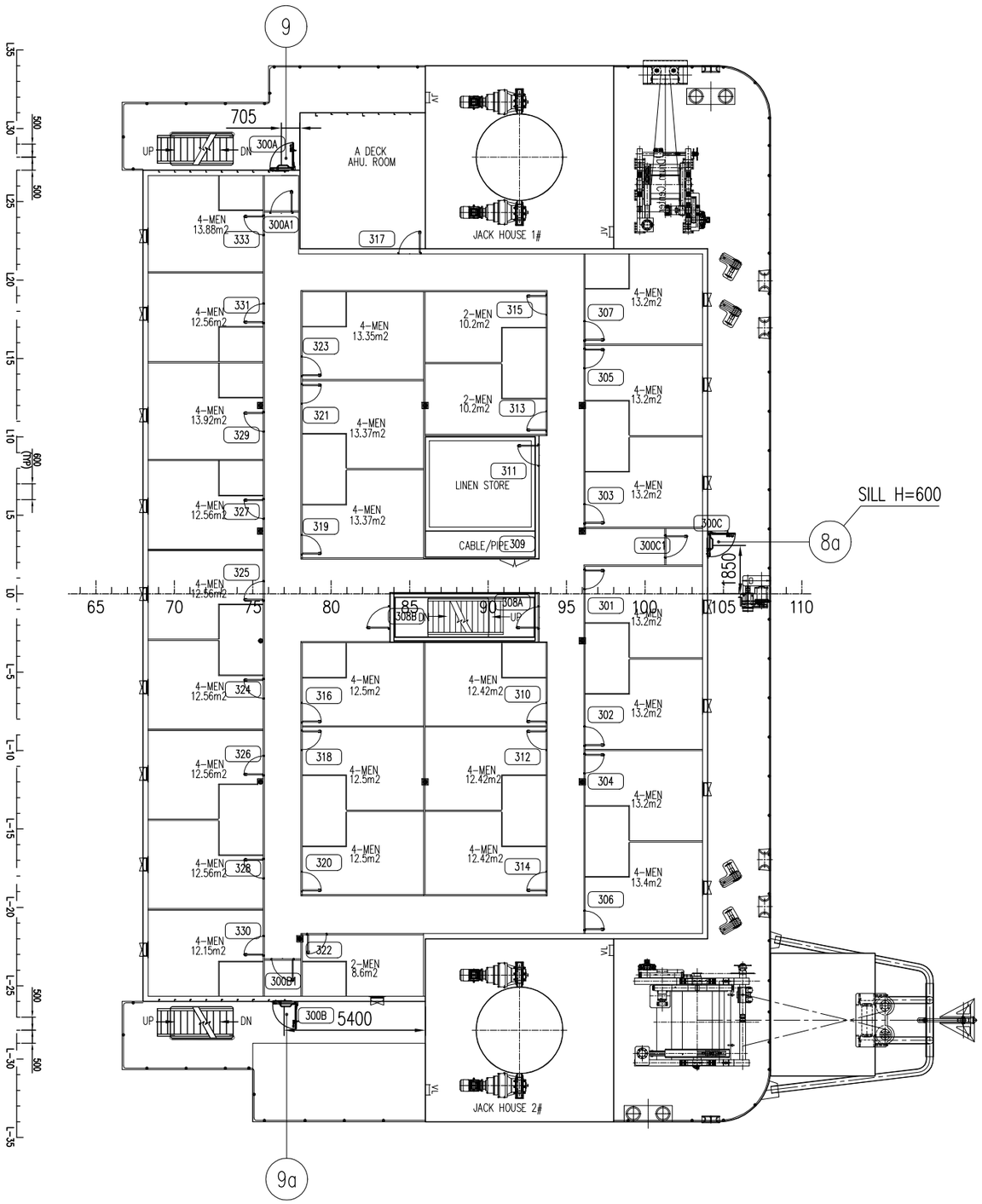


243	PAINTING RM	3	235	WELD ROOM	3a	228	CO_2 RM	8a	222A	TOILET	3a	212	STAIRWAY	8a
241	JACK HOUSE 3#	3a	232	O_2 RM	2	227	ROPE RIG STORE	3	220A	SMOKING ROOM	3a	206C	GALLEY	13a
239	STAIRWAY	8a	231A	INFIRMARY	4	226	JACK HOUSE 4#	3a	217	STAIRWAY	8	200B	CORRIDOR	8a
237	STORE	3a	230	ACETYLENE RM	2	224	STAIRWAY	8	214	GARBAGE TREATMENT ROOM	10	200A	CORRIDOR	8
												DOOR No.	ROOM NAME	ITEM No.

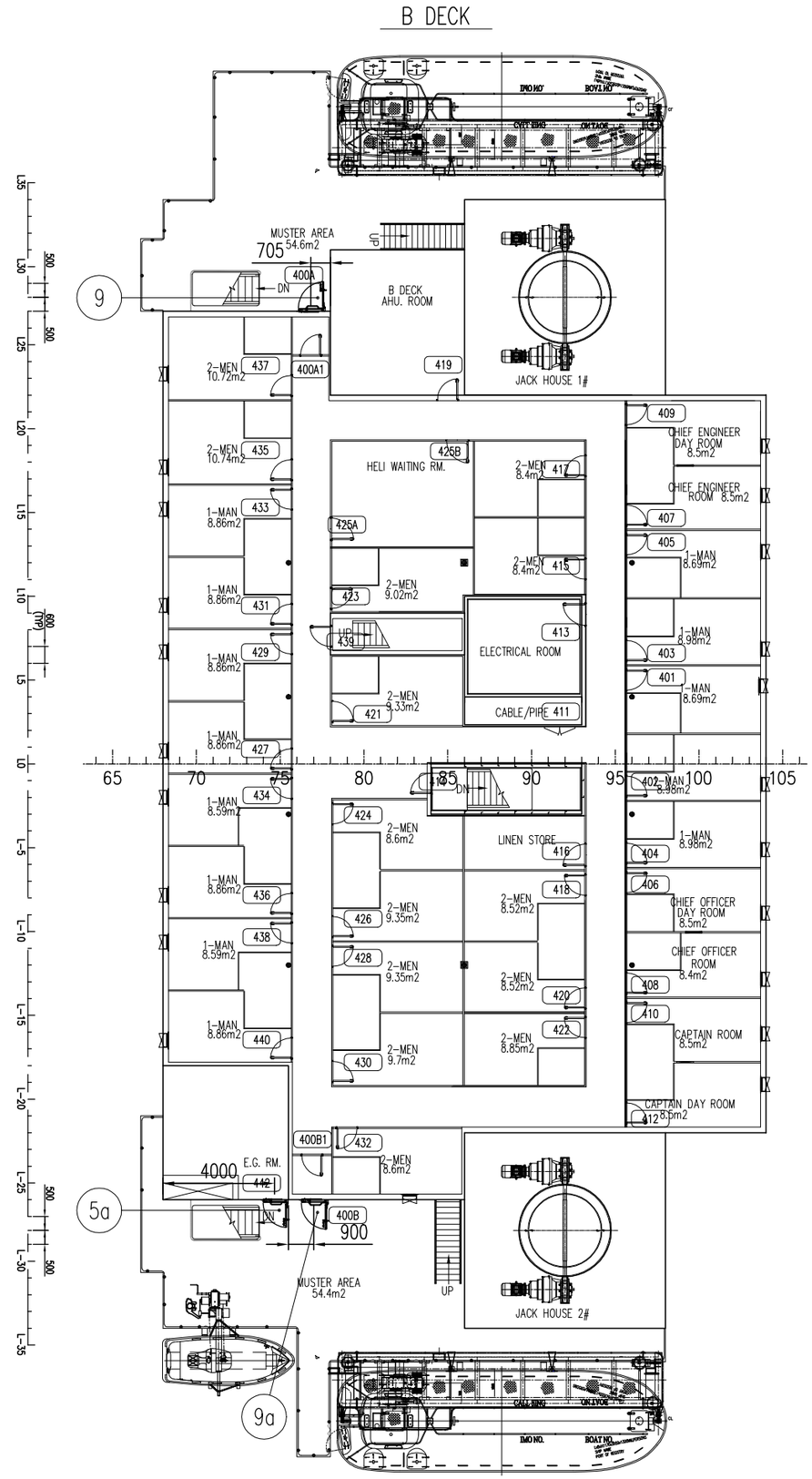
A3:0.125m²

STEEL DOOR ARRANGEMENT 钢质门布置图	JH316G-262-01 RevZ	PAGE 页数	4/5

A DECK

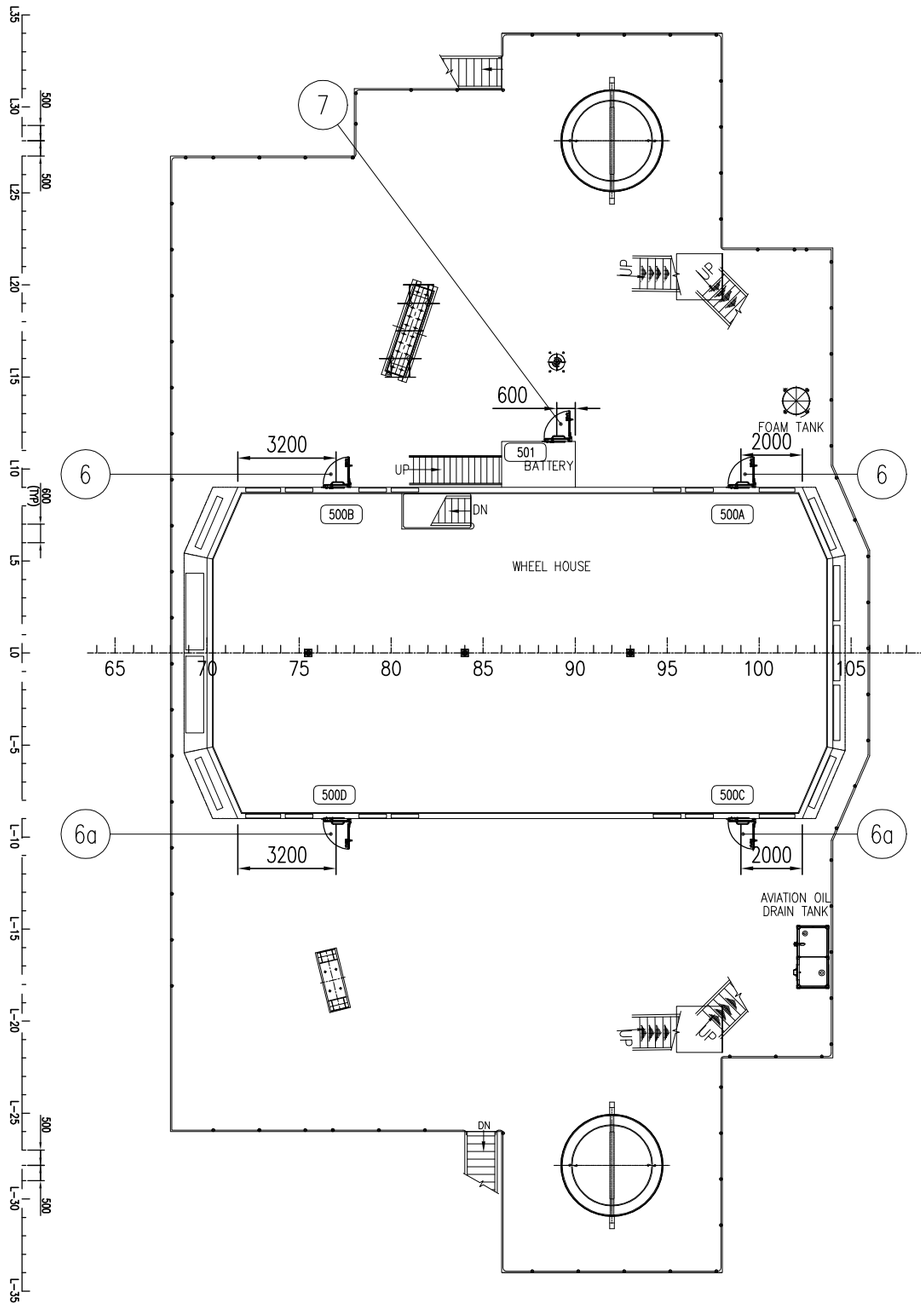


B DECK



A3:0.125m²

C DECK



			500B	WHEEL HOUSE	6
			500A	WHEEL HOUSE	6
			442	E.G.RM.	5a
			400B	CORRIDOR	9a
			400A	CORRIDOR	9
			300C	CORRIDOR	8a
501	BATTERY	7	300B	CORRIDOR	9a
500D	WHEEL HOUSE	6a	300A	CORRIDOR	9
500C	WHEEL HOUSE	6a	DOOR No.	ROOM NAME	ITEM No.

7.6.7 Structure access manual

Please refer to the attached files.

REV 版本号	DATE 日 期	DESCRIPTION 描 述	DESIGNED 设 绘	CHECKED 校 对	VERIFIED 审 核	APPROVED 审 定
Z	2018.04.27	AS BUILT DRAWING				

SIGN
会 签

OWNER 船 东	QMS BANI YAS INC.	HULL NO. 工程号	HXLB3007
BUILDER 船 厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD. 青岛海西重机有限责任公司	CLASS 船级社	ABS
TITLE 船 名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图 名	STRUCTURE ACCESS MANUAL 结构通道手册	DWG. NO. 图 号	JH316G-266-02

SCALE 比 例	WEIGHT 重 量	PAGE 页 码	DATE 日 期
		1/36	

BESTWAY WMMP
上 海 佳 豪 船 海 工 程 研 究 设 计 有 限 公 司
SHANGHAI BESTWAY MARINE ENGINEERING DESIGN CO., LTD
No.10 Building, No.518 Xinzhuan Road Shanghai, CHINA P.C : 201612 Web : www.bestwaysh.com
Tel : 86-21-6085 9800 Fax : 86-21-6085 9842

A4: 0.0625 m^2

Foreword

This access manual provides for safe conduct of overall and close-up inspections and thickness measurements on a regular basis throughout unit's operational life, and gives necessary information and instructions for that purpose, under the provisions of IMO Resolution A.1023 (26) "Code for the Construction and Equipment of Mobile Offshore Drilling Units" (2009) Chapter 2.2.3 Access Manual, and IACS Unified Interpretations for the application of MODU Code Chapter 2 Paragraphs 2.1, 2.2, 2.3, 2.4 and revised technical provisions for means of access for inspections (Resolution MSC.158 (78)) (MODU 1).

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Preamble

It has long been recognized that the only way of ensuring that the condition of a unit's structure maintained to conform to the applicable requirements is for all its components to be surveyed on regular basis throughout their operational life. This will ensure that they are free from damage such as cracks, buckling or deformation due to corrosion, overloading, or contact damage and that thickness diminution is within established limits. The provision of suitable means of access to the hull structure for the purpose of carrying out overall and close-up surveys and inspections is essential and such means should be considered and provided for at the unit design stage.

Units should be designed and built with due consideration as to how they will be surveyed by flag State inspectors and classification society surveyors during their in-service life and how the crew will be able to monitor the condition of the unit. Without adequate access, the structural condition of the unit can deteriorate undetected and major structural failure can arise. A comprehensive approach to design and maintenance is required to cover the whole projected life of the unit.

1 General information

1.1 Main particular

LOA	87.00	m
LENGTH	64.80	m
BREADTH	40.40	m
DEPTH	6.00	m
SUMMER DRAFT	3.35	m

1.2 Tank arrangement

Please refer to appendix 1.

2 Scope of access manual

2.1 General

2.1.1 Permanent means of access provided for the unit do not give access to all areas required to be surveyed and measured. It is necessary that all areas outside of reach (i.e., normally beyond hand's reach) of the permanent means of access can be accessed by alternative means in combination with the permanent means of access.

2.1.2 Such means of access are described as shown in section 4. However other access arrangements including innovative means may be allowed used in lieu of the arrangement described in the manual, based on case by case acceptance with the Classification Society prior to the survey.

2.1.3 Where movable means of access are supplied by a shore-based provider, it should be noted that the confirmation of suitability for the purpose and its safe and adequate use should be made by the Owner based on recorded maintenance and inspection regime by the provider of the equipment. It should be also noted that the surveyor has the right to reject moveable means of access if not satisfied with the documentation or condition of the equipment.

2.2 Critical structure areas

2.2.1 Critical structural areas are locations which have been identified from calculations to require monitoring or from the service history of similar or sister units to be sensitive to cracking, buckling or corrosion which would impair the structural integrity of the unit, and, for this unit, details will be shown on a separated file.

2.2.2 Where monitoring other locations are deemed as necessary from the service history of this unit, or similar or sister units, such locations should be added to a list.

2.3 Relevant rules and regulations

Reference is to be made to the following publications:

a) The relevant ABS Rules and Guides;
b) IMO Resolution A.1023 (26) “Code for the Construction and Equipment of Mobile Offshore Drilling Units” (2009);
c) IACS UI MODU 1;
d) IACS Recommendation No.78 “Safe Use of Portable Ladders for Close-up Surveys”.

2.4 Approval/re-approval

2.4.1 Any changes of the permanent, portable, movable or alternative means of access within the scope of this manual are subject to review and approval / re-approval by the Administration or by the organization recognized by the Administration. An updated copy of the approved manual is to be kept on board. For the approval / re-approval, it should be demonstrated that such means of access provides the required access.

2.4.2 Notwithstanding the provisions of 2.4.1, replacing portable means of access with similar portable means which would give an equivalent safety and accessibility might not require the approval / re-approval, subject to being recorded in the access manual and review by the Administration or by the organization recognized by the Administration at a periodical survey after such change.

3 Definitions

3.1 Definitions

3.1.1 Portable means of access are means that generally may be hand carried by the crew e.g. ladders, small platforms and staging. Portable means specified as part of the unit Structure Access Manual should be carried onboard the unit throughout the duration of the validity of the relevant access manual.

3.1.2 Movable means of access may include devices like a cherry picker, wire lift platforms, rafts or other means. Unless otherwise specified in the Technical Provisions (TP) or UI SC191, such means need not necessarily be kept on board or capable of being operated by the unit’s crew. However arrangements for the provision of such means should be addressed during survey planning. Movable means of access should be included in the Structure Access Manual to designate the extent of access to the structural members to be surveyed and measured.

3.1.3 Alternative means of access is a term within SOLAS II-1/3-6 and TP for portable or movable means of access provided for the survey and thickness measurements of hull structure in areas otherwise not accessible by permanent means of access. For the purpose of this manual, alternative means of access include supplementary or additional means to provide necessary access for surveys and thickness measurements in accordance with SOLAS II-1/3-6.

3.1.4 Approved means that the construction and materials of the means of access and any attachment to the structure should be to the satisfaction of the Administration.

Compliance with the procedures in IACS Recommendation No.91 should be used in the absence of any specific instructions from a specific administration

3.1.5 Acceptance: it should be demonstrated to the satisfaction of the Owner that the equipment provided has been maintained and is, where applicable, provided with operators who are trained to use such equipment. This should be demonstrated to the surveyors by the production of documents, prior to the equipment being used, which demonstrate that the equipment has been maintained and which indicate any limitations of the equipment.

3.1.6 Authorized person is a specified Company person using the means of access that should assume the role of inspector and check for obvious damage prior to using the access arrangements. Whilst using the means of access the inspector should verify the condition of the sections used by close up examination of those sections and note any deterioration in the provisions. Should any damage or deterioration be found, the effect of such deterioration should be assessed as to whether the damage or deterioration affects the safety for continued use of the means of access. Deterioration found that is considered to affect safe use should be determined and measures should be put in place to ensure that the affected section(s) should not be further used prior effective repair.

3.1.7 Rung means the step of a vertical ladder or step on the vertical surface.

3.1.8 Tread means the step of an inclined ladder or step for the vertical access opening.

3.1.9 Spaces are separate compartments including holds and tanks.

3.1.10 Ballast tank is a tank which is used for water ballast and includes side ballast tanks, ballast double bottom spaces, topside tanks, hopper side tanks and peak tanks.

3.1.11 An overall survey is a survey intended to report on the overall condition of the hull structure and determine the extent of close-up surveys.

3.1.12 A close-up survey is a survey where the details of structural components are within the close visual inspection range of the surveyor, i.e., normally within reach of hand.

3.1.13 Transverse section includes all longitudinal members such as plating, longitudinal and girders at the deck, side and bottom, inner bottom and hopper side plating, longitudinal bulkheads, and bottom plating in top wing tanks.

3.1.14 Representative spaces are those which are expected to reflect the condition of other spaces of similar type and service and with similar corrosion prevention systems. When selecting representative spaces account should be taken of the service and repair history on board and identifiable critical and/or suspect areas.

3.1.15 Suspect areas are locations showing substantial corrosion and/or are considered by the surveyor to be prone to rapid wastage.

3.1.16 Substantial corrosion is an extent of corrosion such that assessment of corrosion pattern indicates wastage in excess of 75% of allowable margins, but within acceptable limits.

3.1.17 A corrosion prevention system is normally considered a full hard coating. Hard protective coating should be epoxy coating or equivalent. Other coating systems may be considered acceptable as alternatives provided that they are applied and maintained in compliance with the manufacturer's specifications.

3.1.18 Coating condition is defined as follows:

GOOD condition with only minor spot rusting;

FAIR condition with local breakdown of coating at edges of stiffeners and weld connections and/or light rusting over 20% or more of areas under consideration, but less than as defined for POOR condition;

POOR condition with general breakdown of coating over 20% or more of areas or hard scale at 10% or more of areas under consideration;

3.1.19 Critical structural areas are locations, which have been identified from calculations to require monitoring of from the service history of the subject unit or from similar or sister units to be sensitive to cracking, buckling or corrosion, which would impair the structural integrity of the unit.

4 Access plans

4.1 Access plans

4.1.1 Plans showing the means of access to the space (including openings for introducing portable means), with appropriate technical specifications and dimensions are as shown in appendix 2&3.

4.1.2 Plans showing the means of access within each space to enable an overall inspection to be carried out, with appropriate technical specifications and dimensions are as shown in appendix 2&3.

4.1.3 Plans showing the means of access within the space to enable close-up inspections to be carried out and necessary alternative means to be deployed. For alternative means to be carried out on board, appropriate technical specifications and dimensions are as shown in appendix 2&3.

5 Instructions

5.1 Instructions for use of means of access

5.1.1 All persons using the means of access arrangements should study the instructions for safety in the access manual so as to gain adequate knowledge of the arrangements for the space(s) to be inspected prior to the use.

5.1.2 Any recorded deficiencies to the means of access for the space(s) to be inspected should be considered and that any section with significant damage is not to be used.

5.1.3 It is recognized that climbing may be used by surveyors during surveys but is not accepted as an alternative means of access. When climbing the structures within tanks is necessary during surveys, the surface of the structures should be free of oil, sludge, and mud and relatively dry to the satisfaction of the surveyor so that a good firm, non-slip footing maybe obtained.

5.2 Instructions for inspection and maintenance of means of access

5.2.1 Verification of means of access including portable equipment and their attachment is part of periodical surveys for continued effectiveness of the means of access in that

space which is subject to the survey. Prior to the survey, an inspection of means of access should be carried out by the crew and/or an authorized person.

5.2.2 Periodical inspections of means of access should be carried out by the crew and/or an authorized person as a part of regular inspection and maintenance, at intervals which are determined taking into account any corrosive atmosphere that may be within the space.

5.2.3 Any authorized person using the means of access should assume the role of inspector and check for obvious damage prior to using the access arrangements. Whilst using the means of access the inspector should verify the condition of the sections used by close up examination of those sections and note any deterioration in the provisions. Should any damage or deterioration be found, the effect of such deterioration should be assessed as to whether the damage or deterioration affects the safety for continued use of the access. Deterioration found that is considered to affect safe use should be determined as “substantial damage” and measures should be put in place to ensure that the affected section(s) are not to be further used prior effective repair.

5.2.4 Periodical surveys of any space that contains means of access should include verification of the continued effectiveness of the means of access in that space. Usually, survey of the means of access is not expected to exceed the scope and extent of the survey being undertaken. If the means of access is found deficient the scope of survey should be extended if this is considered appropriate.

5.2.5 Records of all inspections should be established based on the requirements detailed in the Safety Management System. The records should be readily available to persons using the means of access and a copy attached to the access manual. The latest record for the portion of the means of access inspected should include as a minimum the date of the inspection, the name and title of the inspector, a confirmation signature, the sections of means of access inspected, verification of continued serviceable condition or details of any deterioration or substantial damage found. A file of permits issued should be maintained for verification.

5.2.6 Where movable means of access are supplied by a shore-based provider, the confirmation of its safe and adequate use should be made based on recorded maintenance and inspection regime by the provider of the equipment. Cognizance should be taken of the complexity of the equipment when making the judgments on the periodicity of inspections and thoroughness of maintenance by the provider of equipment.

5.2.7 The maintenance of all means of access should be in accordance with the Safety Management System.

5.3 Instructions for the rigging and use of portable means of access

5.3.1 Portable ladders should rest on a stable, strong, suitably sized, immobile footing so that the rungs remain horizontal. Suspended ladders should be attached in a manner so that they cannot be displaced and so that swinging is prevented. Step ladders, hanging ladders and ladders more than 5 m long may only been utilized if fitted with a mechanical device to secure the upper end of the ladder. Portable ladders should be maintained free of oil, grease and other slipping hazards.

5.3.2 The feet of portable ladders should be prevented from slipping during use by securing the stiles at or near their upper and lower ends, by any anti-slip device or by other arrangements of equivalent effectiveness. Unless otherwise specified in its

specification or provided with appropriate securing means, the ladder should be raised at an angle around 70 degrees.

5.3.3 Portable ladders should be used on top of bottom or deep stringer platform so that falling height is not exceeding 6 m. If it is necessary to exceed this height, there should be at least 3 m of water above the highest structural element in the bottom to provide a “cushion” or safety harnesses to be used. The free falling height above the water surface should not exceed 6 m.

5.3.4 Portable ladders should be supported at least four times the maximum intended load.

5.3.5 When climbing ladders in tanks containing water, the using personnel should wear flotation aids. A floatation aid is a simple form of lifejacket which does not impede climbing or a self-inflatable lifejacket.

5.3.6 Aluminum ladders may be used in void tanks, buffer tanks and ballast water tanks, but should not be stored in the void tanks, buffer tanks, ballast water tanks or gas dangerous spaces.

5.3.7 The securing of the equipment, its operation and training in use should be in accordance with the units Safety Management System.

6 Inventory of portable means of access

All portable means of access are listed as following:

ID	Type	Dimensions In Drawing (mm)	Applicable Spaces	Quantity	Storage location
1	Portable ladder (V-ladder)	600x2600	Refer to appendix 2, page 2	2	Dry store
2	Portable ladder (V-ladder)	600x5000	Refer to appendix 2, page 2	2	Dry store

7 Records of inspections and maintenance

Date of inspection		Name and title the inspector	
Sections of means of access inspected			
Conclusion of inspection: Confirmation Signature:			

8 Records of change of portable means of access

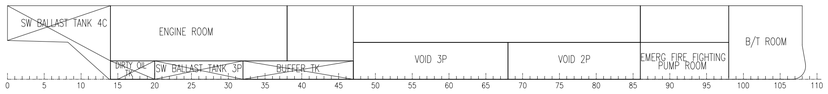
Date	Records of Change of Portable Means of

	Access

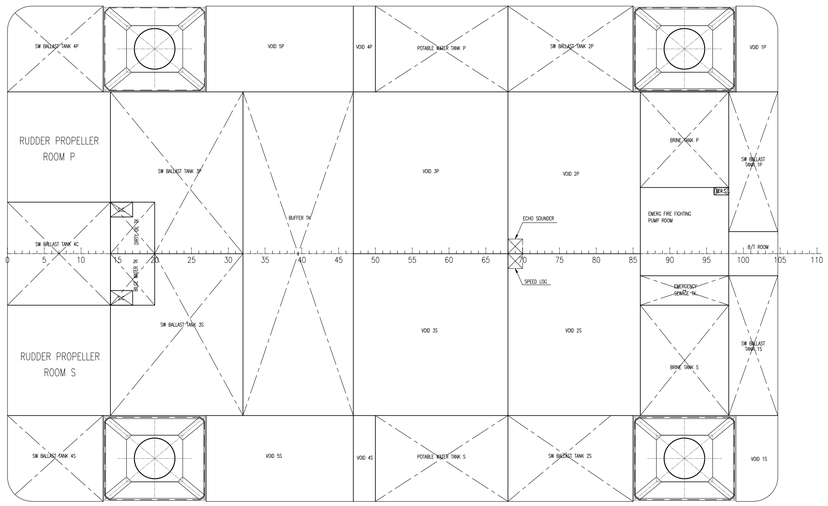
Appendix 1: Tank Capacity Plan

Please refer to the attached file.

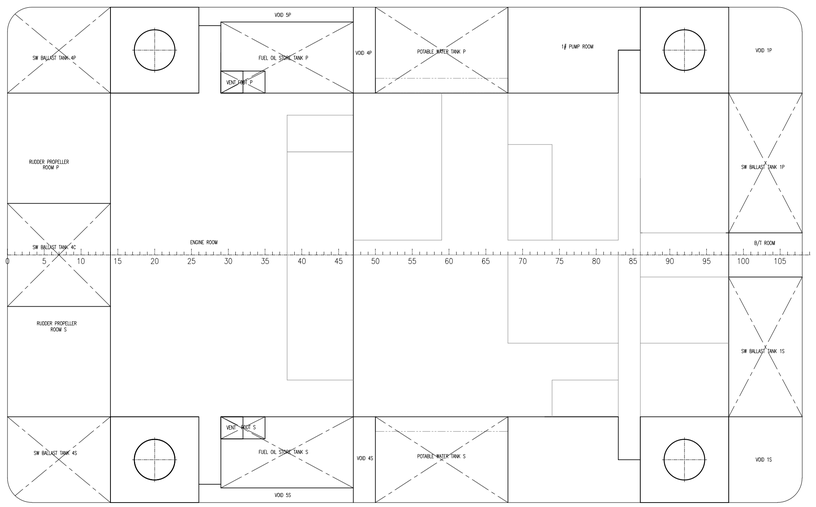
LONGITUDINAL SECTION



DOUBLE BOTTOM



TANK TOP & TWEEN DECK



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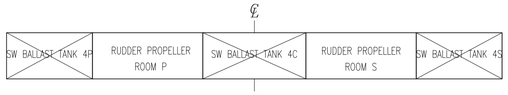

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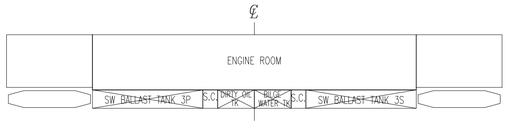

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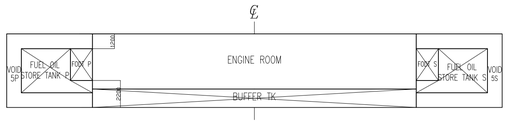

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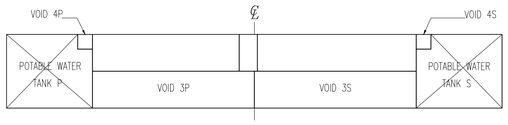

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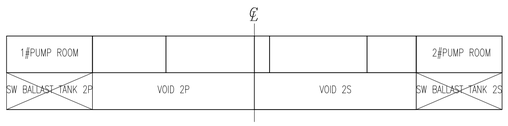

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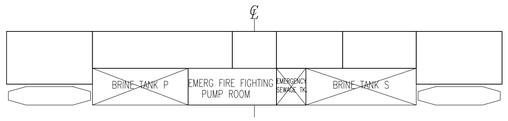

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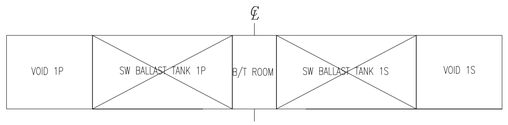


MAIN PARTICULARS

LOA	~87.00 m
LENGTH	64.80 m
BREADTH	40.40 m
DEPTH	6.00 m
SUMMER DRAFT	3.35 m

NO.	TANK NAME	LOCATION		VOLM	VNET	L.C.G	T.C.G	V.C.G	IMAX
		FR.MIN	FR.MAX	m3	m3	m	m	m	m4
BALLAST WATER: REDUCTION=0.02, DENSITY=1.025									
1	SW BALLAST TANK 1P	98	108	343.4	336.5	61.483	7.500	3.400	726.0
2	SW BALLAST TANK 1S	98	108	343.4	336.5	61.483	-7.500	3.400	726.0
3	SW BALLAST TANK 2P	68	86	219.7	215.3	46.034	16.700	1.521	302.5
4	SW BALLAST TANK 2S	68	86	219.7	215.3	46.034	-16.700	1.521	302.5
5	SW BALLAST TANK 3P	14	32	191.2	187.3	14.227	7.134	0.750	1671.1
6	SW BALLAST TANK 3S	14	32	191.2	187.3	14.227	-7.134	0.750	1671.1
7	SW BALLAST TANK 4C	0	14	252.3	247.3	4.776	0.000	4.076	406.6
8	SW BALLAST TANK 4P	0	14	201.4	197.3	4.725	16.662	4.168	227.1
9	SW BALLAST TANK 4S	0	14	201.4	197.3	4.725	-16.662	4.168	227.1
	TOTAL-BALLAST TANK			2163.5	2120.2	32.816	0.000	2.772	
FRESH WATER: REDUCTION=0.02, DENSITY=1.000									
1	POTABLE WATER TANK P	50	68	438.0	429.3	35.400	16.803	2.915	302.5
2	POTABLE WATER TANK S	50	68	438.0	429.3	35.400	-16.803	2.915	302.5
	TOTAL-POTABLE WATER TK			876.1	858.6	35.400	0.000	2.915	
FUEL OIL: REDUCTION=0.02, DENSITY=0.850									
1	FUEL OIL STORE TANK P	29	47	208.7	204.5	23.091	16.261	2.960	172.1
2	FUEL OIL STORE TANK S	29	47	208.7	204.5	23.091	-16.261	2.960	172.1
3	FODT P	29	35	16.8	16.5	19.200	14.100	3.500	1.7
4	FODT S	29	35	16.8	16.5	19.200	-14.100	3.500	1.7
5	EMER.GEN FO TANK	68	71	2.2	2.1	41.700	-15.200	13.250	0.1
	TOTAL-FUEL OIL TANK			453.2	444.1	22.890	-0.072	3.049	
LUBRICATING OIL: REDUCTION=0.02, DENSITY=0.900									
1	LO STORAGE TANK	16	18	2.0	2.0	10.054	12.716	3.265	0.1
MISCELLANEOUS: REDUCTION=0.02, DENSITY=1.000									
1	EMERGENCY SEWAGE TK.	86	98	51.8	50.8	55.200	-3.000	1.500	8.1
2	DIRTY OIL TK	14	20	19.4	19.1	10.350	1.850	0.750	16.0
3	BILGE WATER TK	14	20	19.4	19.1	10.350	-1.850	0.750	16.0
	TOTAL			90.7	88.9	35.979	-1.714	1.179	
BRINE: REDUCTION=0.02, DENSITY=1.300									
1	BRINE TANK P	86	98	168.5	165.1	55.200	9.300	1.500	279.0
2	BRINE TANK S	86	98	194.4	190.5	55.200	-8.700	1.500	428.7
	TOTAL-BRINE TANK			362.9	355.6	55.200	-0.343	1.500	
BUFFER: REDUCTION=0.02, DENSITY=1.025									
1	BUFFER TK	32	47	356.4	349.3	23.700	0.000	0.750	13523.8

VOLM: VOLUME MOULDED
VNET: NET VOLUME
L.C.G: LONGITYUDINAL OF CENTER OF GRAVITY
T.C.G: TRANSVERSE OF CENTER OF GRAVITY
V.C.G: VERTICAL OF CENTER OF GRAVITY
IMAX: TRANSVERSE MOMENT OF INERTIA

SIGN
会 签

APPENDIX 1

TANK CAPACITY PLAN
舱容图

A1:0.5m²

Appendix 2: Structure Access Arrangement

Please refer to the attached file.

SIGN
会 签

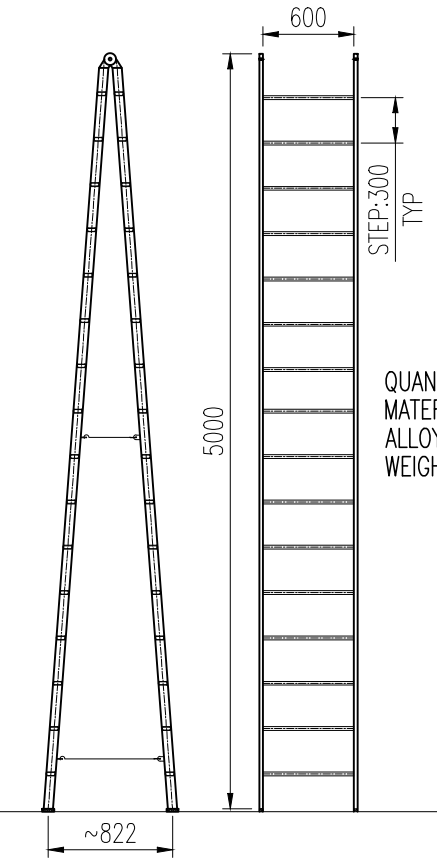
APPENDIX 2

STRUCTURE ACCESS ARRANGEMENT
结构检验通道布置图

No.	TANK NAME	LOCATION	HEIGHT OF TANK(mm)	CHECK UP WITH PORTABLE V LADDER
1	SW BALLAST TANK 1P	FR98~FR108	6000	600X5000
2	SW BALLAST TANK 1S	FR98~FR108	6000	600X5000
3	SW BALLAST TANK 2P	FR68~FR86	3000	600X2600
4	SW BALLAST TANK 2S	FR68~FR86	3000	600X2600
5	SW BALLAST TANK 3P	FR14~FR32	1500	–
6	SW BALLAST TANK 3S	FR14~FR32	1500	–
7	SW BALLAST TANK 4C	FR0~FR14	2900/6000	600X2600
8	SW BALLAST TANK 4P	FR0~FR14	2900/6000	600X2600
9	SW BALLAST TANK 4S	FR0~FR14	2900/6000	600X2600
10	POTABLE WATER TANK P	FR50~FR68	6000	600X5000
11	POTABLE WATER TANK S	FR50~FR68	6000	600X5000
12	FUEL OIL STORE TANK P	FR29~FR47	3600	600X2600
13	FUEL OIL STORE TANK S	FR29~FR47	3600	600X2600
14	FODT P	FR29~FR35	2600	–
15	FODT S	FR29~FR35	2600	–
16	EMERGENCY SEWAGE TK.	FR86~FR98	3000	600X2600
17	DIRTY OIL TK.	FR14~FR20	1500	–
18	BILGE WATER TK.	FR14~FR20	1500	–
19	BRINE TANK P	FR86~FR98	3000	600X2600
20	BRINE TANK S	FR86~FR98	3000	600X2600
21	BUFFER TK.	FR32~FR47	1500	–

No.	TANK NAME	LOCATION	HEIGHT OF TANK(mm)	CHECK UP WITH PORTABLE V LADDER
1	RUDDER PROPELLER ROOM P	FR0~FR14	2900/6000	600X2600
2	RUDDER PROPELLER ROOM S	FR0~FR14	2900/6000	600X2600
3	ENGINE ROOM	FR14~FR47	4500	600X2600
4	VOID 5P	FR26~FR47	6000	600X5000
5	VOID 5S	FR26~FR47	6000	600X5000
6	VOID 4P	FR47~FR50	6000	600X5000
7	VOID 4S	FR47~FR50	6000	600X5000
8	VOID 3P	FR47~FR68	3000	600X2600
9	VOID 3S	FR47~FR68	3000	600X2600
10	VOID 2P	FR68~FR86	3000	600X2600
11	VOID 2S	FR68~FR86	3000	600X2600
12	VOID 1P	FR98~FR108	6000	600X5000
13	VOID 1S	FR98~FR108	6000	600X5000
14	1# PUMP ROOM	FR68~FR86	3000	600X2600
15	2# PUMP ROOM	FR68~FR86	3000	600X2600
16	B/T ROOM	FR98~FR108	6000	600X5000
17	EMER FIRE FIGHTING PUMP ROOM	FR86~FR98	3000	600X2600

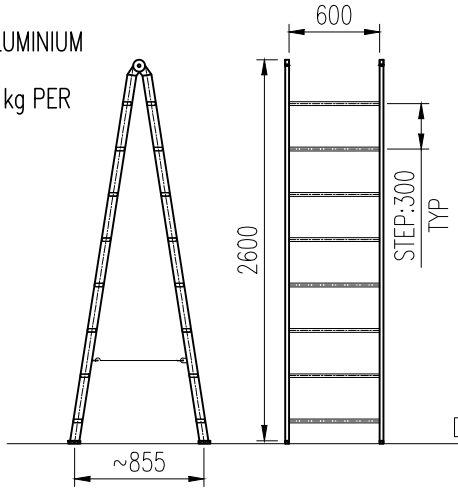
PORTABLE V-LADDER 600X5000
1:50



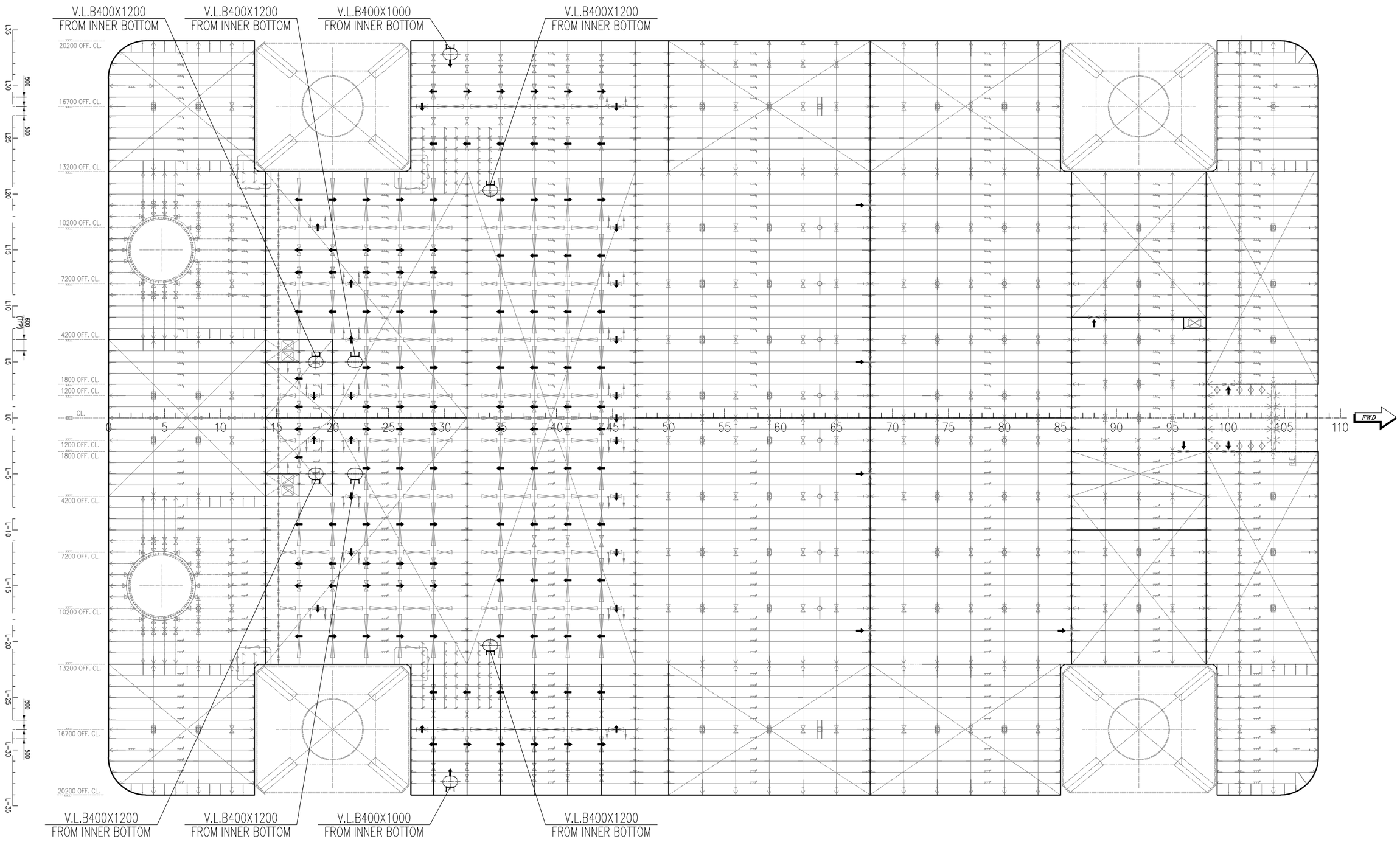
QUANTITY:2
MATERIAL: ALUMINIUM ALLOY
WEIGHT:~40 kg PER

PORTABLE V-LADDER 600X2600
1:50

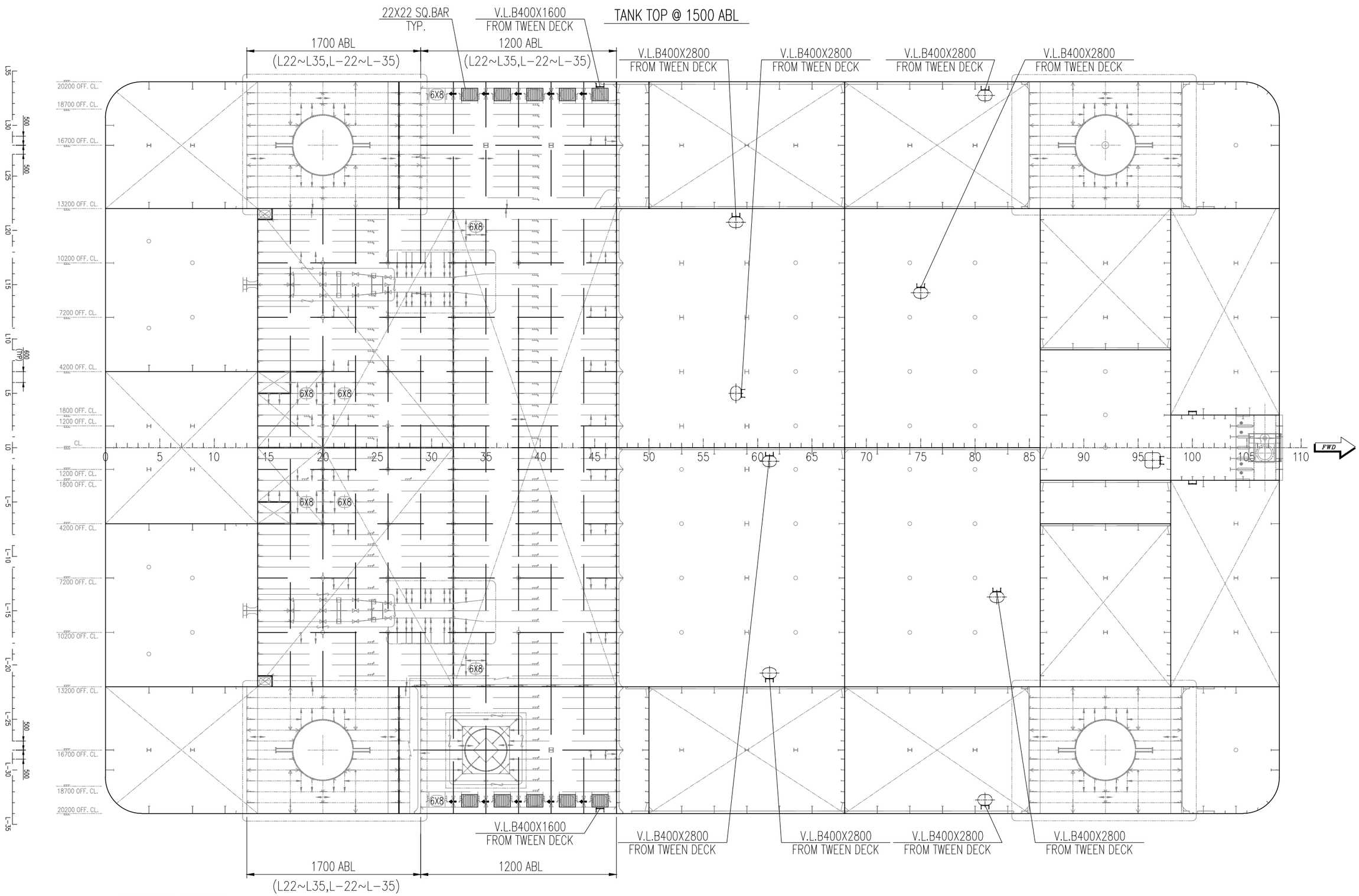
QUANTITY:2
MATERIAL: ALUMINIUM ALLOY
WEIGHT:~20 kg PER



BOTTOM



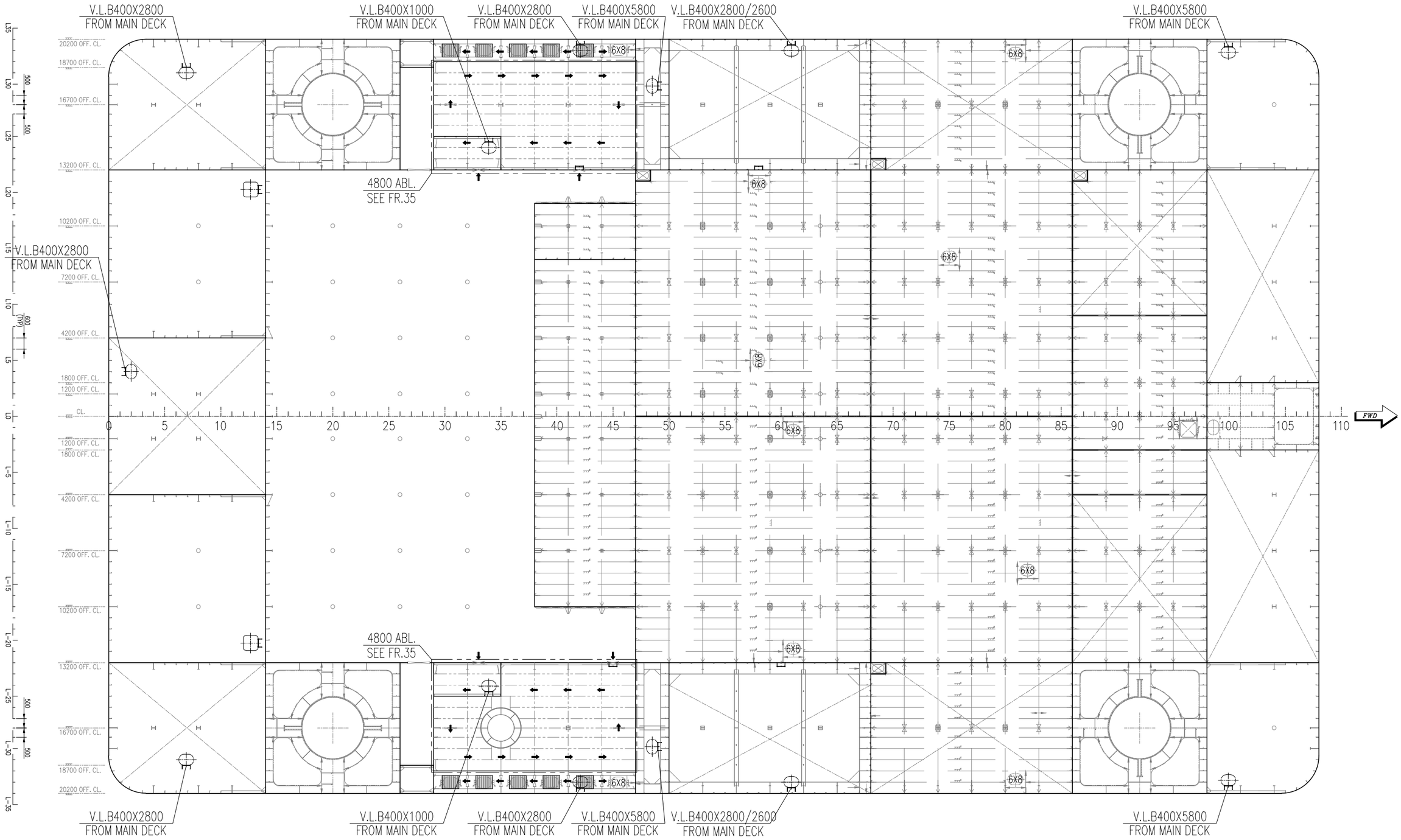
→ INSPECTION DIRECTION
V.L. VERTICAL LADDER.



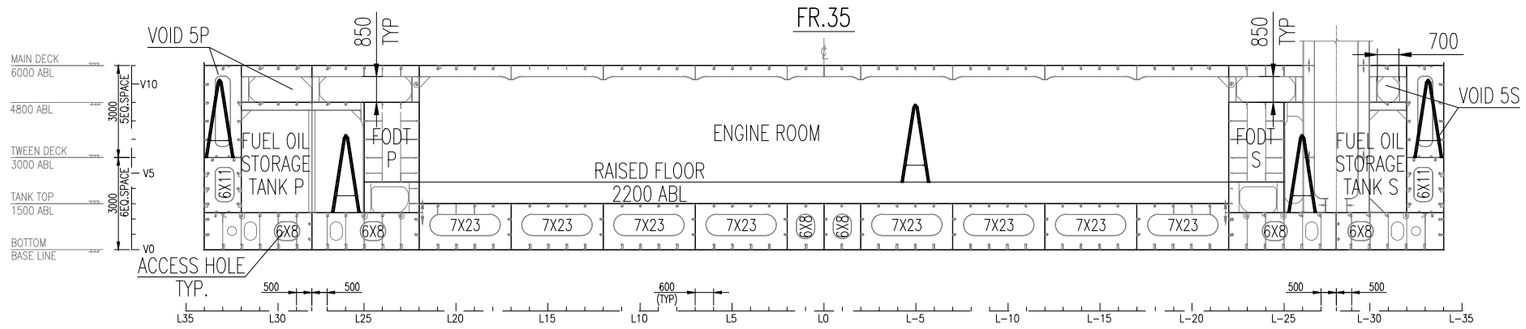
➡ INSPECTION DIRECTION
V.L. VERTICAL LADDER.

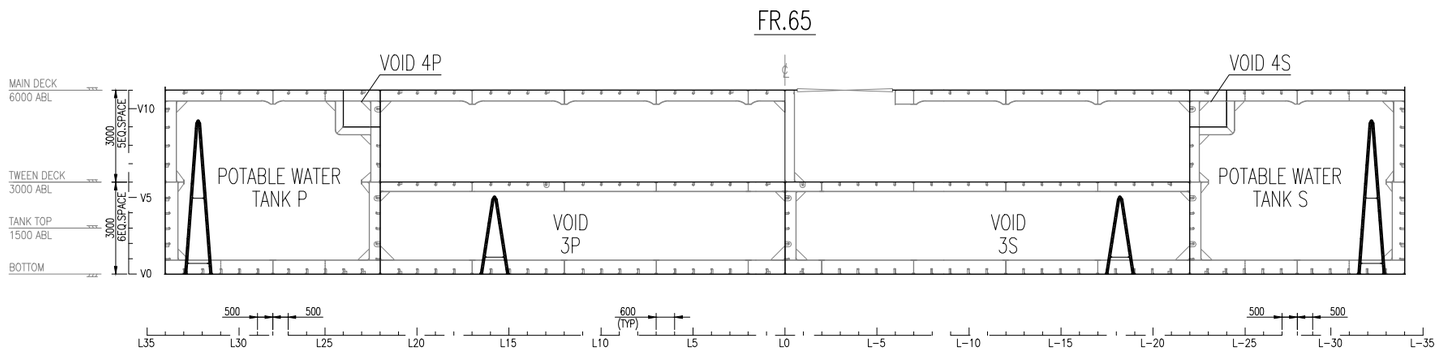
A3:0.125m²

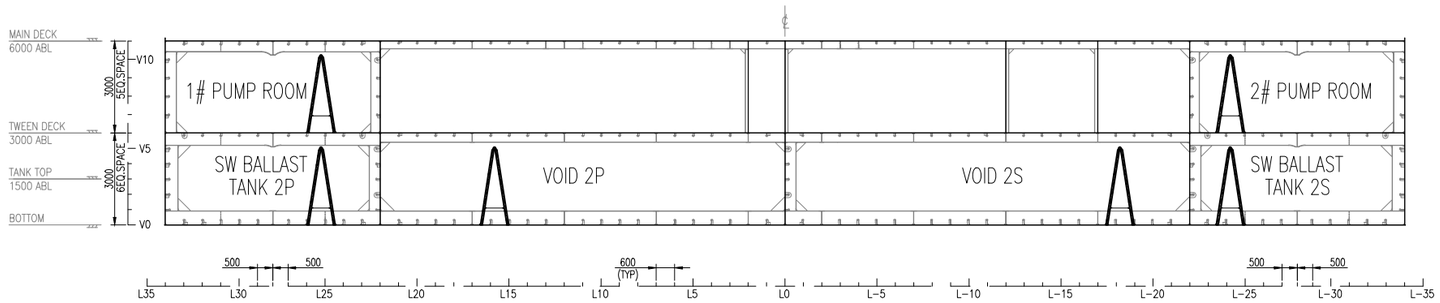
TWEEN DECK @ 3000 ABL

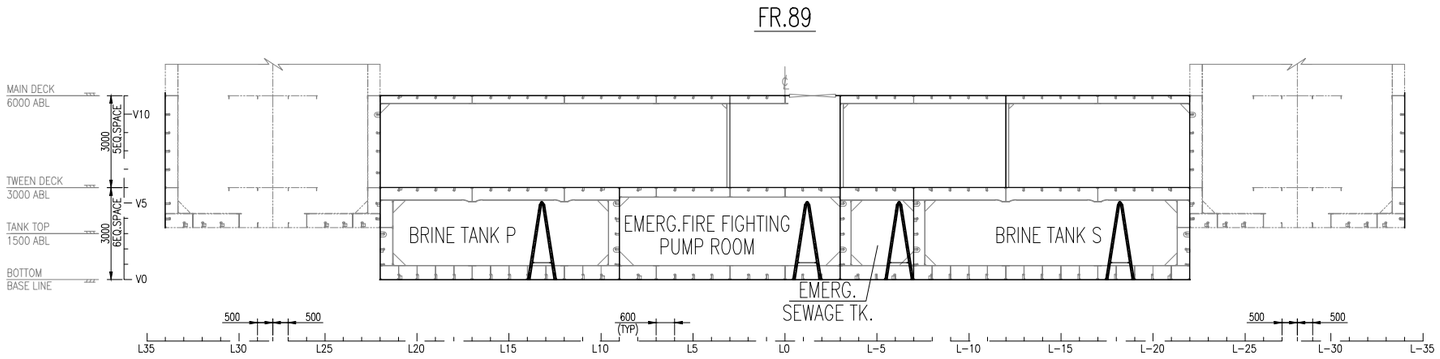


➡ INSPECTION DIRECTION
V.L. VERTICAL LADDER.



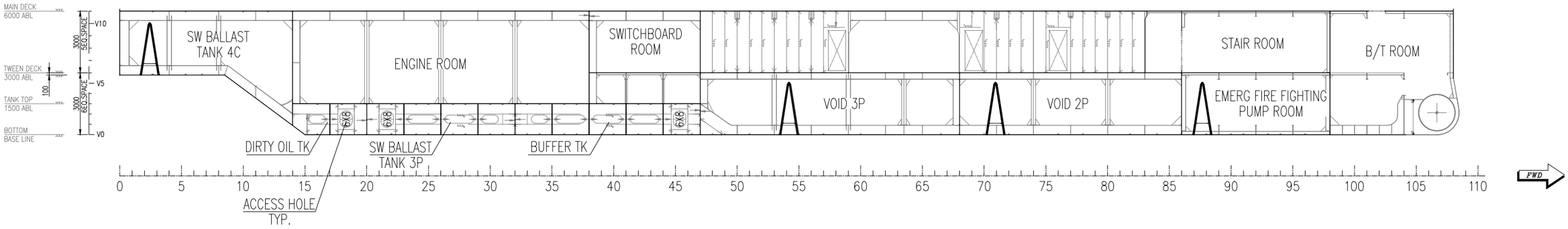






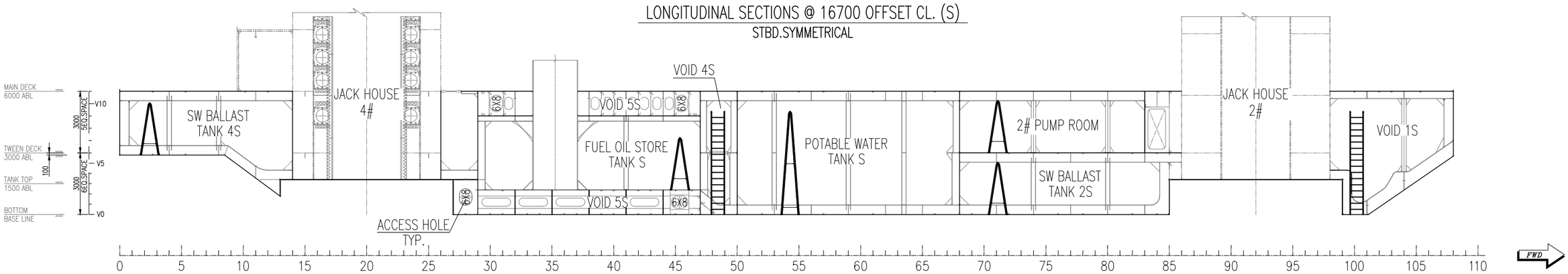
LONGITUDINAL SECTIONS @ 1200 OFFSET CL. (P)

4200,7200,10200 OFFSET CL.SIM.
STBD.SYMMETRICAL

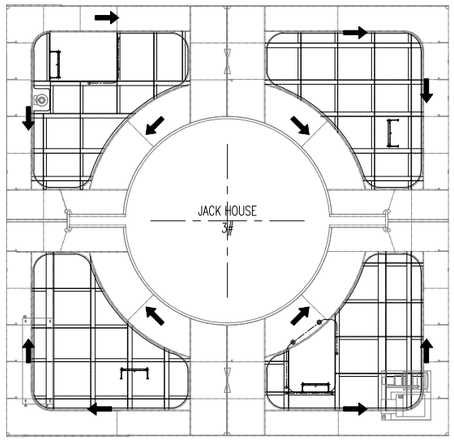


LONGITUDINAL SECTIONS @ 16700 OFFSET CL. (S)

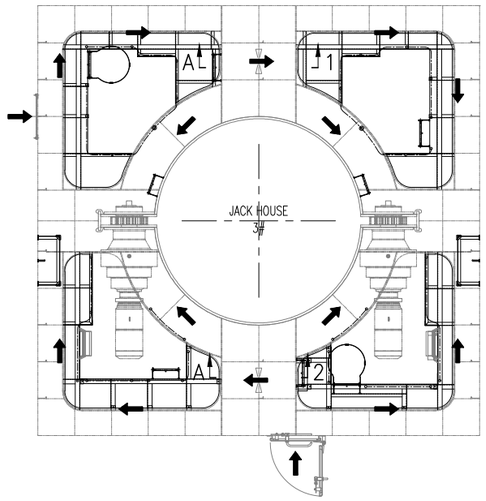
STBD.SYMMETRICAL



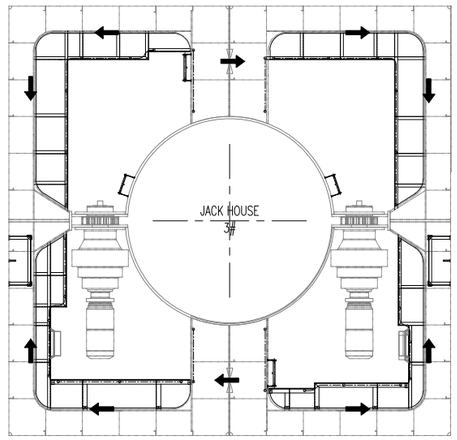
PLATFORM DETAIL FOR JACK HOUSE @ 3000 ABL
STBD.SYMMETRICAL 1:100



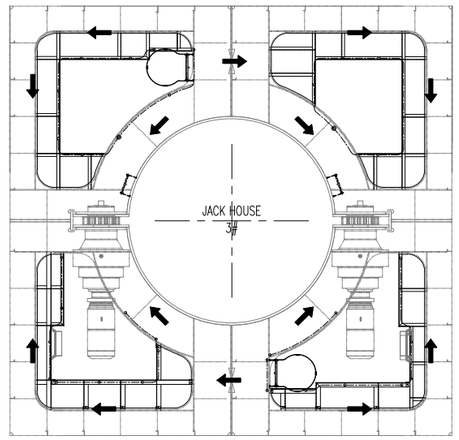
PLATFORM DETAIL FOR JACK HOUSE @ 6000 ABL
STBD.SYMMETRICAL 1:100



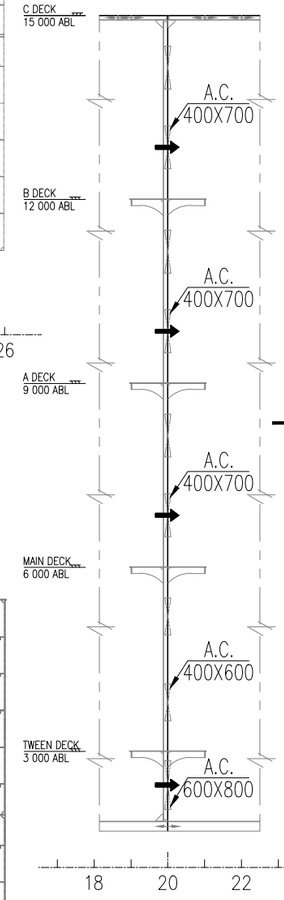
PLATFORM DETAIL FOR JACK HOUSE @ 9000 ABL
STBD.SYMMETRICAL 1:100

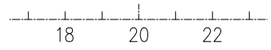


PLATFORM DETAIL FOR JACK HOUSE @ 12000 ABL
STBD.SYMMETRICAL 1:100

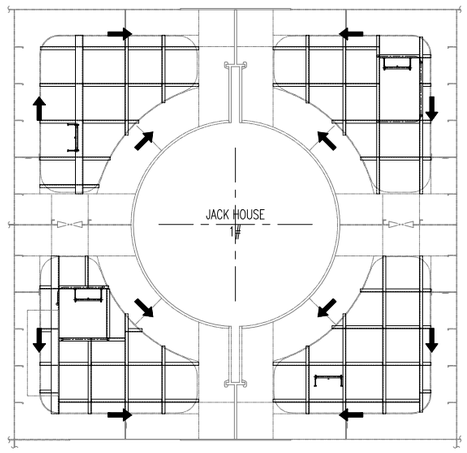


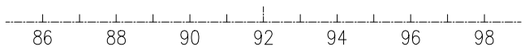
A-1
A-2,A-3 & A-4 SIM.1:100



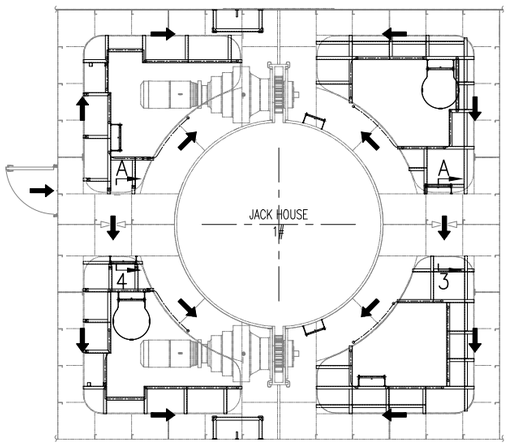


PLATFORM DETAIL FOR JACK HOUSE @ 3000 ABL
STBD.SYMMETRICAL 1:100

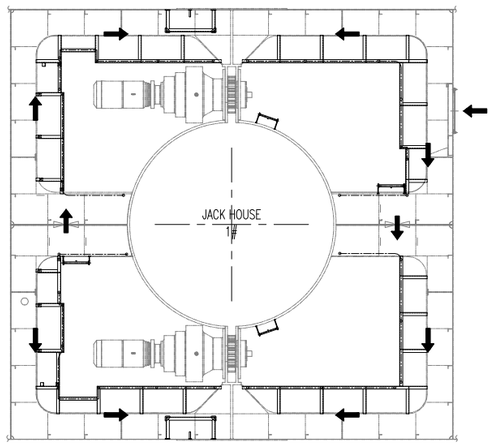




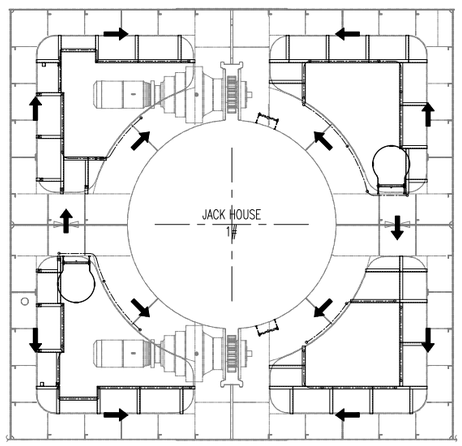
PLATFORM DETAIL FOR JACK HOUSE @ 6000 ABL
STBD.SYMMETRICAL 1:100



PLATFORM DETAIL FOR JACK HOUSE @ 9000 ABL
STBD.SYMMETRICAL 1:100



PLATFORM DETAIL FOR JACK HOUSE @ 12000 ABL
STBD.SYMMETRICAL 1:100

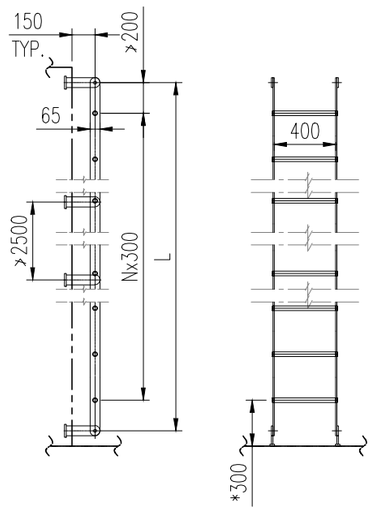


Appendix 3: Vertical Ladder Arrangement

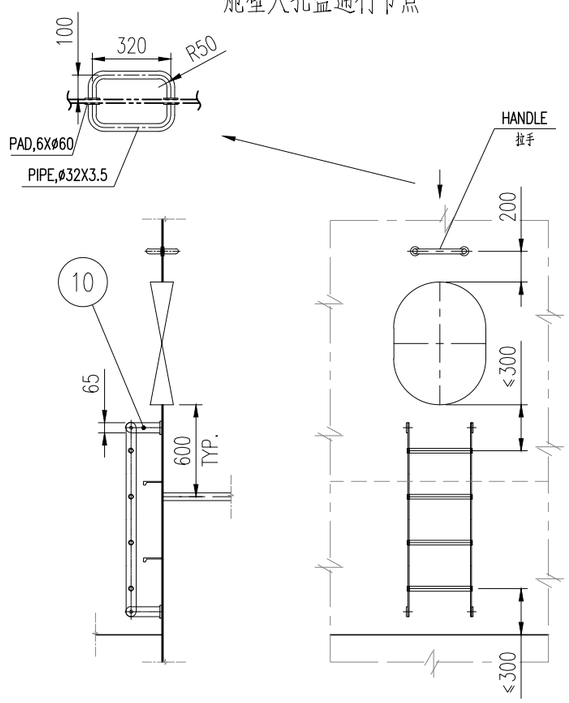
Please refer to the attached file.

VERTICAL LADDER ARRANGEMENT 全船直梯布置图	APPENDIX 3 RevZ	PAGE 页数	1/6

LADDER INSTALLATION DETAIL(1:40)
直梯安装典型节点



DETAIL FOR MANHOLE ON WALL(1:40)
舱壁人孔盖通行节点



NOTE:
1. LADDERS IN OIL TANKS SHOULD BE WELDED INSTALLED WITHOUT GALVANIZING;THOSE IN BALLAST TANKS AND VOID TANKS SHOULD BE GALVANIZED AND BOLTS CONNECTED;NO GALVANIZING FOR LADDERS IN FRESH WATER TANKS;
2. LENGTH OF LADDERS AND EYE PADS SHOULD BE DECIDED BY LOFTING;
3. LADDER LOCATIONS CAN BE MODIFIED AT SITE;
4. THOSE LADDERS WHOSE LENGTH ARE MORE THAN 2500MM SHOULD BE SECURED AT INTERVALS NOT EXCEEDING 2.5M APART OF PREVENT VIBRATION.

说明：
1. 油舱直梯，焊接连接，无需镀锌；压载水舱、空舱直梯镀锌，螺栓连接；淡水舱直梯不镀锌；
2. 直梯及眼板的长度根据放样定；
3. 直梯布置可根据现场人孔情况调整；
4. 直梯超过2500mm增加固定眼板.

No. 序号	STANDARD 标准	NAME 名称	QTY. 数量	MATERIAL 材料	SINGLE单件 WEIGHT重量(kg)	TOTAL总重	NOTE 备注
11	B CB/T 74-1999	STEEL DOG STEP 船用钢质踏步		Q235A			
10	-65X10	EYE PAD 眼板		Q235A			
9	B400X2600 CB/T 73-1999	STEEL VERTICAL LADDER 船用钢质直梯	10	ASSEMBLY 组合件	41.1	411	NON-OIL TANK
8	B400X6000 CB/T 73-1999	STEEL VERTICAL LADDER 船用钢质直梯	2	ASSEMBLY 组合件	100.6	201.2	NON-OIL TANK
7	B400X5800 CB/T 73-1999	STEEL VERTICAL LADDER 船用钢质直梯	8	ASSEMBLY 组合件	97	970	NON-OIL TANK
5	B400X3200 CB/T 73-1999	STEEL VERTICAL LADDER 船用钢质直梯	2	ASSEMBLY 组合件	50.1	100.2	NON-OIL TANK
3	B400X2800 CB/T 73-1999	STEEL VERTICAL LADDER 船用钢质直梯	42	ASSEMBLY 组合件	43.6	1744	NON-OIL TANK
2a	B400X1200 CB/T 73-1999	STEEL VERTICAL LADDER 船用钢质直梯	3	ASSEMBLY 组合件	20.6	61.8	OIL TANK
2	B400X1200 CB/T 73-1999	STEEL VERTICAL LADDER 船用钢质直梯	15	ASSEMBLY 组合件	20.6	309	NON-OIL TANK
1	B400X1000 CB/T 73-1999	STEEL VERTICAL LADDER 船用钢质直梯	2	ASSEMBLY 组合件	17.4	34.8	NON-OIL TANK

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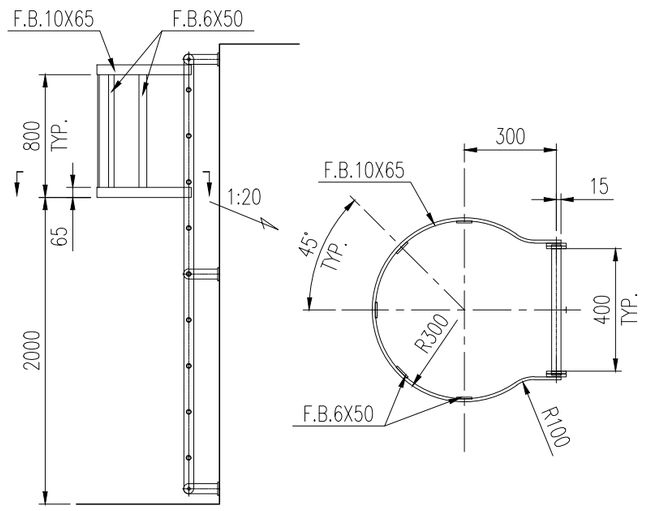
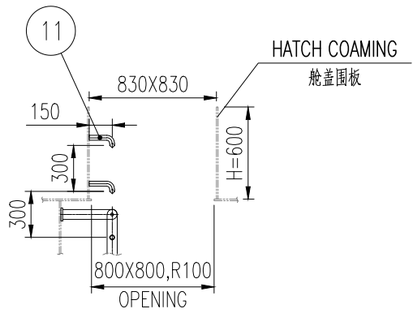
STEEL CAGE DETAIL(1:40)
钢制护栏节点



SMALL HATCH ACCESS DETAIL(1:40)
小舱盖通行节点

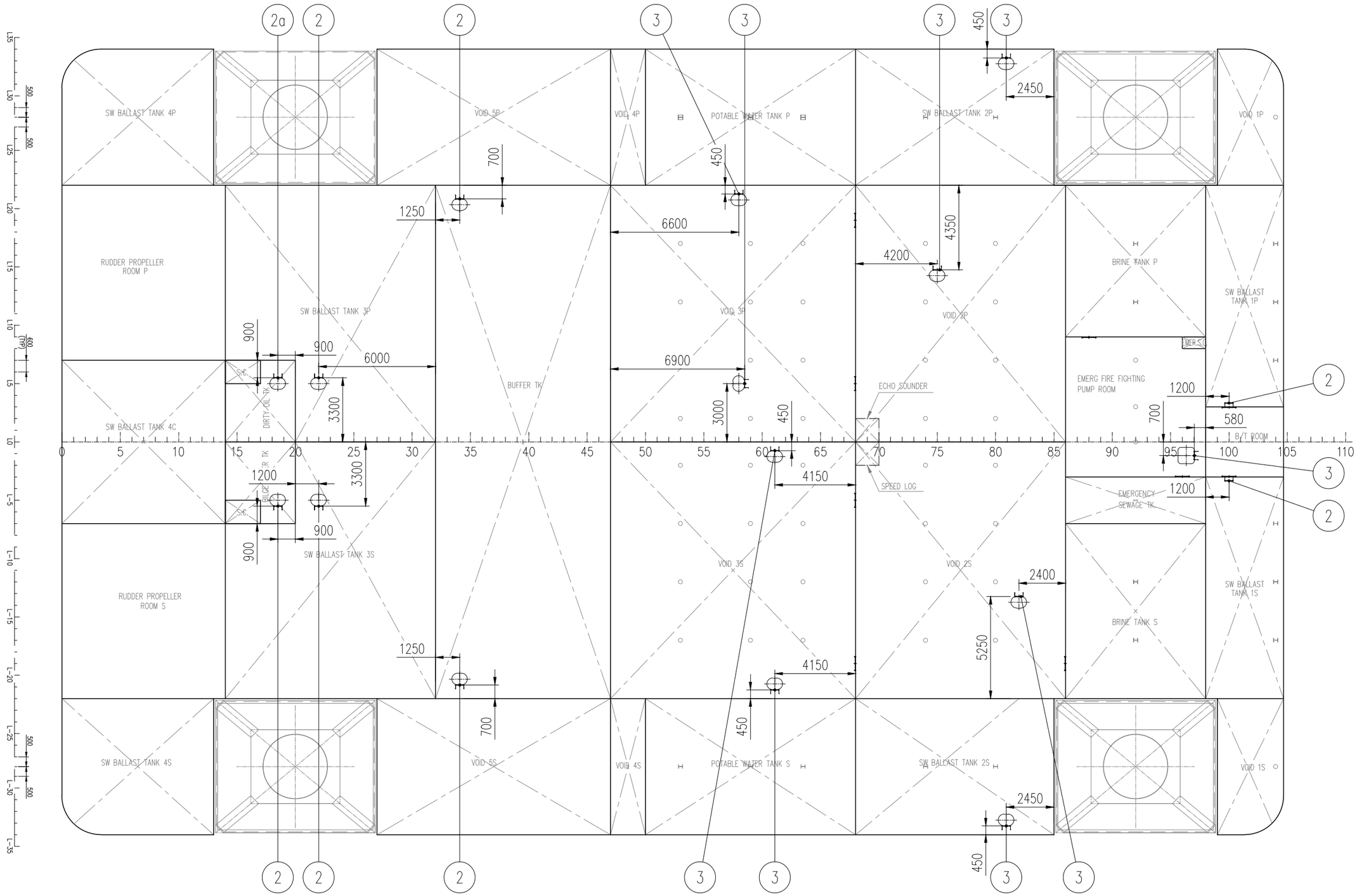


APPENDIX 3

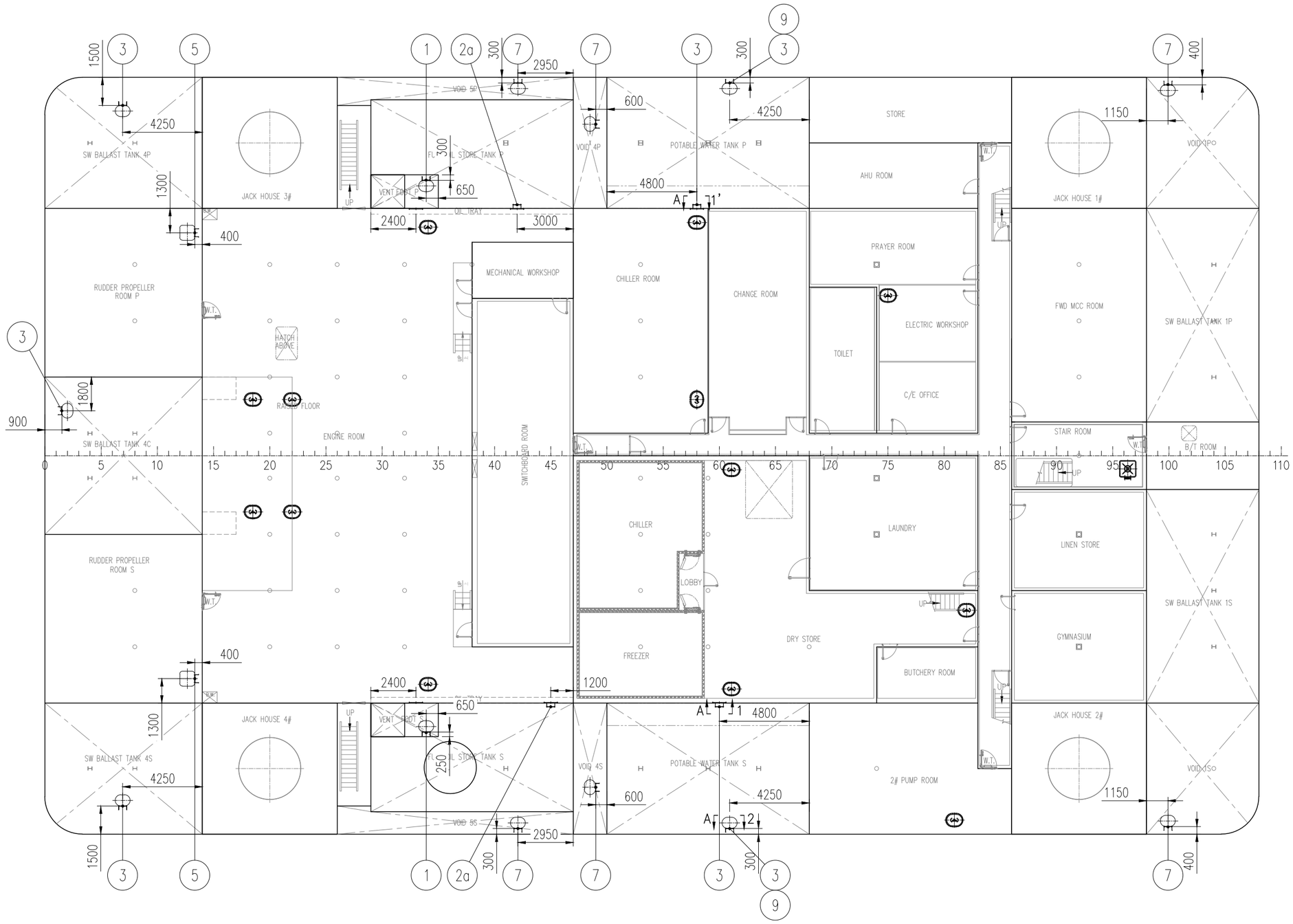
STRUCTURE ACCESS ARRANGEMENT
结构检验通道布置图

A3:0.125m²

DOUBLE BOTTOM



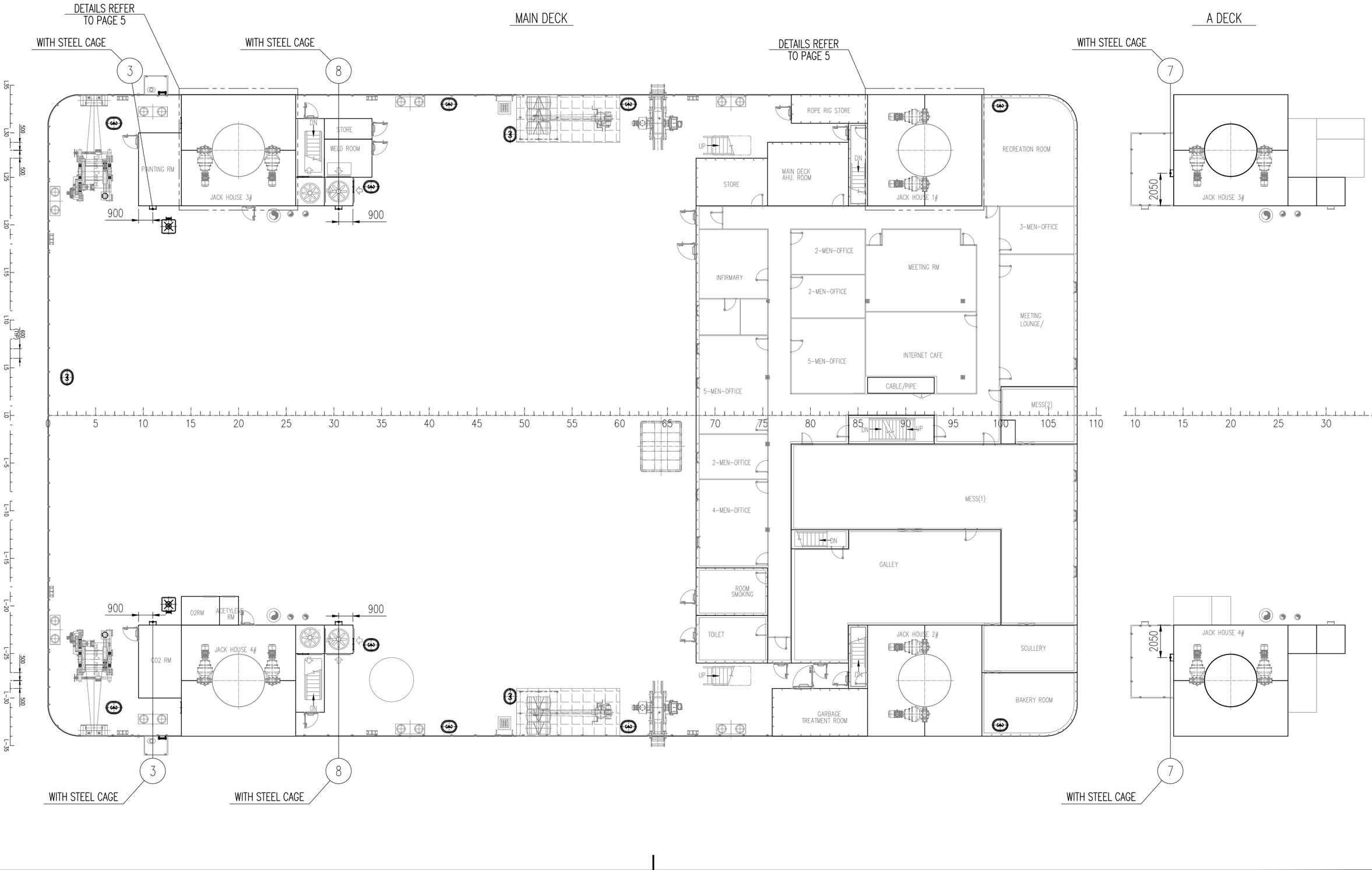
TANK TOP & TWEEN DECK



A-1
A-1' SYM. 1:100

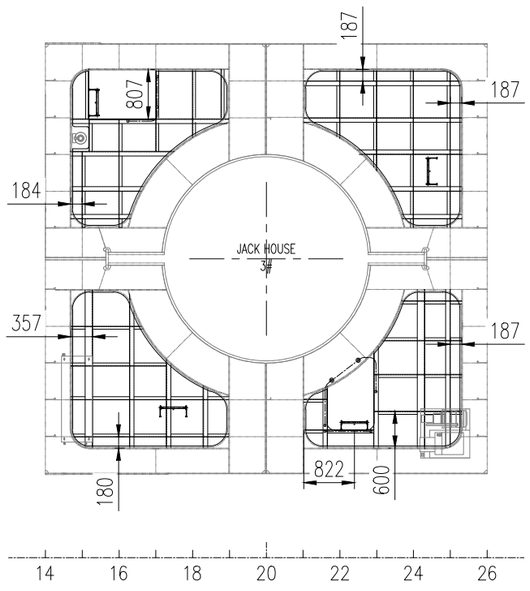
A-2
PS.SYS. 1:100

B-1
1:20

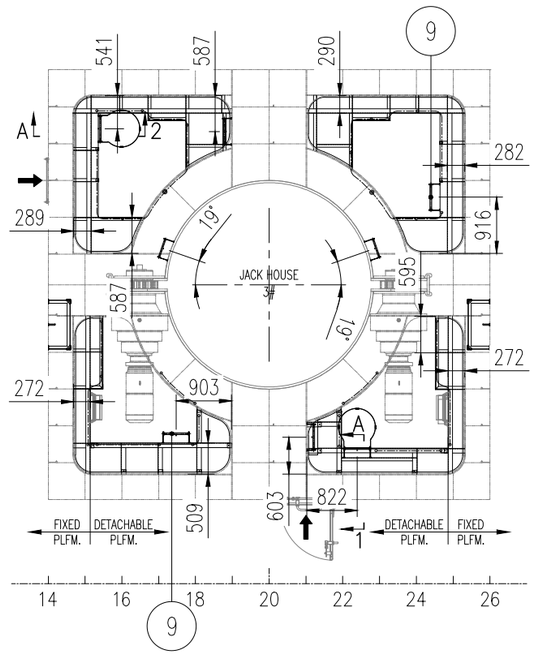


A3+:0.156m²

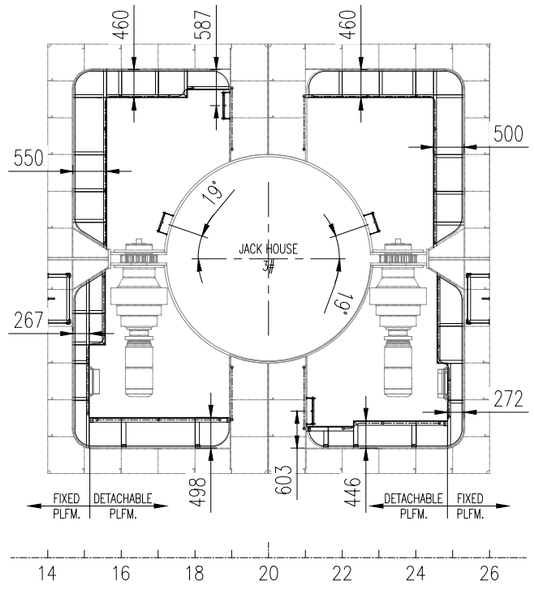
PLATFORM DETAIL FOR JACK HOUSE @ 3000 ABL
STBD.SYMMETRICAL 1:100



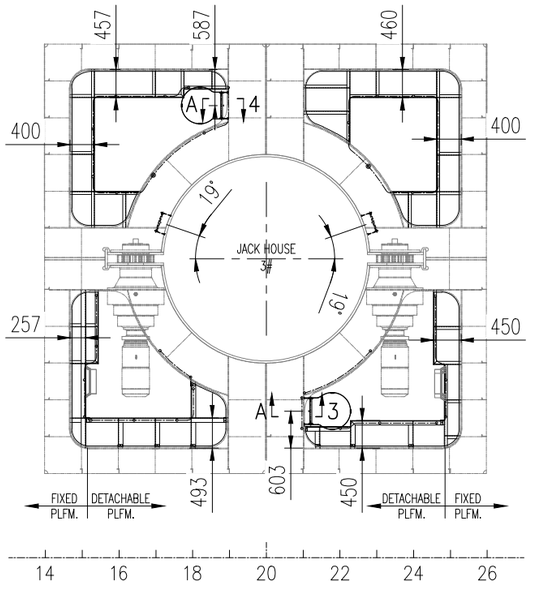
PLATFORM DETAIL FOR JACK HOUSE @ 6000 ABL
STBD.SYMMETRICAL 1:100



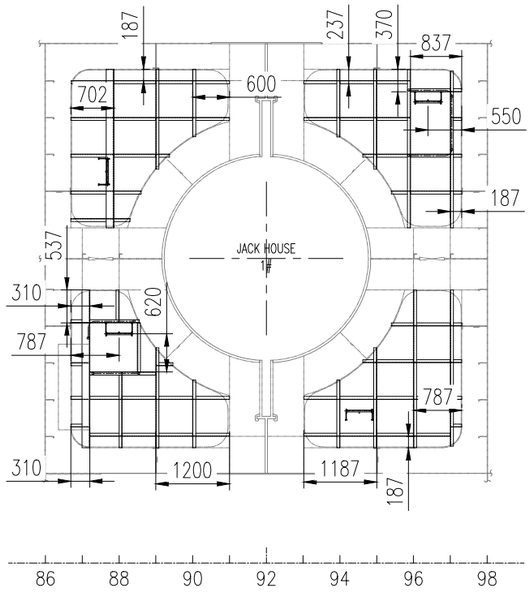
PLATFORM DETAIL FOR JACK HOUSE @ 9000 ABL
STBD.SYMMETRICAL 1:100



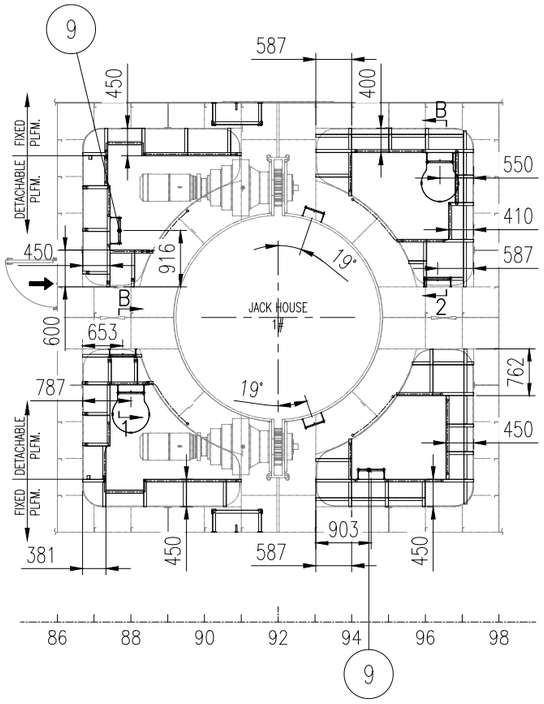
PLATFORM DETAIL FOR JACK HOUSE @ 12000 ABL
STBD.SYMMETRICAL 1:100



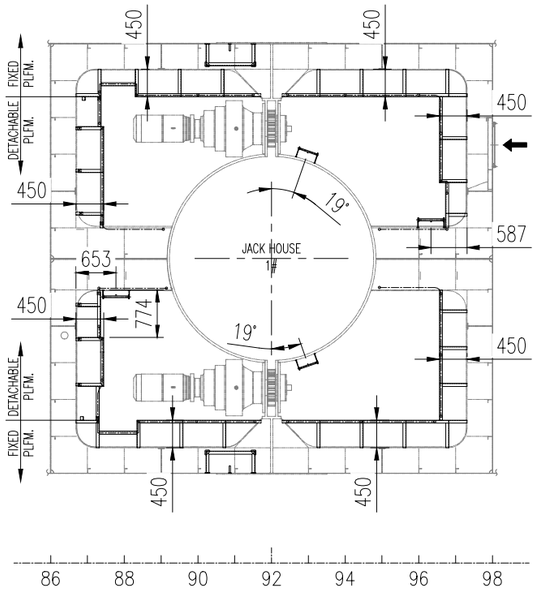
PLATFORM DETAIL FOR JACK HOUSE @ 3000 ABL
STBD.SYMMETRICAL 1:100



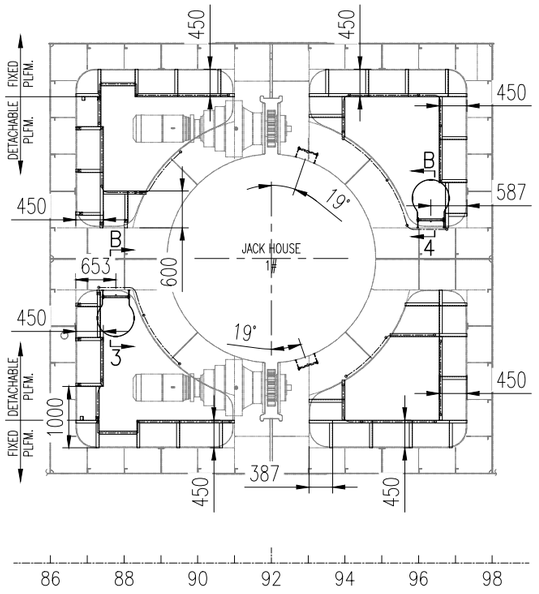
PLATFORM DETAIL FOR JACK HOUSE @ 6000 ABL
STBD.SYMMETRICAL 1:100



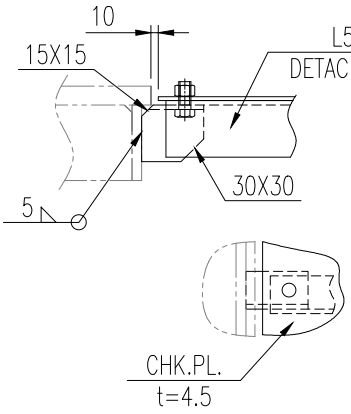
PLATFORM DETAIL FOR JACK HOUSE @ 9000 ABL
STBD.SYMMETRICAL 1:100

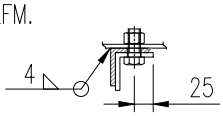


PLATFORM DETAIL FOR JACK HOUSE @ 12000 ABL
STBD.SYMMETRICAL 1:100

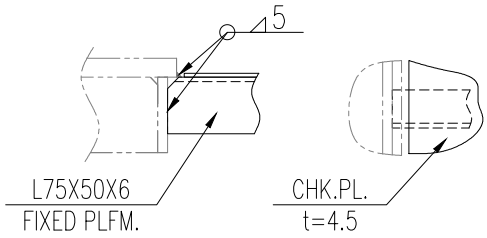


DETACHABLE PLATFORM DETAILS
1:10

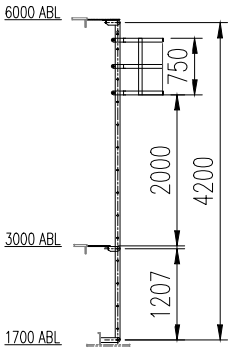




FIXED PLATFORM DETAILS
1:10



A-1
1:100



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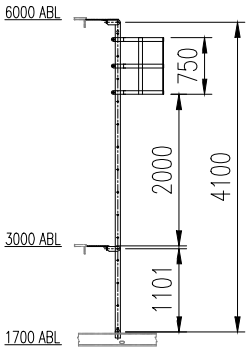
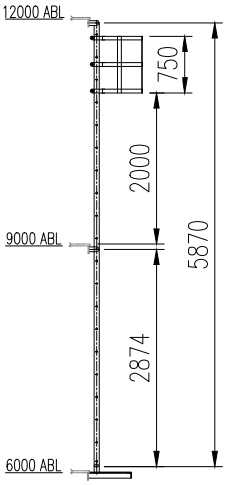
1:100



A-3
1:100



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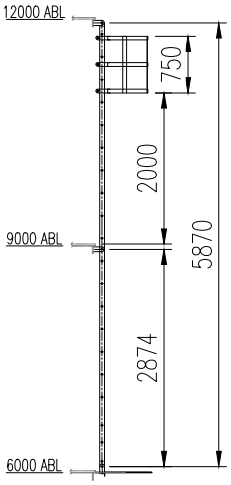
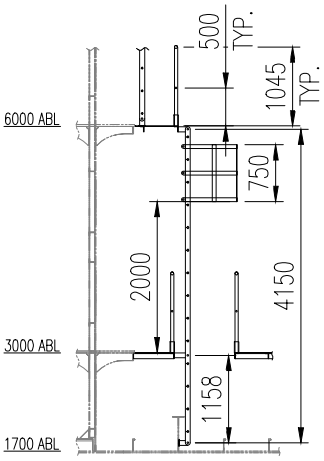
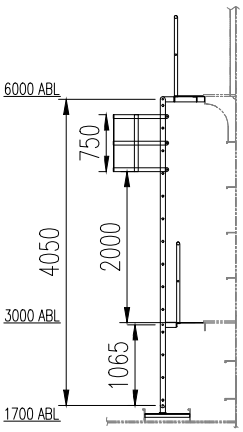
1:100



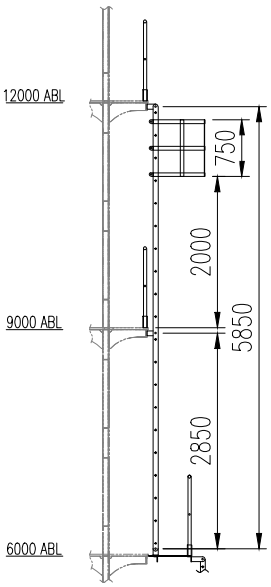
B-1
1:100



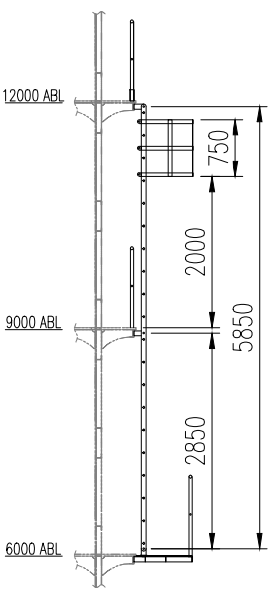
B-2
1:100



B-3
1:100

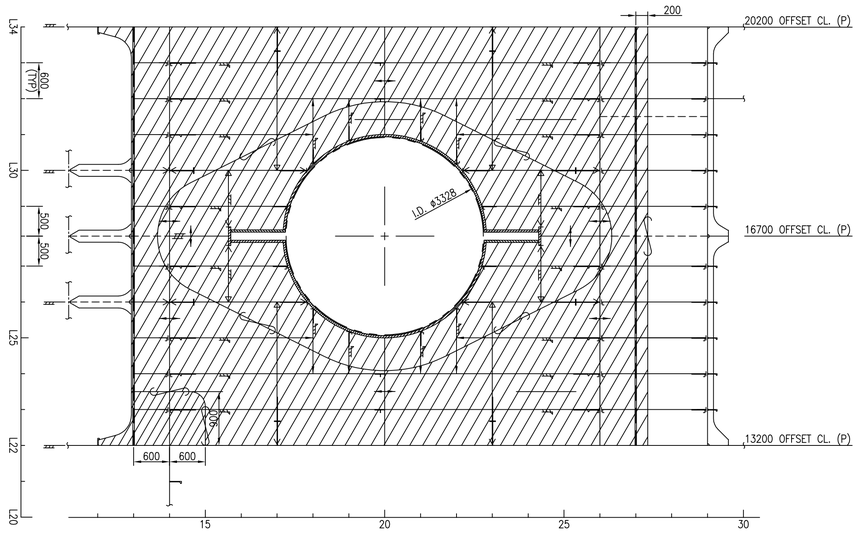


B-4
1:100

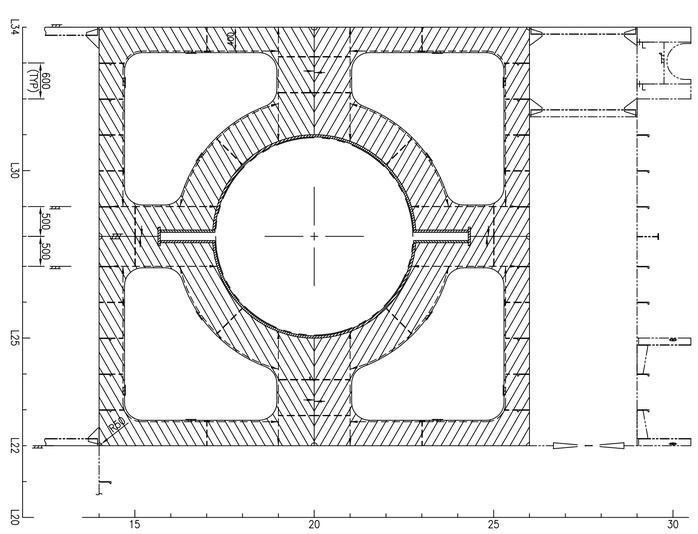


ACTUAL LENGTH OF VERTICAL LADDERS IN JACK HOUSES SHOULD BE LOFTED AT SITE.

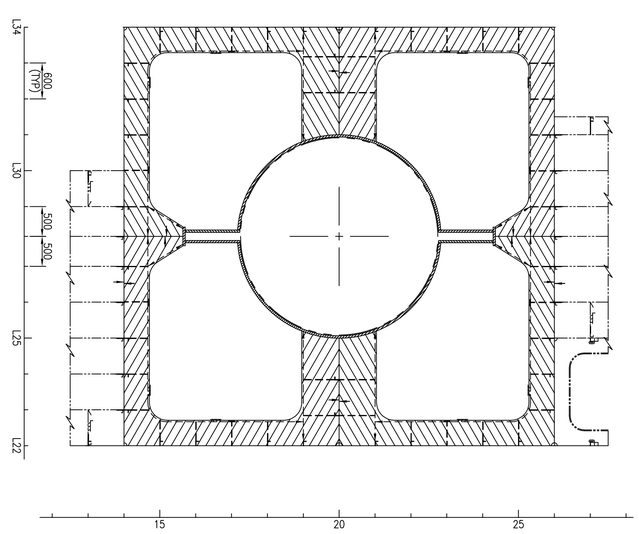
JH316G-110-19



BOTTOM @1 700 ABL
PORT SIDE SHOWN STBD SIM. BUT OPP. HAND

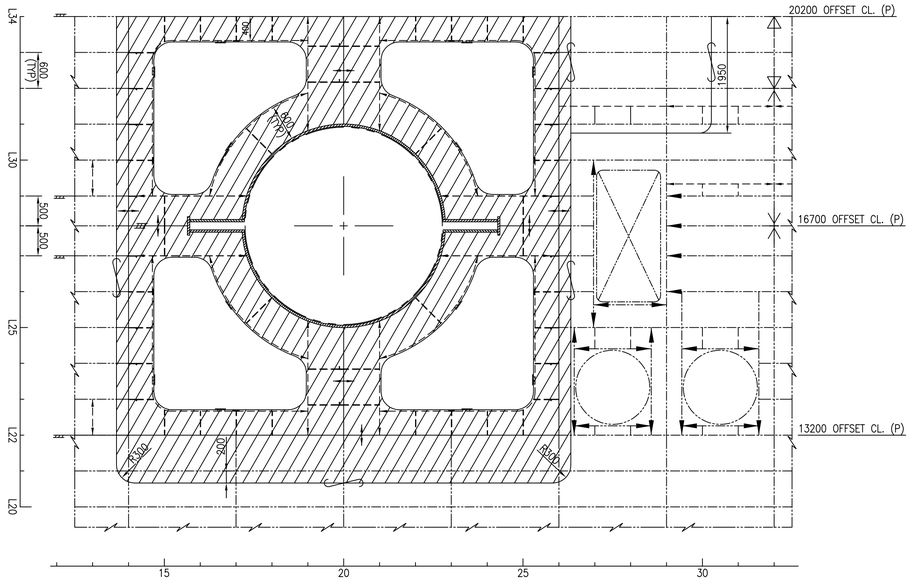


TWEEN DECK @3 000 ABL
PORT SIDE SHOWN STBD SIM. BUT OPP. HAND

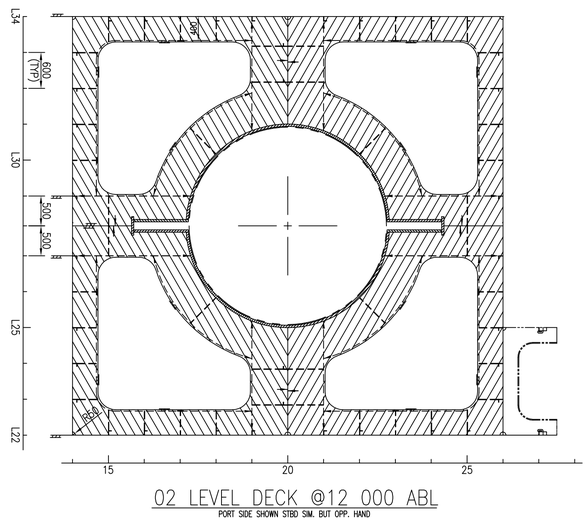


01 LEVEL DECK @9 000 ABL
PORT SIDE SHOWN STBD SIM. BUT OPP. HAND

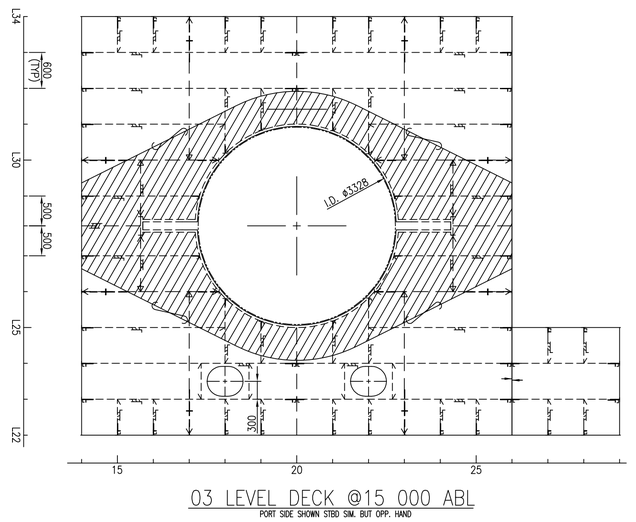
SIGN
会 签



MAIN DECK @6 000 ABL
PORT SIDE SHOWN STBD SIM. BUT OPP. HAND



02 LEVEL DECK @12 000 ABL
PORT SIDE SHOWN STBD SIM. BUT OPP. HAND



03 LEVEL DECK @15 000 ABL
PORT SIDE SHOWN STBD SIM. BUT OPP. HAND

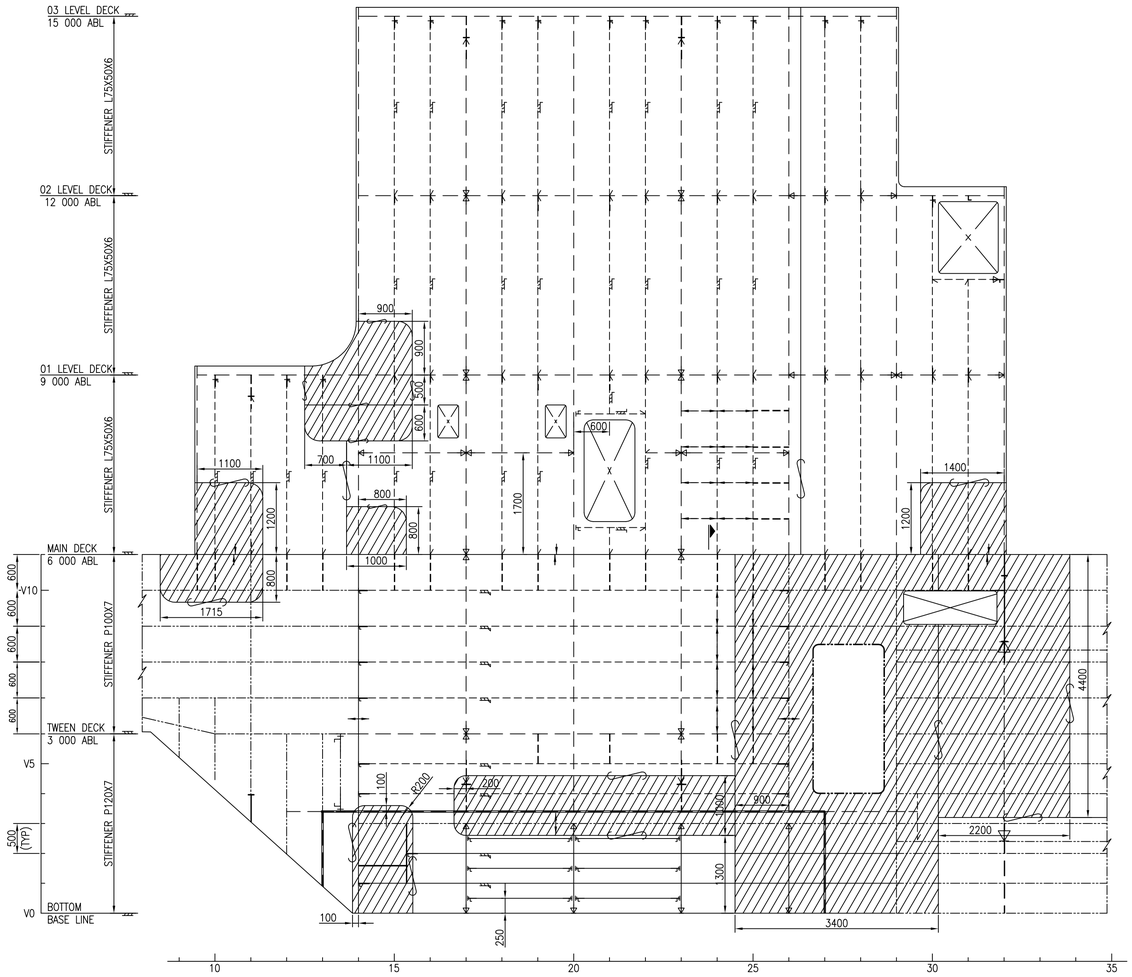
SYMBOL LEGEND:

1.CRITICAL STRUCTURAL AREA FOR WHOLE UNIT IS SHOWED IN THIS DRAWING,SEE THE HATCHED AREA.
2.THE AREA NOT SHOWED IN THIS DRAWING IS NOT CRITICAL STRUCTURAL AREA.

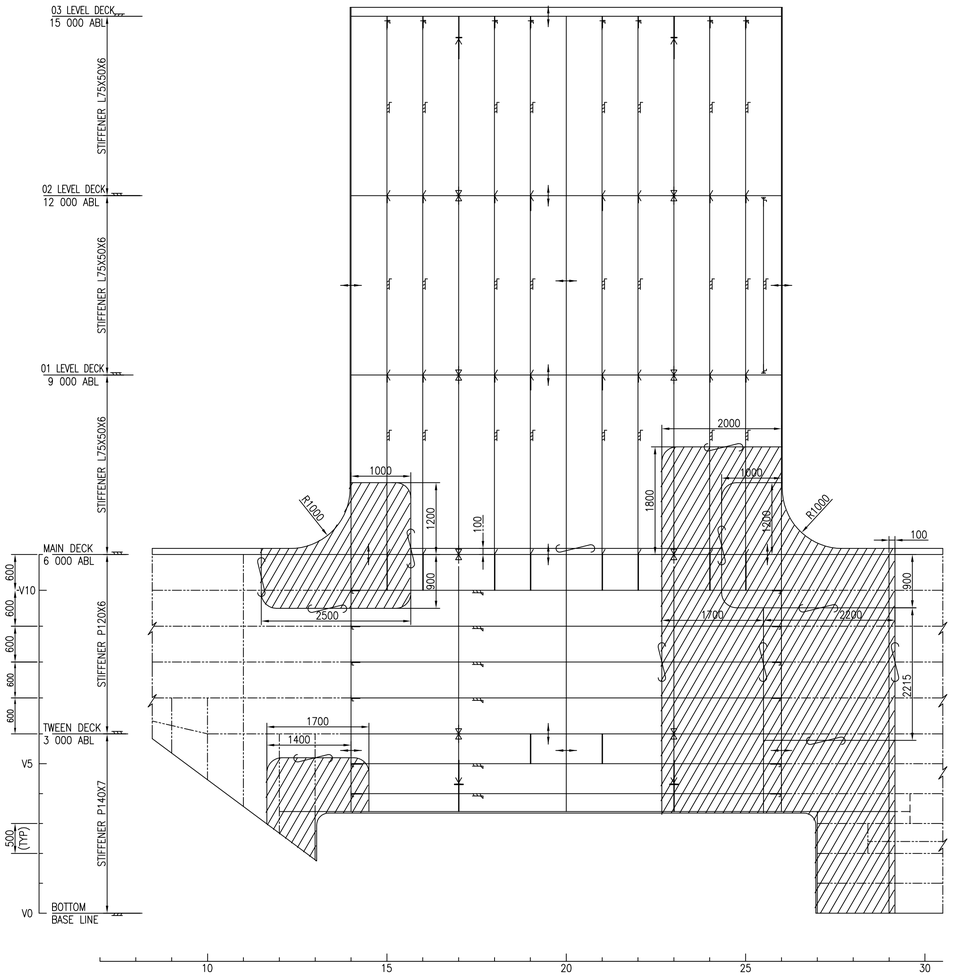
OWNER 船 东	QMS BANI YAS INC.	HULL NO. 工 程 号	HXLB3007
BUILDER 船 厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD 青岛海西重机有限责任公司	CLASS 船 级 社	ABS
TITLE 船 名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图 名	CRITICAL STRUCTURE AREA 关键结构区域	DWG. NO. 图 号	JH316G-100-19
		SCALE 比 例 / WEIGHT 重 量 / PAGE 页 数 / DATE 日 期	1:50 / - / 1/7 /

BESTWAY 威海
上海佳豪船海工程研究设计有限公司
SHANGHAI BESTWAY MARINE ENGINEERING DESIGN CO.,LTD
No.10 Building, No.518 Xinzhuan Road Shanghai, CHINA P.C : 201612 Web : www.bestwaysh.com
Tel : 86-21-6085 9800 Fax : 86-21-6085 9842

A1:0.50m²

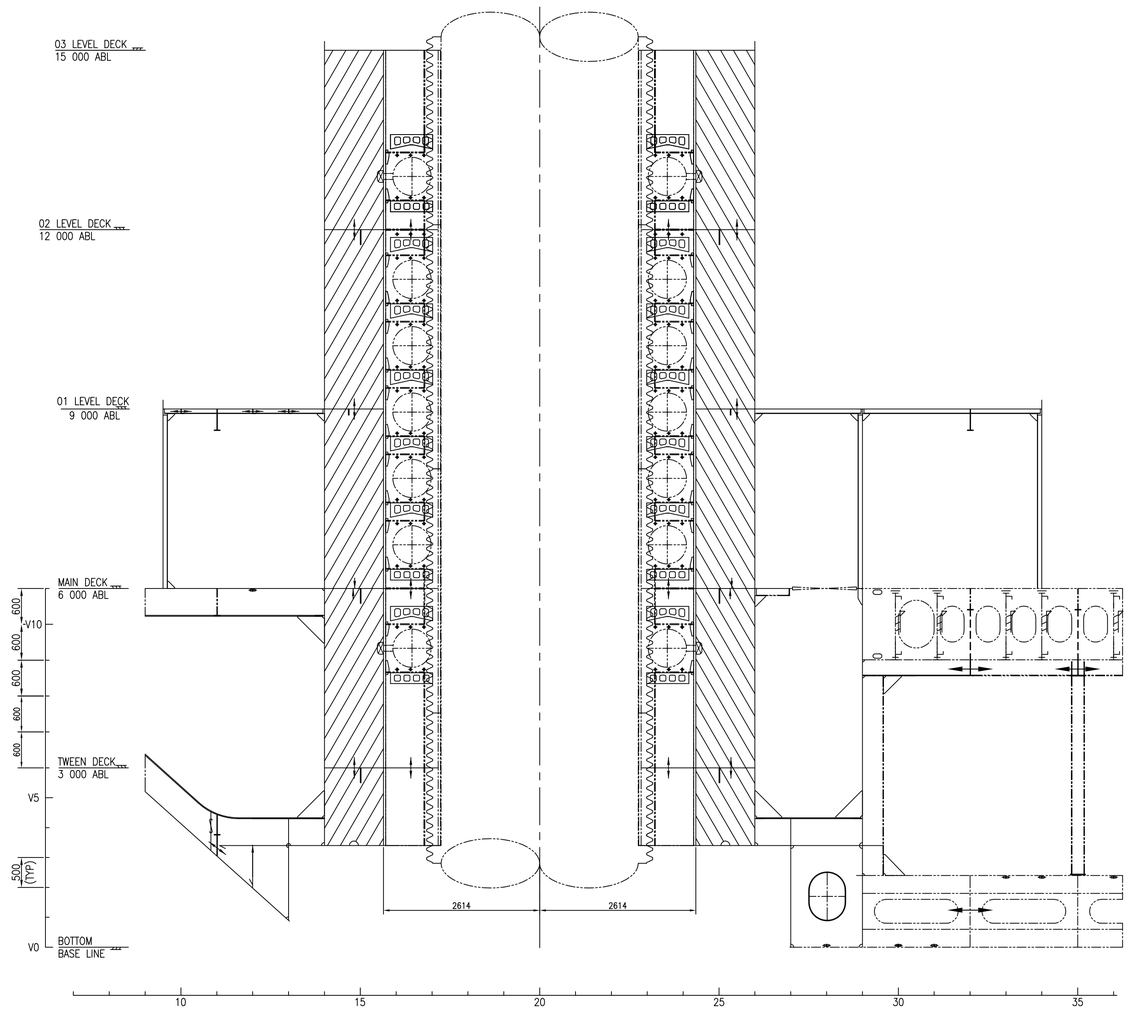


LONGITUDINAL BHDS & SECTIONS @ 13200 OFFSET CL.

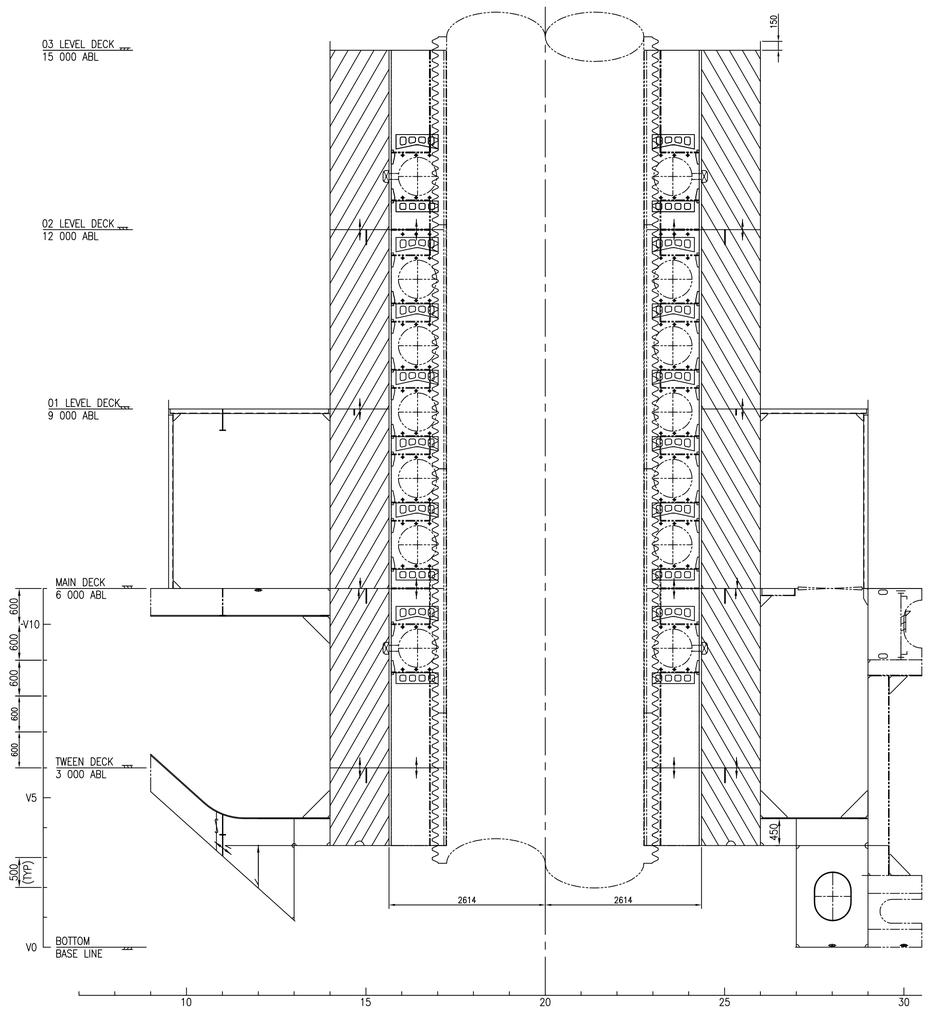


LONGITUDINAL BHDS & SECTIONS @ 20200 OFFSET CL.

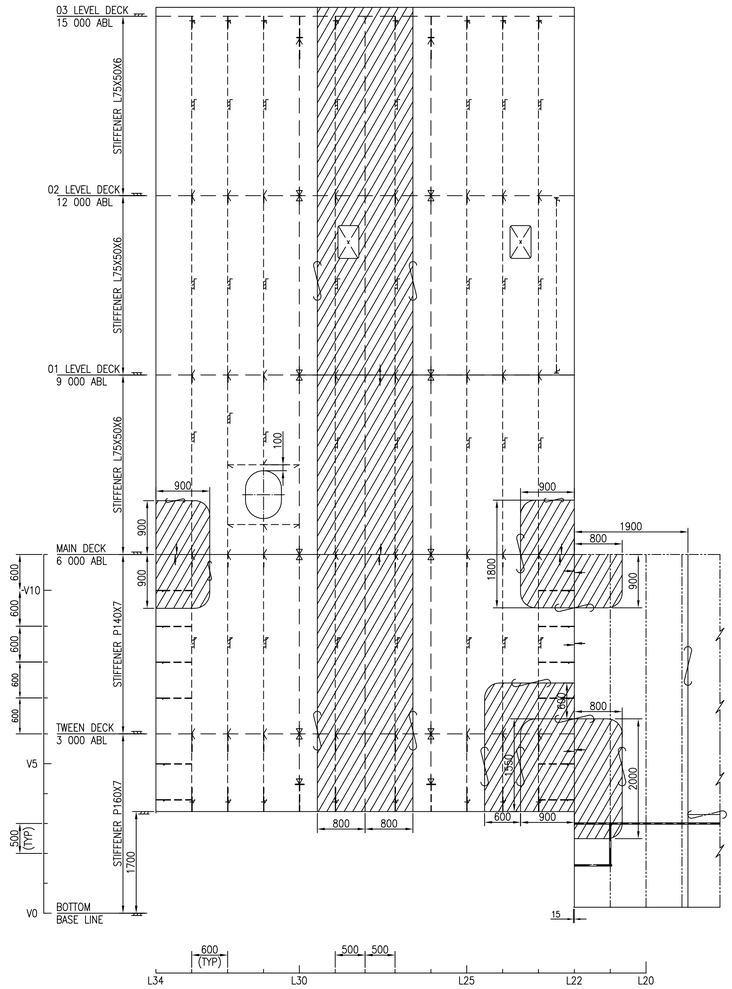
PORT SIDE SHOWN STBD SIM. BUT OPP. HAND



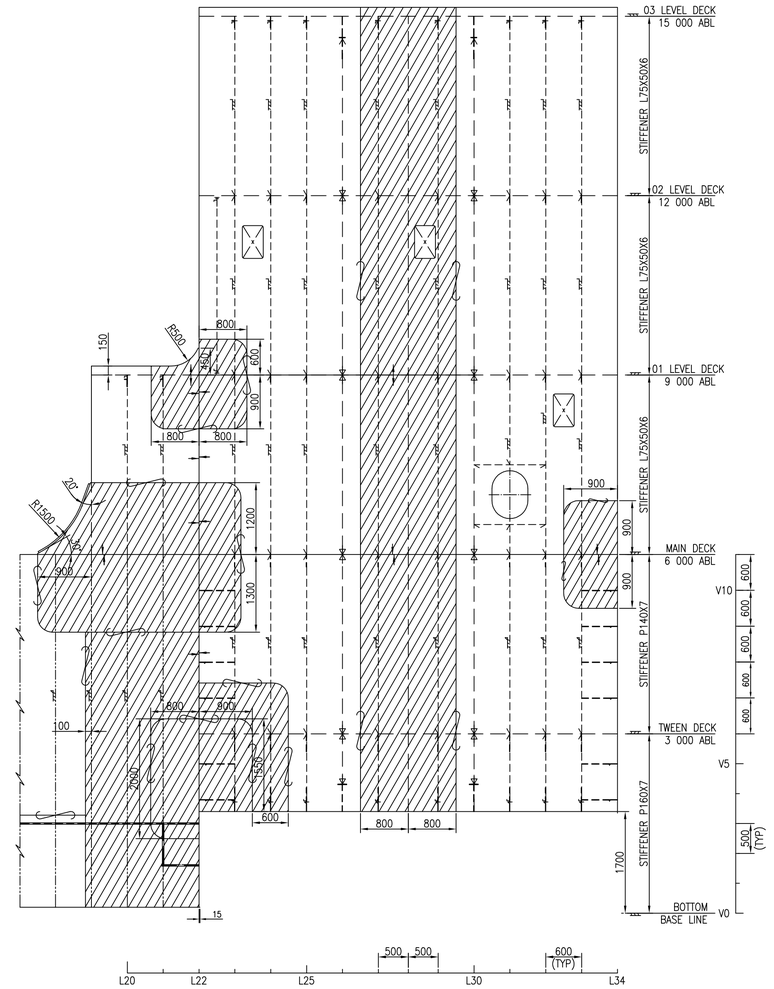
LONGITUDINAL BHDS & SECTIONS @ 16700 OFFSET CL. (P)



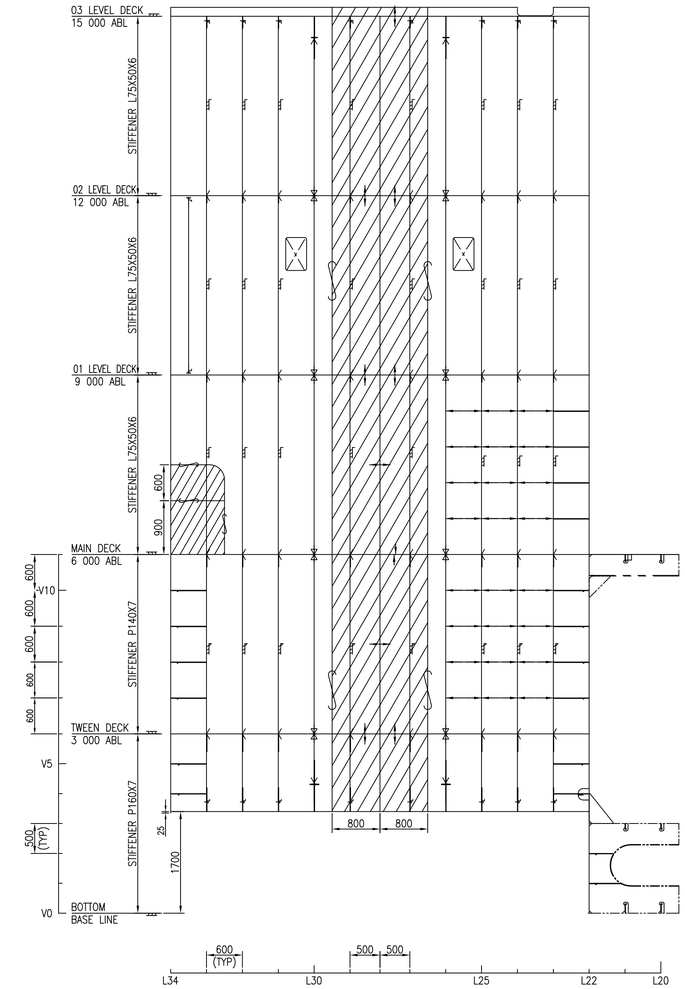
LONGITUDINAL BHDS & SECTIONS @ 16700 OFFSET CL. (S)



FR.14(P)

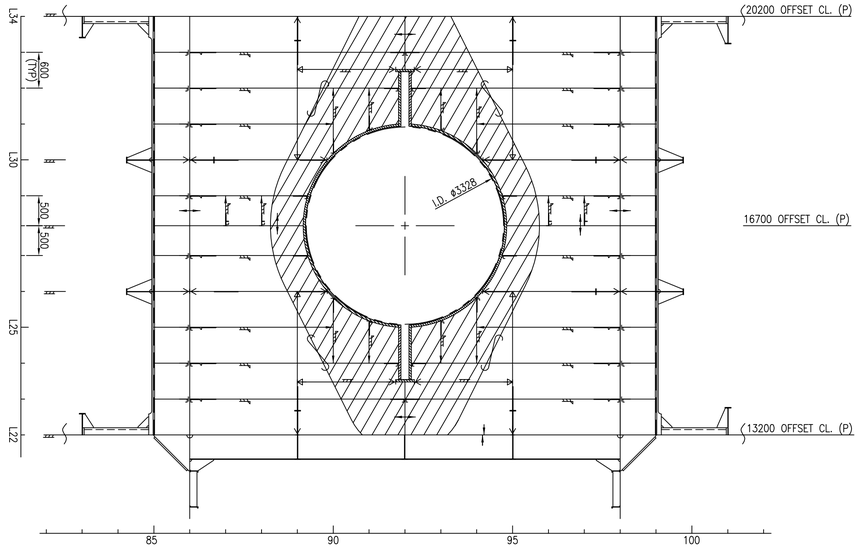


FR.14(S)

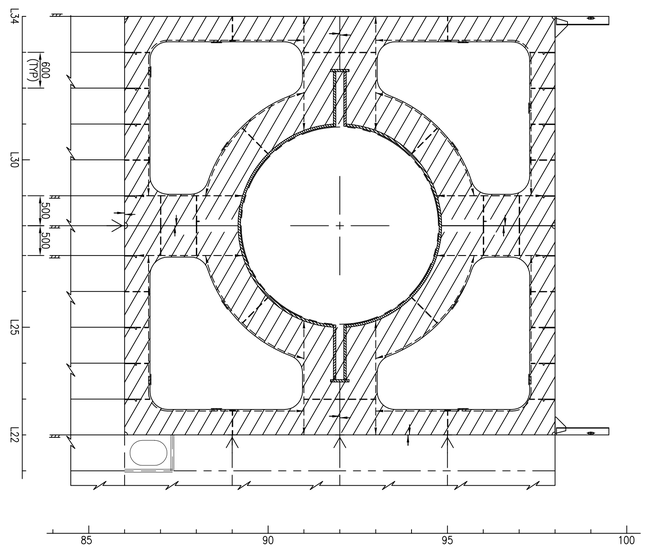


FR.26

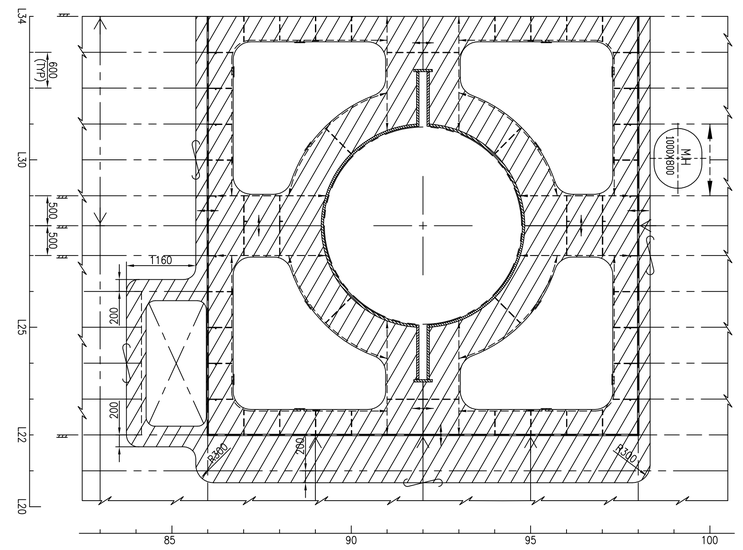
PORT SIDE SHOWN STBD SIM. BUT OPP. HAND



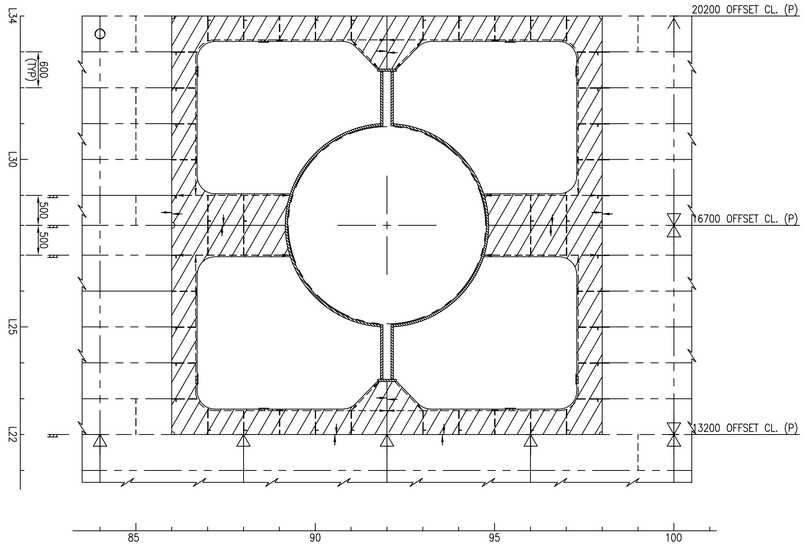
BOTTOM @1 700 ABL
PORT SIDE SHOWN STBD SIM. BUT OPP. HAND



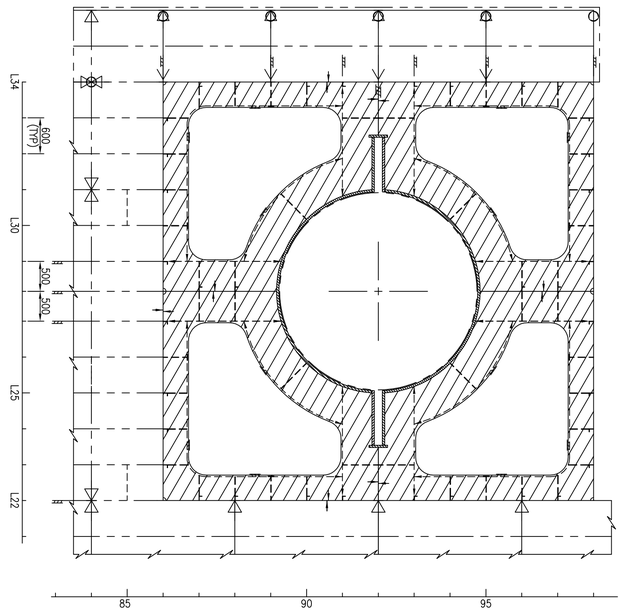
TWEEN DECK @3 000 ABL
PORT SIDE SHOWN STBD SIM. BUT OPP. HAND



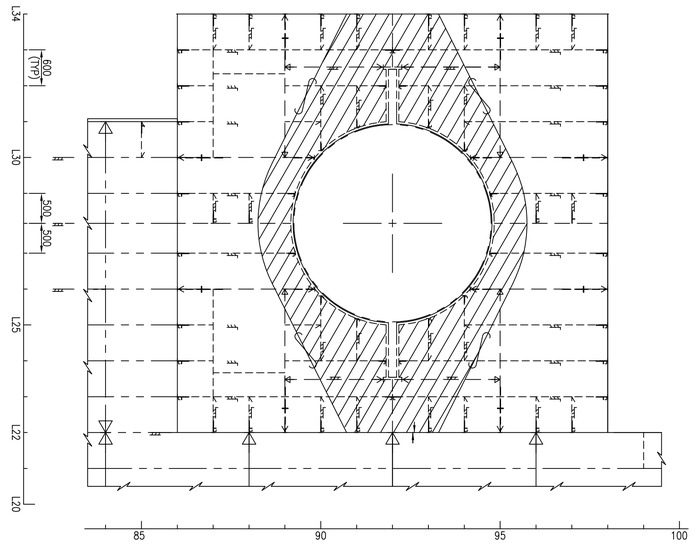
MAIN DECK @6 000 ABL
PORT SIDE SHOWN STBD SIM. BUT OPP. HAND



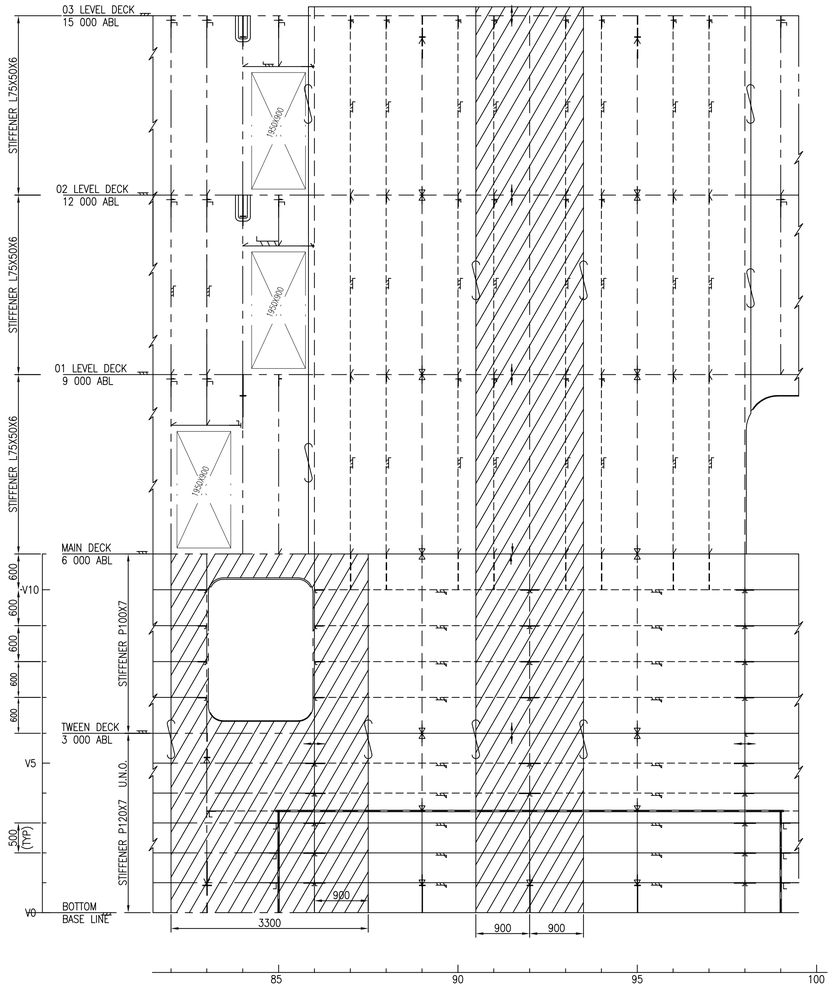
01 LEVEL DECK @9 000 ABL
PORT SIDE SHOWN STBD SIM. BUT OPP. HAND



02 LEVEL DECK @12 000 ABL
PORT SIDE SHOWN STBD SIM. BUT OPP. HAND

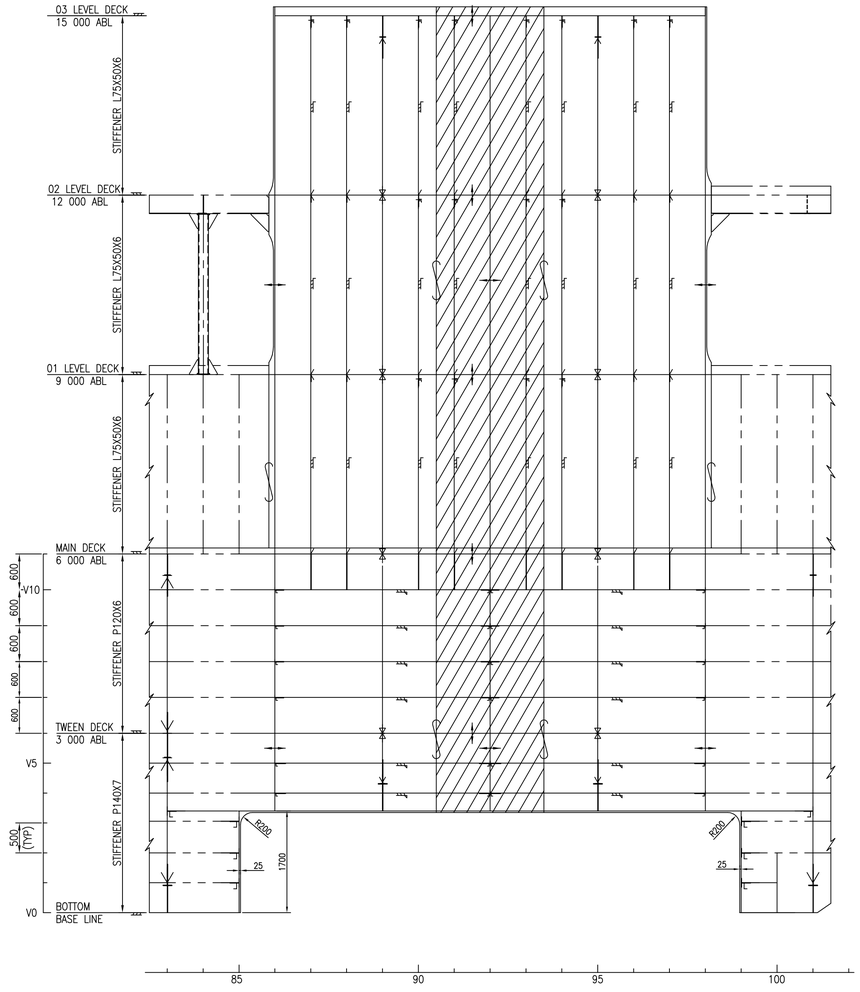


03 LEVEL DECK @15 000 ABL
PORT SIDE SHOWN STBD SIM. BUT OPP. HAND



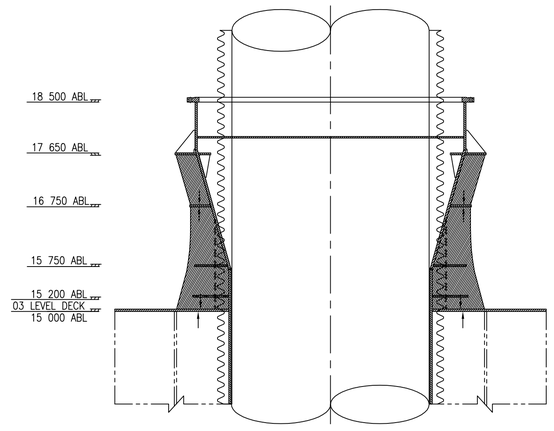
LONGITUDINAL BHDS & SECTIONS @ 13200 OFFSET CL.

PORT SIDE SHOWN STBD SIM. BUT OPP. HAND



LONGITUDINAL BHDS & SECTIONS @ 20200 OFFSET CL.

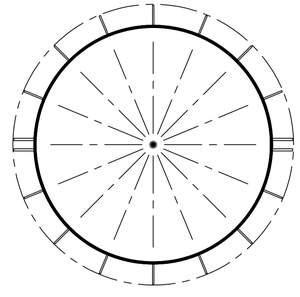
PORT SIDE SHOWN STBD SIM. BUT OPP. HAND



MAIN CRANE SECTION

SCALE 1:50

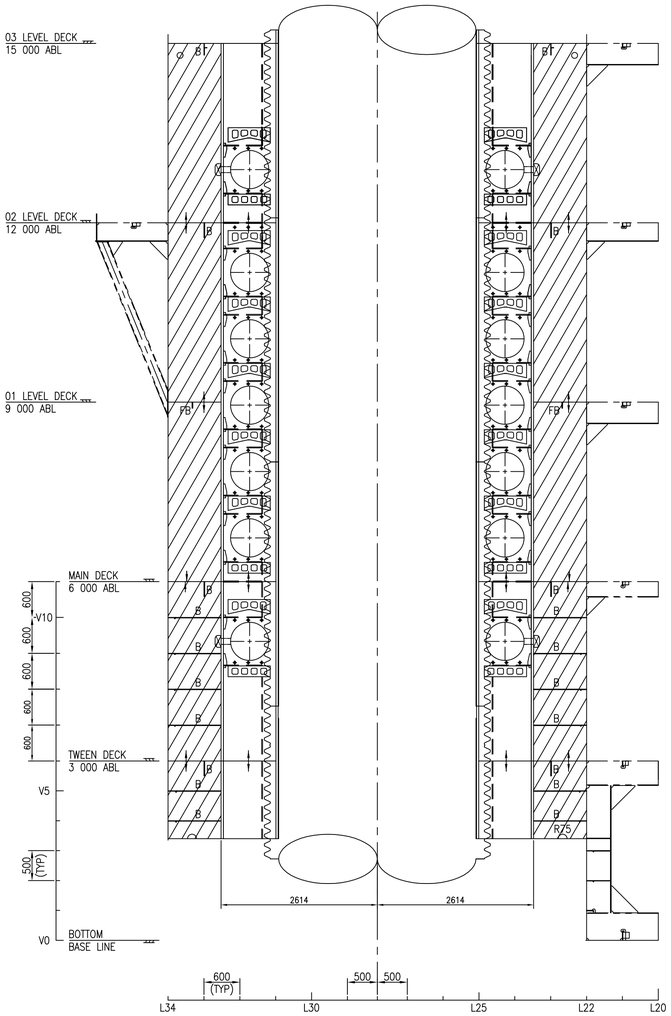
PORT SIDE SHOWN STBD SIM. BUT OPP. HAND



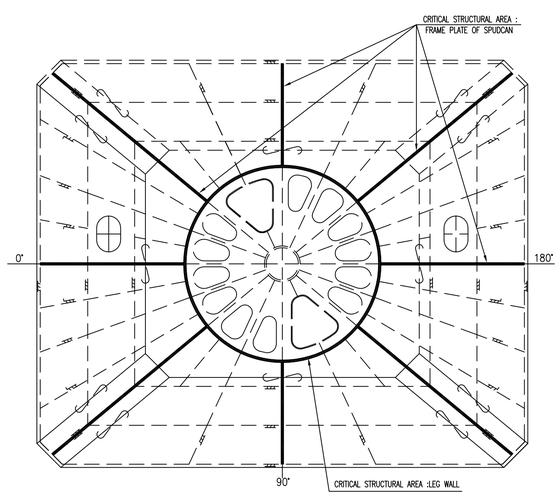
DECK @ 16750 ABL

SCALE 1:50

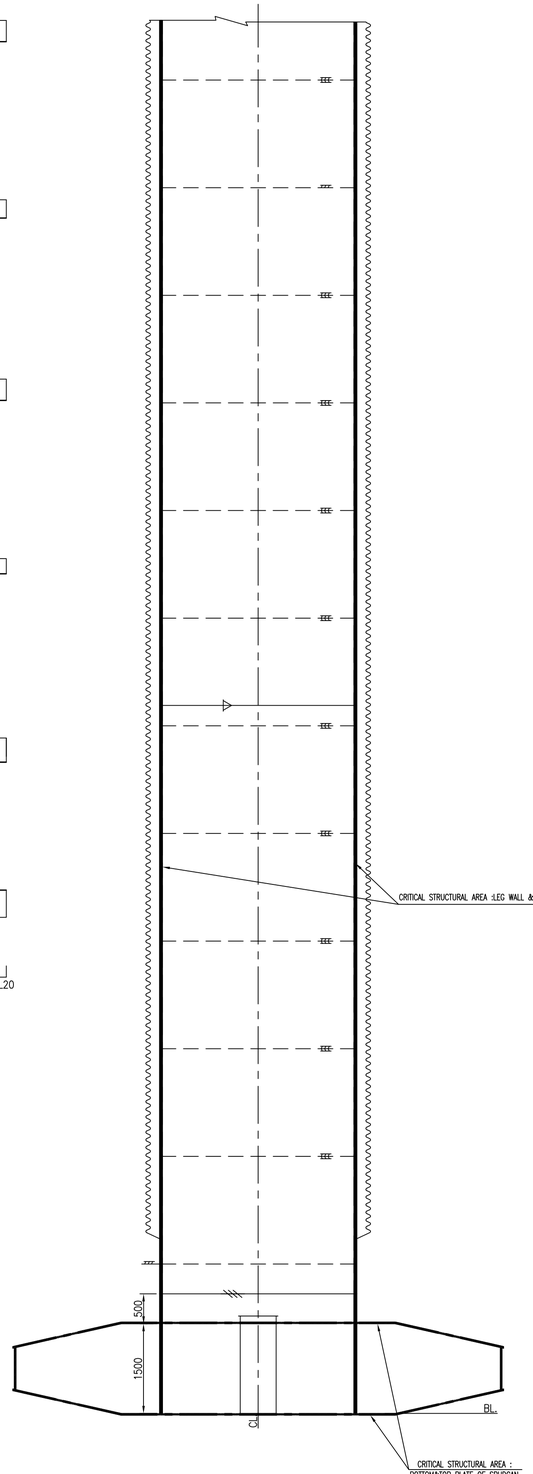
PORT SIDE SHOWN STBD SIM. BUT OPP. HAND



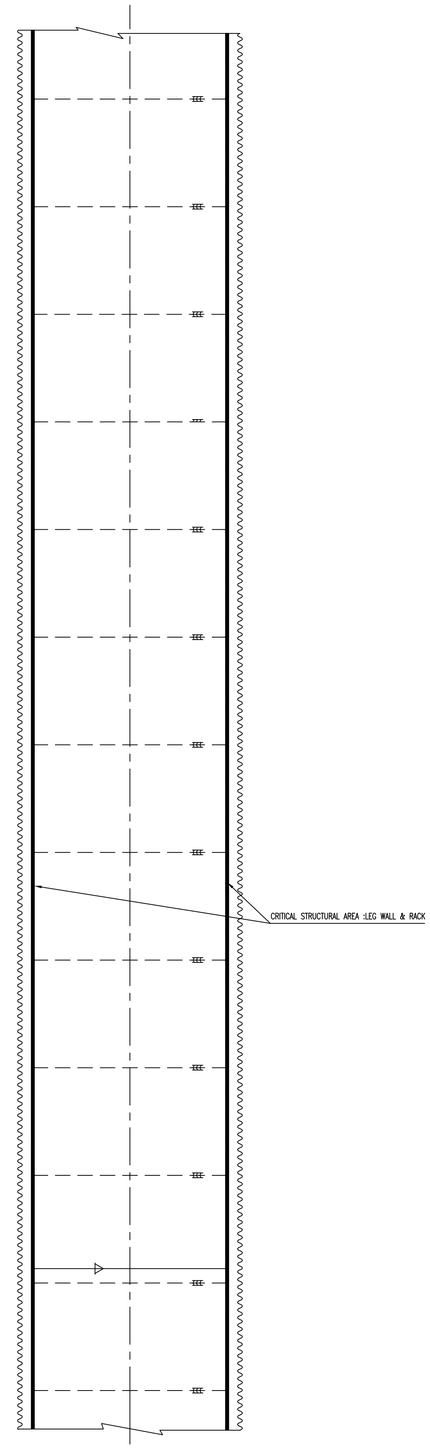
FR.92
PORT SIDE SHOWN STBD SIM. BUT OPP. HAND



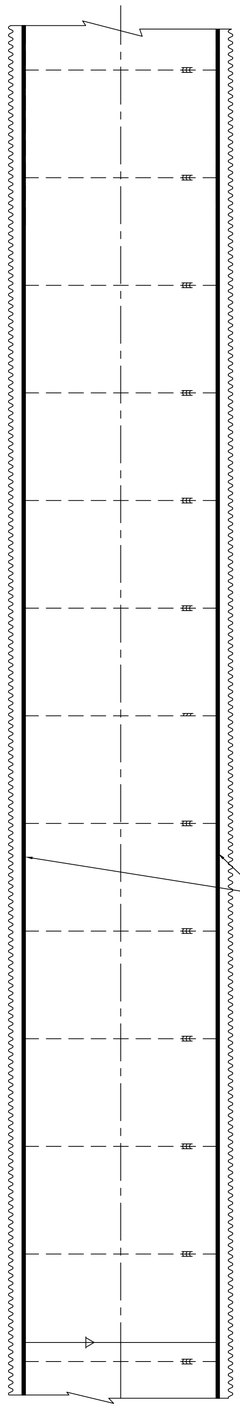
SPUDCAN TOP VIEW
PORT SIDE SHOWN STBD SIM. BUT OPP. HAND



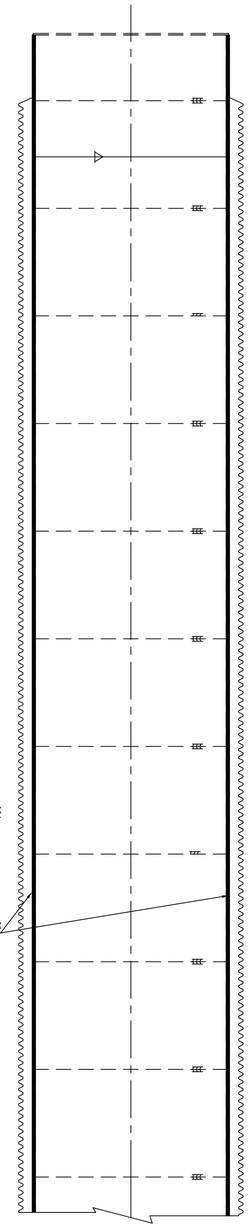
LEG SIDE VIEW 1
PORT SIDE SHOWN STBD SIM. BUT OPP. HAND



LEG SIDE VIEW 2
PORT SIDE SHOWN STBD SIM. BUT OPP. HAND



LEG SIDE VIEW 3
PORT SIDE SHOWN STBD SIM. BUT OPP. HAND



LEG SIDE VIEW 4
PORT SIDE SHOWN STBD SIM. BUT OPP. HAND

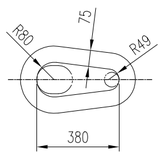
7.6.8 Towing & fitting plan

Please refer to the attached file.

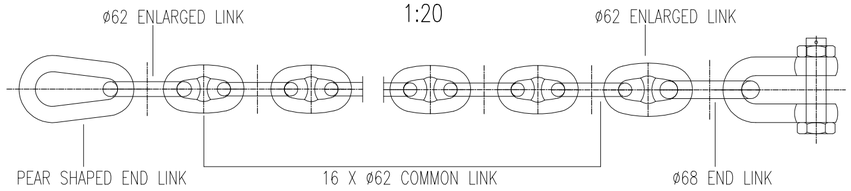
JH316G-222-01

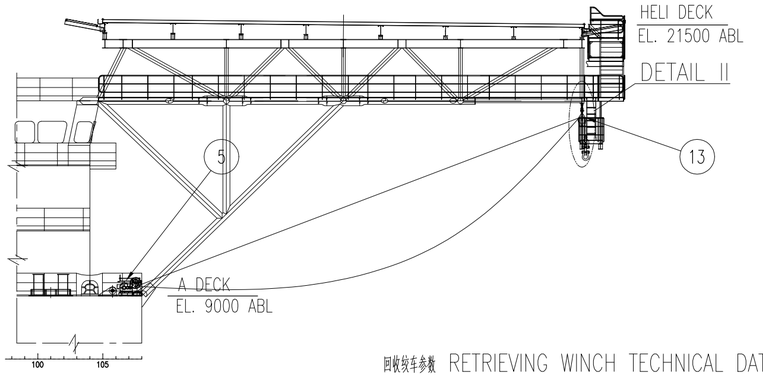
REV 版本号	DATE 日期	DESCRIPTION 描述	DESIGNED 设绘	CHECKED 校对	VERIFIED 审核	APPROVED 审定
Z	2018.04.27	AS BUILT DRAWING	朱燕青	林玉璋	姚俊卿	李兵

PEAR SHAPED END LINK
1:20

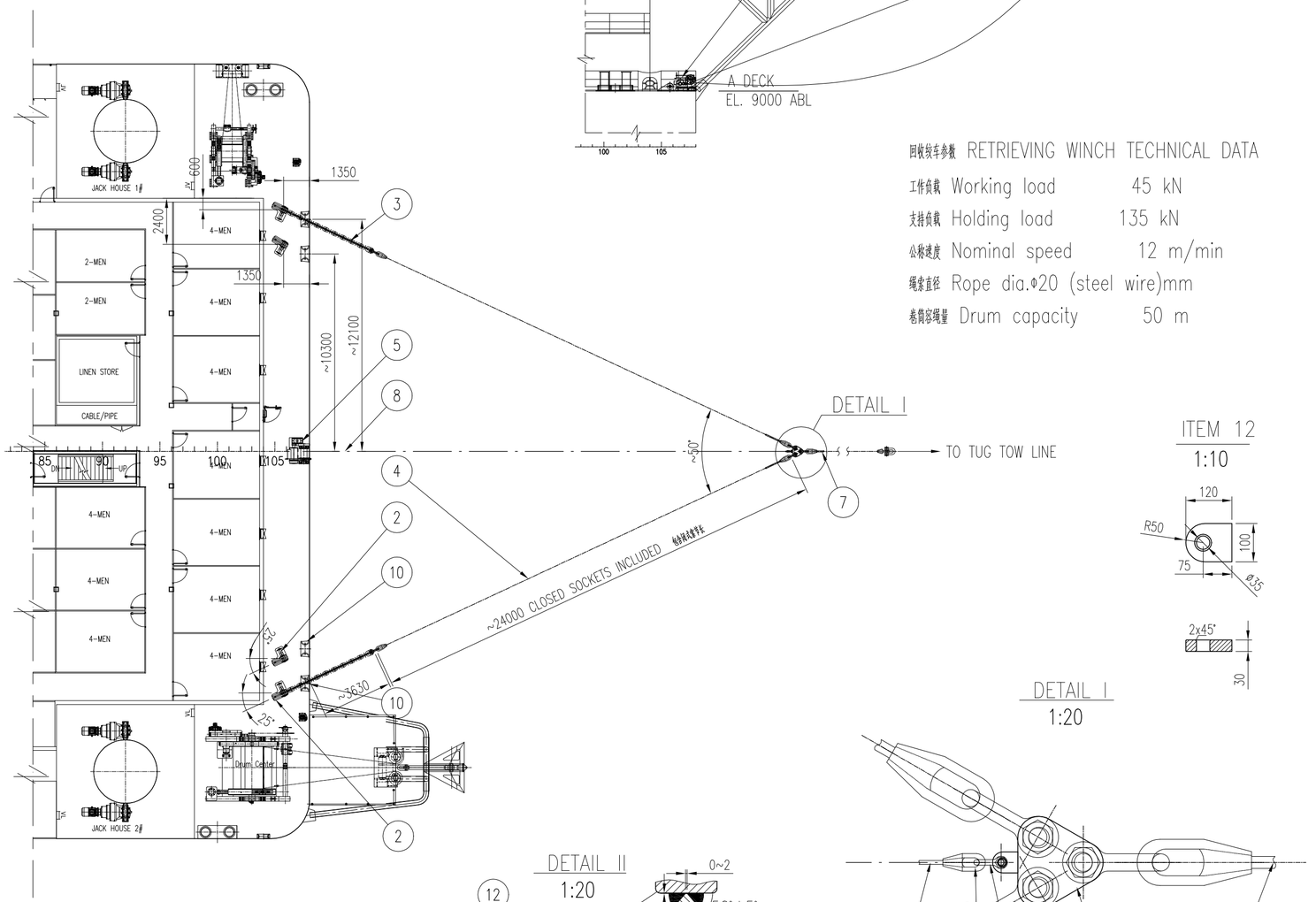


SKETCH OF CHAFE CHAIN
1:20





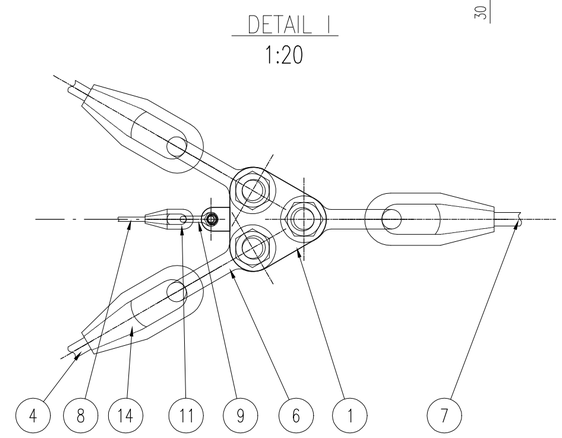
A DECK



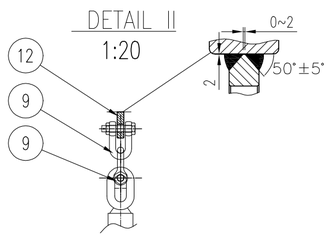
回收绞车参数 RETRIEVING WINCH TECHNICAL DATA

工作负载	Working load	45 kN
支持负载	Holding load	135 kN
公称速度	Nominal speed	12 m/min
绳索直径	Rope dia.ø20 (steel wire)mm	
卷筒容绳量	Drum capacity	50 m

DETAIL I
1:20



DETAIL II
1:20



ITEM 12
1:10

NOTE:
1. SMIT BRACKETS SHALL BE SUCH FITTED THAT FORCE ON THE BEARING SHAFT SHALL HAVE THE SAME DIRECTION OF THE BRIDLE LEG'S LEADING DIRECTION;
2. ITEMS ACTUAL SELECTED SHALL MATCH THE PARTS WHATEVER THEY ARE CONNECTED TO;
3. ITEM 10. PANAMA CHOCK SHALL SUBJECT TO THE FORCE DIRECTION OUTBOARD: HORIZONTAL: 90° TOWARDS C.L. OF UNIT, VERTICAL ±30°;
4. STRUCTURE REINFORCEMENT REFER TO RELATED STRUCTURE DRAWINGS.
5. POSITION OF ITEM 12 EYE PLATE SHALL BE SETTLED ACCORDING TO THE ACTUAL STRUCTURE OF HELIDECK.

说明:
1. 眼板的布置应使得滑动轴的受力方向与龙须链走向一致;
2. 舾装件的选用应考虑和相邻物件的匹配;
3. 巴拿马导缆孔的受力方向, 舷外: 水平向船中90°, 垂直: ±30°;
4. 结构加强见结构相关图纸.
5. 件12眼板的位置应根据直升机甲板实际结构形式而定。

NO. 序号	PART NO. 代号	NAME 名称	QTY. 数量	MATERIAL 材料	SINGLE 单件	TOTAL 总计	REMARKS 备注
					WEIGHT(kg) 重量 (kg)		
14	G417	CLOSED SOCKET 美式闭式套节	6	ASSEMBLY 组合件	63.5	381	MATCH FOR ø62 ROPE 适用绳径ø62
13	A1C-50 CB/T 3759-95	WIREBLOCK 钢索滑车	1	ASSEMBLY 组合件	61.38	61.38	SWL=49kN
12		EYE PLATE 眼板	1	ASSEMBLY 组合件	3	3	SWL=49kN
11	G417	CLOSED SOCKET 美式闭式套节	1	ASSEMBLY 组合件	3.3	3.3	MATCH FOR ø20 ROPE 适用绳径ø20
10	IMITATION 仿 GB 11586-89	PANAMA CHOCK 巴拿马导缆孔(滚轧H350xB400)	4	ASSEMBLY 组合件	450	1800	SWL=120t
9	D3-49.0 CB/T 32-1999	SHACKLES FOR SHIP 船用卸扣	3	ASSEMBLY 组合件	1.87	5.61	SWL=49kN
8	ø20 6x36WS+IWR 1770 GB/T 20067-2006	RECOVERY LINE 回收缆 50m	1	STEEL WIRE 钢丝绳	83.6	83.6	MBL=252kN
7	ø62 6x36WS+IWR 1770 GB/T 20067-2006	INTERMEDIATE PENNANT 短缆 30m	1	STEEL WIRE 钢丝绳	483	483	MBL=2420kN
6	G2150	SHACKLE 美标卸扣	6	ASSEMBLY 组合件	82.6	496	MBL=3920kN SWL=100t
5		BRIDLE WIRE RETRIEVING WINCH 回收缆绞车	1	ASSEMBLY 组合件	1500	1500	
4	ø62 6x36WS+IWR 1770 GB/T 20067-2006	BRIDLE WIRE 龙须缆	2	STEEL WIRE 钢丝绳	387	774	MBL=2420kN
3	ø62 GB/T 549-2008	CHAFE CHAIN 摩擦链	2	GRADE 3 3级锚链钢	480	960	MBL=2940kN
2	JH316-222-02	TOWING SMIT BRACKET 拖航眼板	4	ASSEMBLY 组合件	400	1600	MBL≥3146kN
1	JH316-222-03	DELTA PLATE 拖航三角板	1	ASSEMBLY 组合件	132	132	MBL≥3630kN

OWNER 船东	QMS BANI YAS INC.	HULL NO. 工程号	HXLB3007
BUILDER 船厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD 青岛海西重机有限责任公司	CLASS 船级社	ABS
TITLE 船名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图名	TOWING & FITTINGS PLAN 拖曳设备布置图	DWG. NO. 图号	JH316G-222-01
		SCALE 比例	1:200
		WEIGHT 重量	8300
		PAGE 页数	1/1
		DATE 日期	

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AREA: 0.25㎡

7.6.9 Opening through main deck

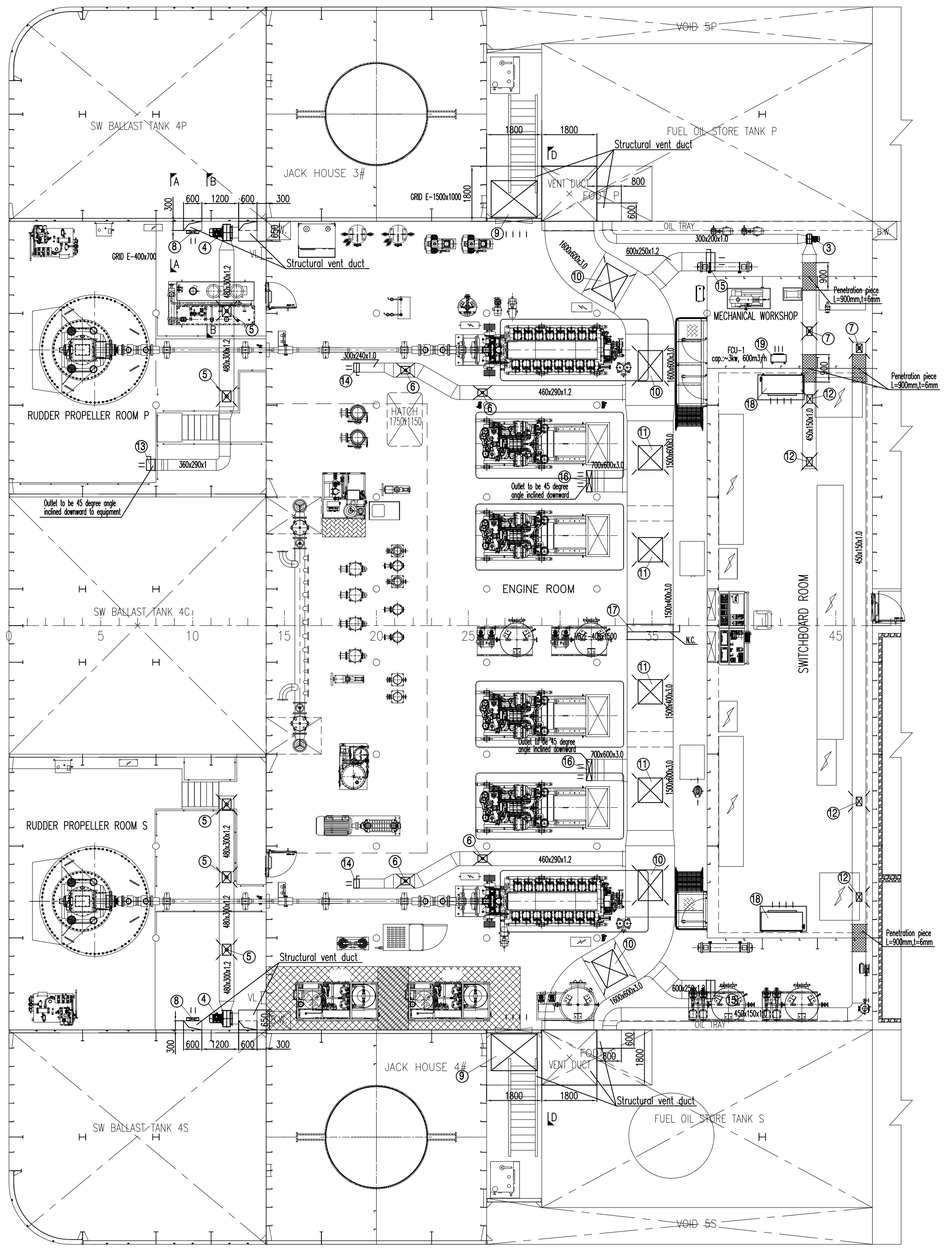
Please refer to the attached files.

JH316G-424-01

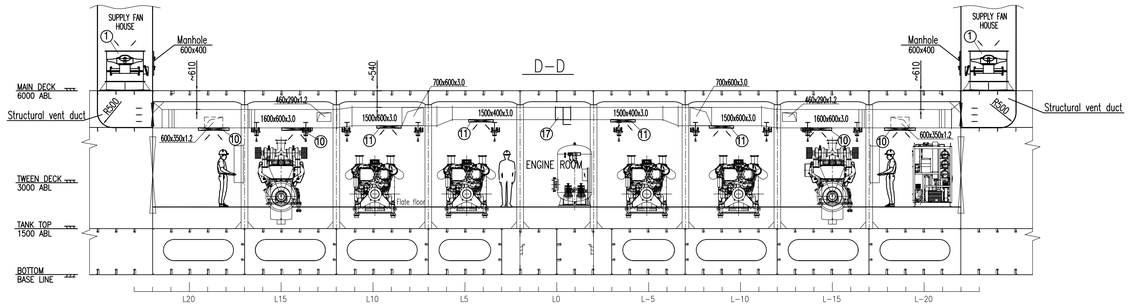
REV 版本号	DATE 日期	DESCRIPTION 描 述	DESIGNED 设 绘	CHECKED 校 对	VERIFIED 审 核	APPROVED 审 定
Z	2018.04.27	AS BUILT DRAWING	姚俊卿	唐山	林玉璋	李兵

SIGN
会 签

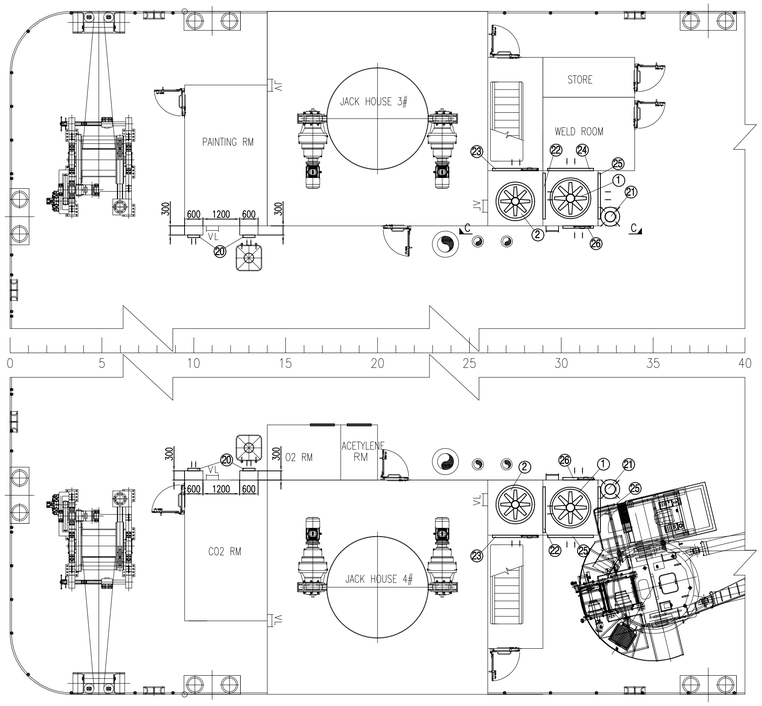
TANK TOP & TWEEN DECK



D–D



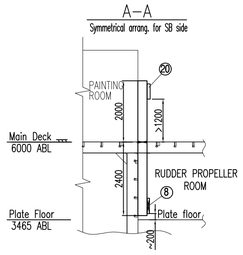
ABOVE MAIN DECK



—	Air flow direction
	Adjustable ventilation fence
	Non-adjustable ventilation fence
	Stainless steel mesh
	Fire damper
	Vent damper
	Weather-tight louver
	Mushroom ventilator
	Electric centrifugal fan
	Electric axial flow fan
Symbol	Description
LEGEND	

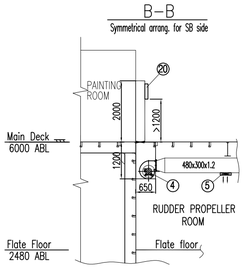
A–A

Symmetrical arrang. for SB side



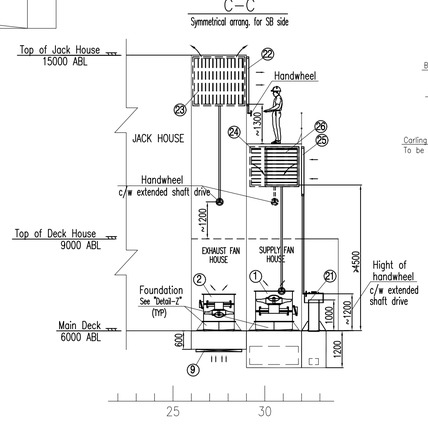
B–B

Symmetrical arrang. for SB side

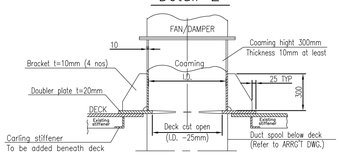


C–C

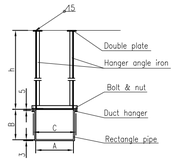
Symmetrical arrang. for SB side



"Detail-Z"



DETAIL DRAWING OF DUCT HANGER



No.	Name	Specifications	Qty.	Remarks
26	Louver c/w weather tight without cover	1000x1200, handwheel operation type	2	c/w extended shaft drive
25	Louver c/w weather tight without cover	1500x1200, handwheel operation type	3	c/w extended shaft drive
24	Louver c/w weather tight without cover	1500x1200, handwheel operation type	1	
23	Louver c/w weather tight without cover	1500x1600, handwheel operation type	2	c/w extended shaft drive
22	Louver c/w weather tight without cover	1500x1600, handwheel operation type	2	
21	Mushroom ventilator Weather tight type	B350 CB/T 295–2000, h=1000	2	t=10mm
20	Louver c/w weather tight without cover	500x400, handwheel operation type	4	
19	Fan coil for WORKSHOP	cooling cap.: ~3kW, air flow: ~600m3/h, elec. heating, wall mounted.	1	Chilled water cooled
18	Package AC for SWITCHBOARD ROOM	cooling cap.: ~30kW, air flow: ~4000m3/h, elec. heating cap.: ~10kW, floor type mounted.	2	Seawater cooled
17	Shut off vent damper	E-type: 400x1500, steel	1	To be normal closed
16	Non-adjustable ventilation grille	E-type: 600x700, steel	2	
15	Vent damper with manual handle	E500–350x600, CB/T3726–1995	2	
14	Vent damper with manual handle	E300–240x300, CB/T3726–1995	2	
13	Vent damper with manual handle	E350–290x360, CB/T3726–1995	1	
12	Non-adjustable ventilation grille	E250–190x280, CB/T462–1996	4	
11	Non-adjustable ventilation grille	E-type: 800x800, steel	4	
10	Non-adjustable ventilation grille	E-type: 1000x800, steel	4	
9	Non-adjustable ventilation grille	E-type: 1200x1500, steel	2	
8	Non-adjustable ventilation grille	E-type: 400x500, steel	2	
7	Adjustable ventilation grille	F250–190x280, CB/T462–1996	2	
6	Adjustable ventilation grille	F300–240x300, CB/T462–1996	4	
5	Adjustable ventilation grille	F350–290x360, CB/T462–1996	5	
4	Centrifugal supply fan for RUDDER PROPELLER ROOM	3000m3/h, 350Ps	2	
3	Centrifugal supply fan for SWITCHBOARD/WORKSHOP	1800m3/h, 400Ps	1	
2	Axial flow exhaust fan for engine room	45000m3/h, 500Ps, t=10mm	2	
1	Axial flow supply fan for engine room	60000m3/h, 590Ps, t=10mm	2	Reversible

TECHNICAL REQUIREMENTS

1. ANNOTATED SIZES OF PIPE IN THE DRAWING TO BE OUT.DIM(mm).
2. ALL DUCTS SHOULD BE FIXED WITH HANGER.THE DISTANCE BETWEEN TWO HANGERS IS ABOUT 2 METER, HANGERS SHALL BE INSTALLED HARDLY ACC. TO RELATED REGULATION REQUIREMENT.
3. THE PAINTING OF DUCT SHALL BE PAINTED ACCORDING TO THE SPECIFICATION OF THE SHIP.
4. THE MATERIAL OF DUCK TO BE GAV. STEEL OR PAINTED STEEL.
5. THE MATERIAL OF THE PADS BETWEEN FLANGES SHOULD BE NONCOMBUSTIBLE.
6. THE FLANGES USED FOR RECTANGULAR DUCTS IN THIS DRAWING SHOULD BE MADE IN ACCORDANCE WITH CB/T64–99.
7. EXCEPT SPECIAL NOTE, THE DUCK THICKNESS REFER TO FOLLOWING REQUIREMENT:
   DUCK WIDTH 0~450mm,THICKNESS 1mm;
   DUCK WIDTH 450~610mm,THICKNESS 1.2mm;
   DUCK WIDTH 610mm~EXCEEDING,THICKNESS 3mm.
8. THE STRUCTURE DUCK THICKNESS ≥ 6mm.

OWNER 船 东	QMS BANI YAS INC.	HULL NO. 工程号	HXLB3007
BUILDER 船 厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD 青岛海西重机有限责任公司	CLASS 船级社	ABS
TITLE 船 名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图 名	LAYOUT OF ENGINE ROOM & RUDDER PROPELLER ROOM VENTILATION 机舱及舵桨间布置图	DWG. NO. 图 号	JH316G-424-01
		SCALE 比 例 / WEIGHT 重 量 / PAGE 页 数 / DATE 日 期	1:100 / - / 1/1 /

BESTWAY 威玛仕
上海佳豪船海工程研究设计有限公司
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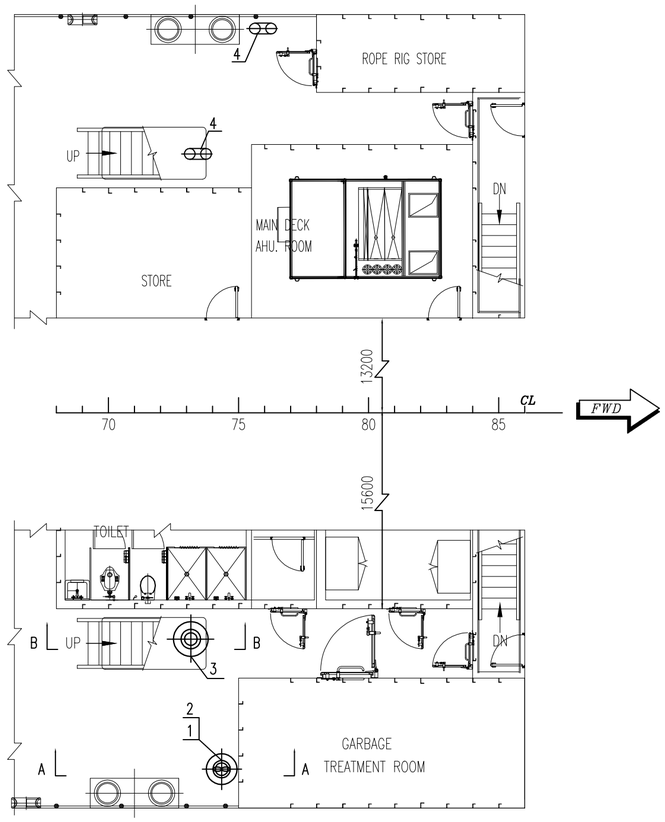
A1 : 0.5 m²

JH316G-541-03

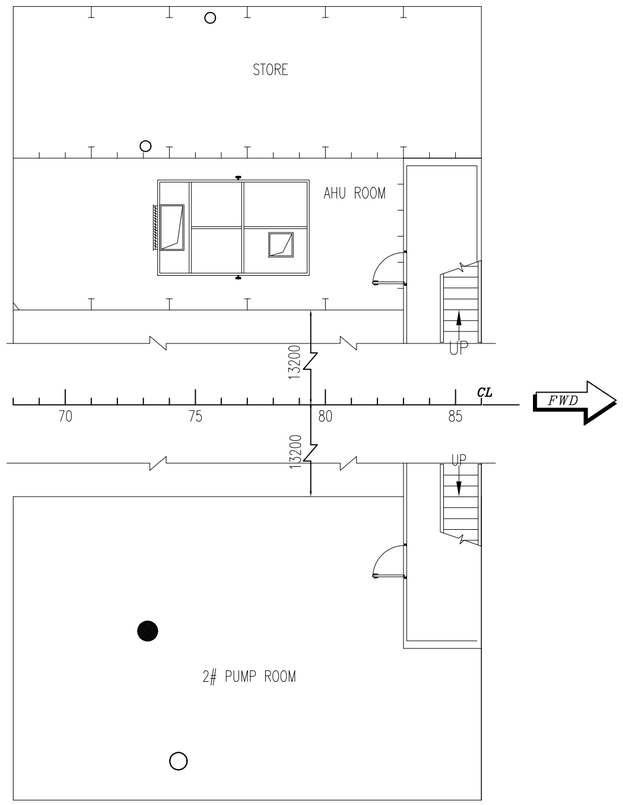
REV 版本号	DATE 日期	DESCRIPTION 描述	DESIGNED 设绘	CHECKED 校对	VERIFIED 审核	APPROVED 审定
Z	2018.04.27	AS BUILT DRAWING	姚俊卿	唐山	林玉璋	李兵

SIGN
会 签

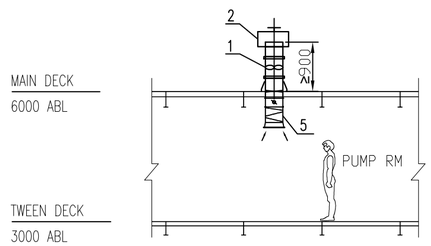
MAIN DECK



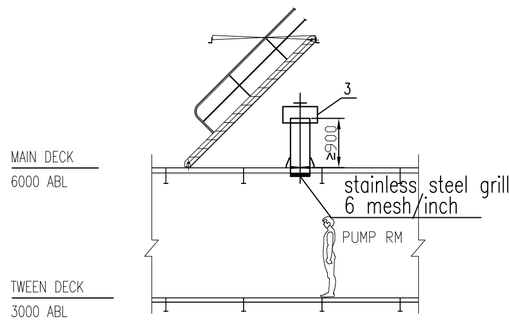
TANK TOP & TWEEN DECK



A–A



B–B



TECHNICAL REQUIREMENTS

1. ANNOTATED SIZES OF PIPE IN THE DRAWING TO BE OUT.DIA(mm).
2. ALL DUCTS SHOULD BE FIXED WITH HANGER.THE DISTANCE BETWEEN TWO HANGERS IS ABOUT 2 METER, HANGERS SHALL BE INSTALLED HARDLY ACC. TO RELATED REGULATION REQUIREMENT.
3. THE PAINTING OF DUCT SHALL BE PAINTED ACCORDING TO THE SPECIFICATION OF THE SHIP.
4. THE MATERIAL OF DUCK TO BE GAV. STEEL OR PAINTED STEEL.
5. THE MATERIAL OF THE PADS BETWEEN FLANGES SHOULD BE NONCOMBUSTIBLE.
6. ALL VENTILATORS SHOULD BE INSTALLED WITH RATPROOF STAINLESS STEEL GRIDS & MESH.
7. THE FLANGES USED FOR RECTANGULAR DUCTS IN THIS DRAWING SHOULD BE MADE IN ACCORDANCE WITH CB/T64-99.
8. EXCEPT SPECIAL NOTE, THE DUCK THICKNESS REFER TO FOLLOWING REQUIREMENT:
   DUCK WIDTH 0~450mm,THICKNESS 1mm;
   DUCK WIDTH 450~610mm,THICKNESS 1.2mm;
   DUCK WIDTH 610mm~EXCEEDING,THICKNESS 3mm.
   DUCK WIDTH 1000mm~EXCEEDING,THICKNESS 5mm.
9. THE DETAIL BRACKETS OF GOOSNECK/MUSHROOM VENTILATORS SEE JH316-542-01;
10. VENTILATION DUCTS SHOULD BE OF NON-COMBUSTIBLE MATERIAL.

	LEGEND
Symbol	Description
	MUSHROOM VENTILATOR
	Electric axial flow fan
	Structure duct
	Weather-tight louver

No.	Name	Specifications	Qty.	Remarks
5	ROTARY TRUMPET VENTILATOR	ø350 CB459-66	1	
4	GOOSENECK VENTILATOR WITH WEATHER TIGHT CLOSING DEVICE	AB250 CB/T 296-1999	2	t=10mm
3	MUSHROOM VENTILATOR WITH WEATHER TIGHT CLOSING DEVICE	B450 CB/T 295-2000	1	t=10mm
2	MUSHROOM VENTILATOR WITH WEATHER TIGHT CLOSING DEVICE	C400 CB/T 295-2000	1	t=10mm
1	2# PUMP ROOM EXHAUST FAN	4000m³/hxPs200Pa	1	AXIAL FAN

OWNER 船东	QMS BANI YAS INC.	HULL NO. 工程号	HXLB3007
BUILDER 船厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD 青岛海西重机有限责任公司	CLASS 船级社	ABS
TITLE 船名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图名	LAYOUT OF 1# & 2# PUMP ROOM VENTILATION 1#、2#泵舱通风布置图	DWG. NO. 图号	JH316G-541-03

SCALE 比例	WEIGHT 重量	PAGE 页数	DATE 日期
1:100	-	1/1	

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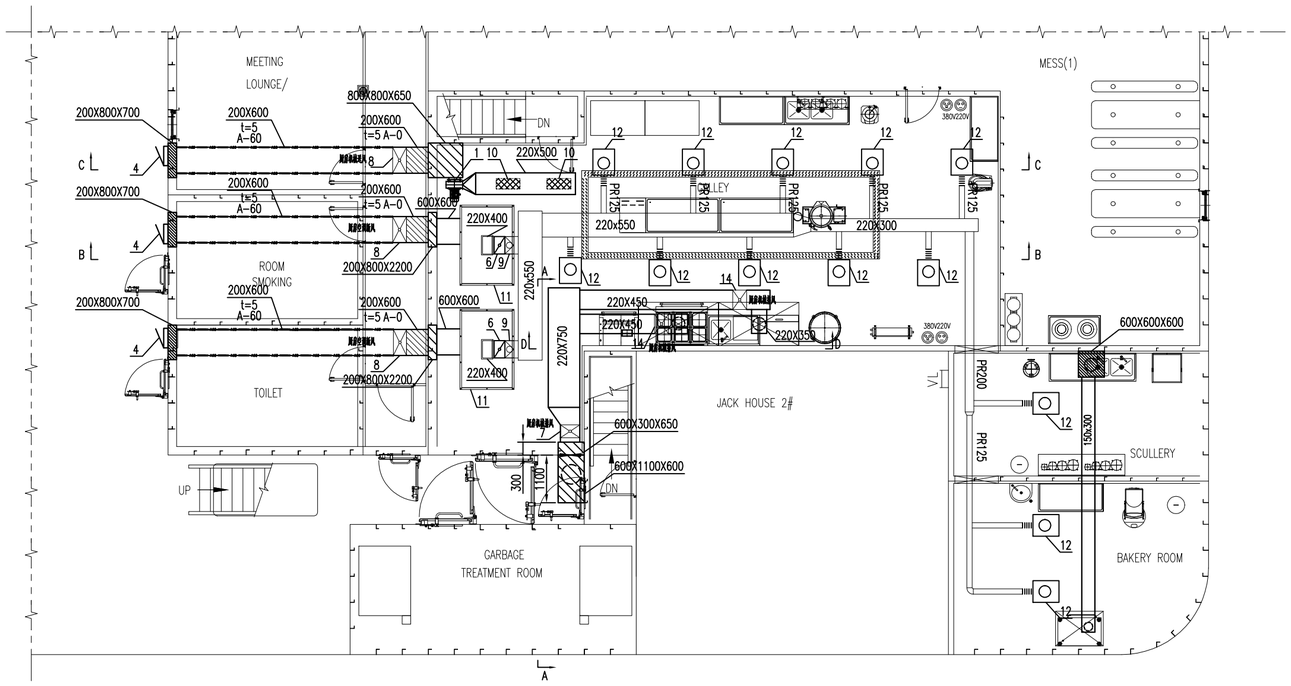
A2:0.25m²

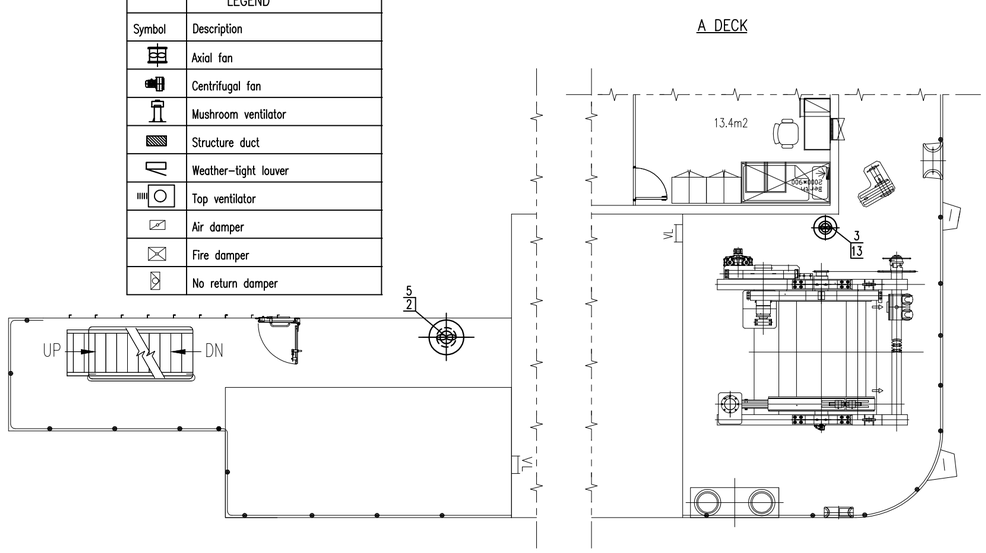
JH316G-541-05

REV 版本号	DATE 日期	DESCRIPTION 描述	DESIGNED 设绘	CHECKED 校对	VERIFIED 审核	APPROVED 审定
Z	2018.04.27	AS BUILT DRAWING	姚俊卿	唐山	林玉璋	李兵

MAIN DECK

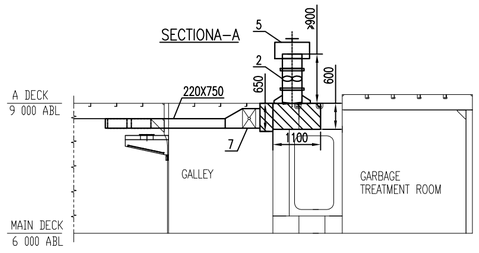


A DECK



	LEGEND
Symbol	Description
	Axial fan
	Centrifugal fan
	Mushroom ventilator
	Structure duct
	Weather-tight louver
	Top ventilator
	Air damper
	Fire damper
	No return damper

SECTIONA-A



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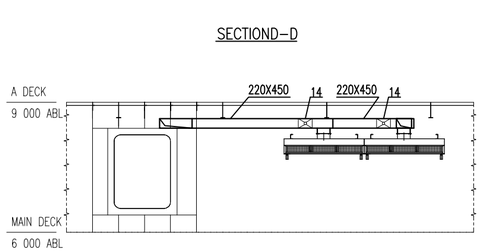
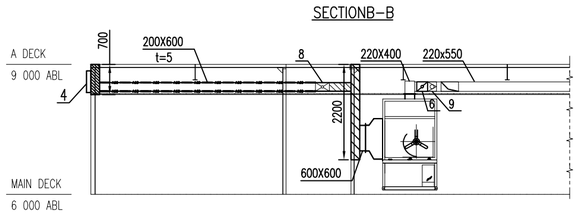
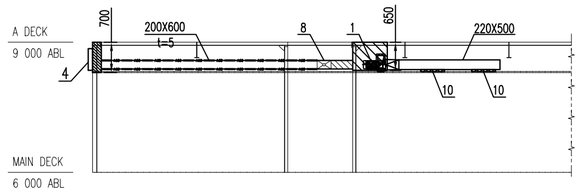


SECTIONB-B



SECTIONC-C



TECHNICAL REQUIREMENTS

1. ANNOTATED SIZES OF PIPE IN THE DRAWING TO BE OUT.DIA(mm).
2. ALL DUCTS SHOULD BE FIXED WITH HANGER.THE DISTANCE BETWEEN TWO HANGERS IS ABOUT 2 METERS, HANGERS SHALL BE INSTALLED HARDLY ACC. TO RELATED REGULATION REQUIREMENT.
3. THE PAINTING OF DUCT SHALL BE PAINTED ACCORDING TO THE SPECIFICATION OF THE SHIP.
4. THE MATERIAL OF DUCT TO BE GAV. STEEL OR PAINTED STEEL.
5. THE MATERIAL OF THE PADS BETWEEN FLANGES SHOULD BE NONCOMBUSTIBLE.
6. THE FLANGES USED FOR RECTANGULAR DUCTS IN THIS DRAWING SHOULD BE MADE IN ACCORDANCE WITH CB/T64-99.
7. THE CEILING OR WAINSCOT WHICH IS CLOSED TO THE FIRE DAMPER, REGULATOR AND FAN SHALL BE SETTED INSPECTION DOOR AND MARKED,WHICH IS PRONE TO BE TAKEN DOWN.
8. EXCEPT SPECIAL NOTE, THE DUCK THICKNESS REFER TO FOLLOWING REQUIREMENT:
   DUCK WIDTH 0~450mm,THICKNESS 1mm;
   DUCK WIDTH 450~610mm,THICKNESS 1.2mm;
   DUCK WIDTH 610mm~EXCEEDING,THICKNESS 3mm.
   DUCK WIDTH 1000mm~EXCEEDING,THICKNESS 5mm.
9. THE STRUCTURE DUCK THICKNESS ≥ 6mm.
10. ALL A/C DUCTS SHALL BE INSULATED WITH 25MM FIBREGLASS AT LEAST;
11. PENETRATING PIECES USED FOR DUCTS TO PASS THROUGH THE A CLASS B CLASS BULKHEAD OR DECK SHALL BE PROVIDED IN ACCORDANCE WITH "FIRE INSULATIONPLAN(TYPICAL CONSTRUCTION DETAILS)". SEE(-355-01).
12. WATER INLET HEIGHT OF ALL VENTILATORS SHOULD BE NOT LESS THAN 900mm ,AND THE VENTILATORS SHOULD BE PROPERELY STRENGTHING SOPPORTED.

No.	Name	Specifications	Qty.	Remarks
14	FIRE DAMPER, NO.: FDC.07/FDC.08	220x450	2	A-0
13	MUSHROOM VENTILATOR WITH WEATHERTIGHT COVER	C300 CB/T 295-2000	1	t=10mm
12	TPB-TYPE TOP VENTILATOR	TPB-25 AIR FLOW 0-500m³/h	13	
11	PACKAGE A/C UNIT	AIR FLOW 3500m³/h	2	JOSUN SUPPLY
10	VENTILATION FENCE	B400-240x550 CB/T462-1996	2	
9	NO RETURN DAMPER	220x400	2	
8	FIRE DAMPER, NO.: FDC.11/FDC.12(全铝材); FDC.09(铝质)	200x600	3	A-0
7	FIRE DAMPER, NO.: FDC.10	DN450	1	A-0
6	AIR DAMPER	220x400	2	
5	MUSHROOM VENTILATOR WITH WEATHERTIGHT COVER	C450 CB/T 295-2000	1	t=10mm
4	FC-TYPE LOUVER BOX C/W W.T. COVER	450x500	3	RIGHT OPEN t=10mm
3	BAKERY EXHAUST FAN	1100m³/hxPs300Pa	1	AXIAL FAN
2	GALLEY EXHAUST FAN	6800m³/hxPs350Pa	1	AXIAL FAN
1	GALLEY SUPPLY FAN	3400m³/hxPs350Pa	1	CENTRIFUGAL FAN

SIGN
会 签

OWNER 船东	QMS BANI YAS INC.	HULL NO. 工程号	HXLB3007
BUILDER 船厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD 青岛海西重机有限责任公司	CLASS 船级社	ABS
TITLE 船名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图名	LAYOUT OF GALLEY VENTILATION 厨房通风布置图	DWG. NO. 图号	JH316G-541-05
		SCALE 比例: 1:100 / WEIGHT 重量: - / PAGE 页数: 1/1 / DATE 日期:	

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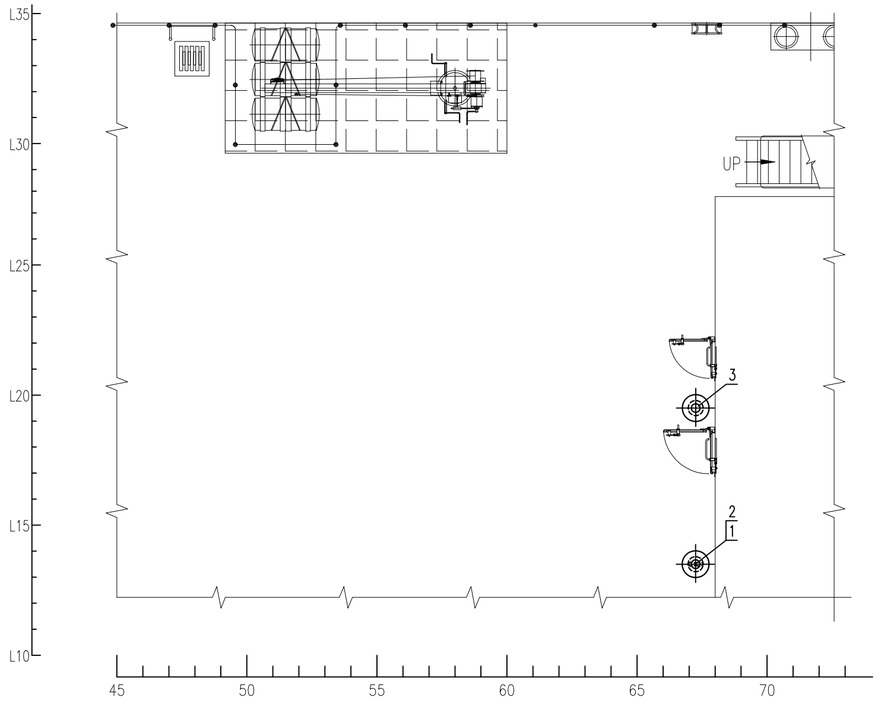
A2:0.25m²

JH316G-541-10

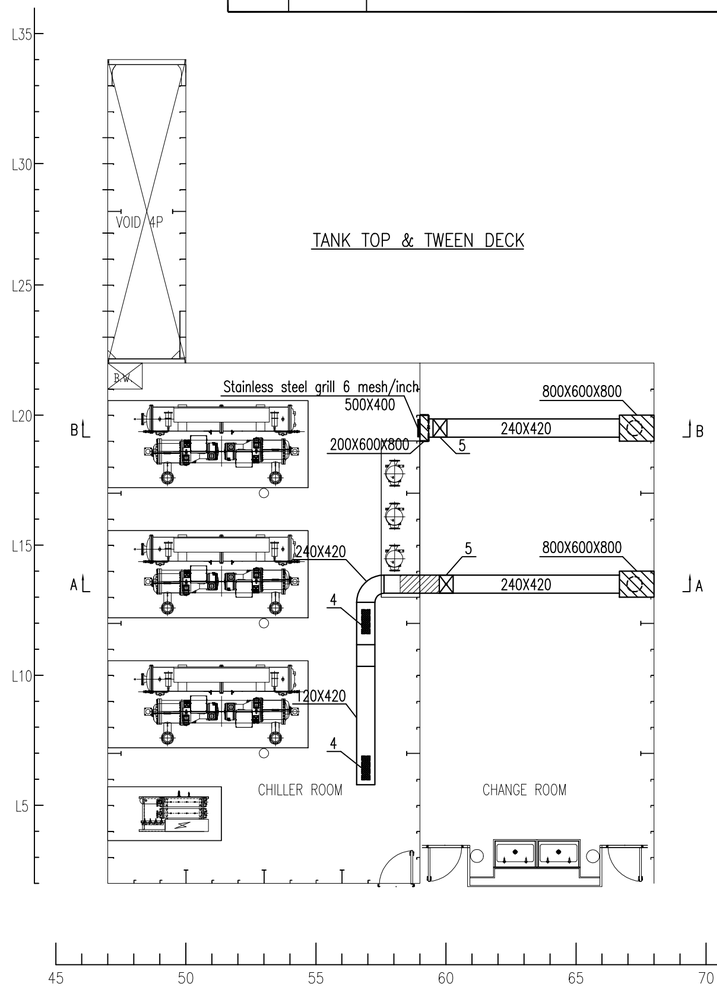
REV 版本号	DATE 日期	DESCRIPTION 描述	DESIGNED 设绘	CHECKED 校对	VERIFIED 审核	APPROVED 审定
Z	2018.04.27	AS BUILT DRAWING	姚俊卿	唐山	林玉璋	李兵

SIGN
会 签

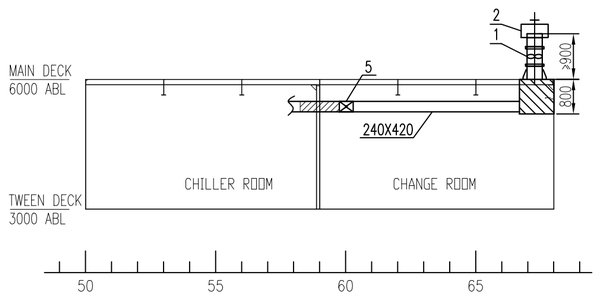
MAIN DECK



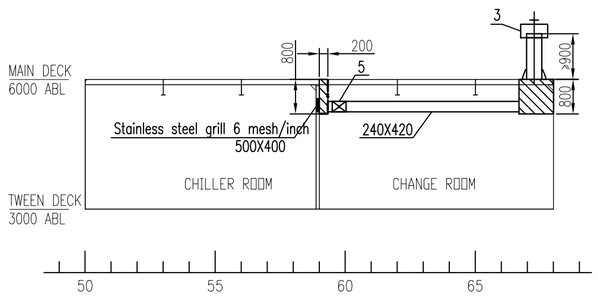
TANK TOP & TWEEN DECK



SECTION A–A



SECTION B–B



TECHNICAL REQUIREMENTS

1. ANNOTATED SIZES OF PIPE IN THE DRAWING TO BE OUT.DIM(mm).
2. ALL DUCTS SHOULD BE FIXED WITH HANGER.THE DISTANCE BETWEEN TWO HANGERS IS ABOUT 2 METER, HANGERS SHALL BE INSTALLED HARDLY ACC. TO RELATED REGULATION REQUIREMENT.
3. THE PAINTING OF DUCT SHALL BE PAINTED ACCORDING TO THE SPECIFICATION OF THE SHIP.
4. THE MATERIAL OF DUCK TO BE GAV. STEEL OR PAINTED STEEL.
5. THE MATERIAL OF THE PADS BETWEEN FLANGES SHOULD BE NONCOMBUSTIBLE.
6. THE FLANGES USED FOR RECTANGULAR DUCTS IN THIS DRAWING SHOULD BE MADE IN ACCORDANCE WITH CB/T64–99.
7. EXCEPT SPECIAL NOTE, THE DUCK THICKNESS REFER TO FOLLOWING REQUIREMENT:
   DUCK WIDTH 0~450mm,THICKNESS 1mm;
   DUCK WIDTH 450~610mm,THICKNESS 1.2mm;
   DUCK WIDTH 610mm~EXCEEDING,THICKNESS 3mm.
   DUCK WIDTH 1000mm~EXCEEDING,THICKNESS 5mm.
8. THE STRUCTURE DUCK THICKNESS ≥ 6mm.
9. VENTILATION DUCTS SHOULD BE OF NON–COMBUSTIBLE MATERIAL.
10. PENETRATING PIECES USED FOR DUCTS TO PASS THROUGH THE A CLASS B CLASS BULKHEAD OR DECK SHALL BE PROVIDED IN ACCORDANCE WITH "FIRE INSULATIONPLAN(TYPICAL CONSTRUCTION DETAILS)". SEE(–355–01).
11. THE DETAIL BRACKETS OF MUSHROOM VENTILATORS SEE JH316–542–01.

LEGEND	
Symbol	Description
⊞	Electric axial flow fan
▬	Structure duct
▭	Weather–tight louver

No.	Name	Specifications	Qty.	Remarks
5	FIRE DAMPER, NO.: FDC.13(SUP.)/FDC.14(EXH.)	240X420	2	A–0
4	B–TYPE VENTILATION FENCE	B190X550 CB/T 462–1996	2	
3	MUSHROOM VENTILATOR WITH WEATHERTIGHT CLOSING DEVICE	B350 CB/T 295–2000	1	t=10
2	MUSHROOM VENTILATOR WITH WEATHERTIGHT CLOSING DEVICE	C350 CB/T 295–2000	1	t=10
1	CHILLER ROOM SUPPLY FAN	3000m³/hxPs350Pa	1	AXIAL FAN

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BUILDER 船厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD 青岛海西重机有限责任公司	CLASS 船级社	ABS
TITLE 船名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图名	LAYOUT OF CHILLER ROOM VENTILATION 冷水机室通风布置图	DWG. NO. 图号	JH316G-541-10
		SCALE 比例 / WEIGHT 重量 / PAGE 页数 / DATE 日期	1:100 / - / 1/1 /

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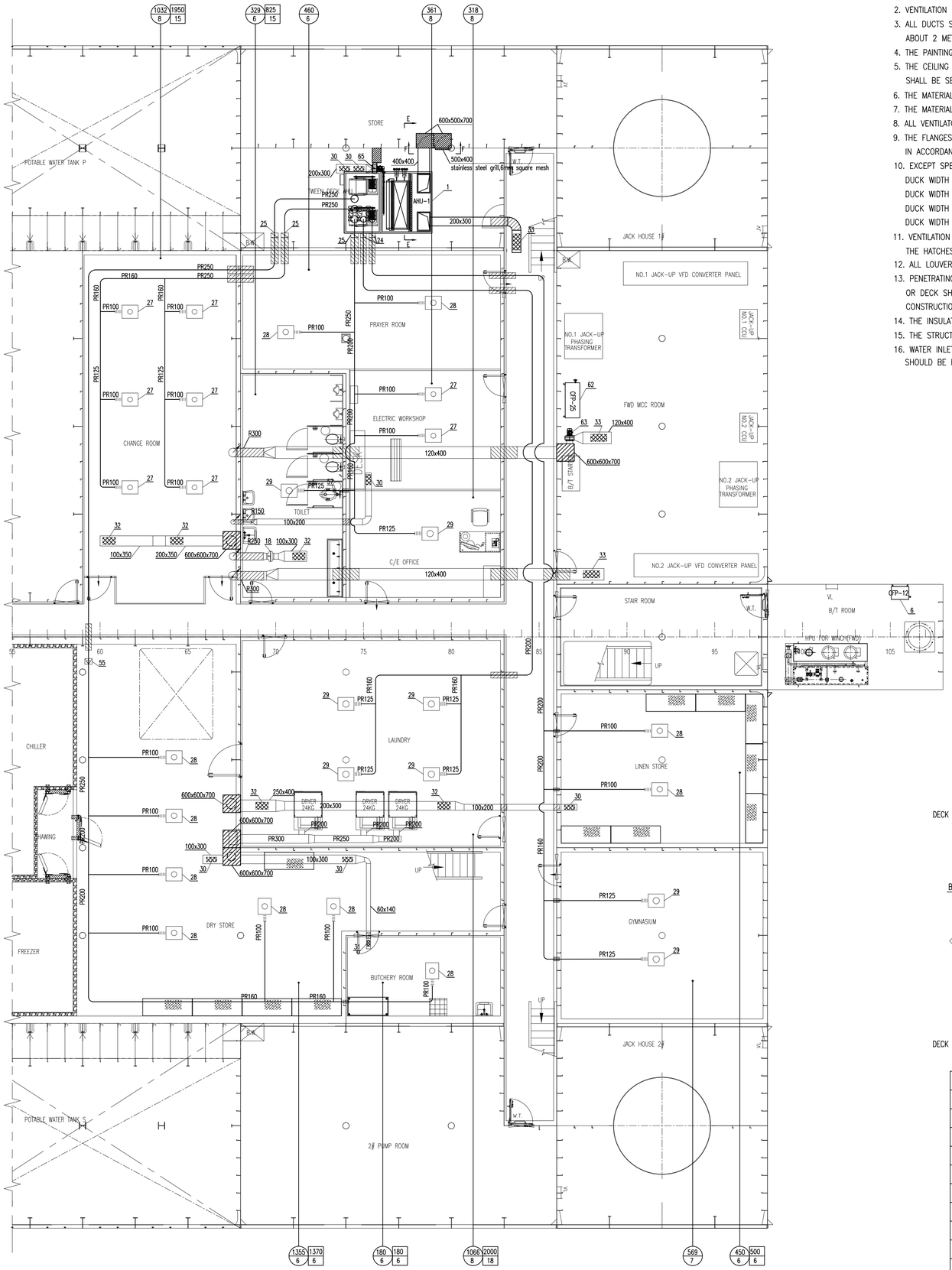
A2:0.25m²

TANK TOP & TWEEN DECK



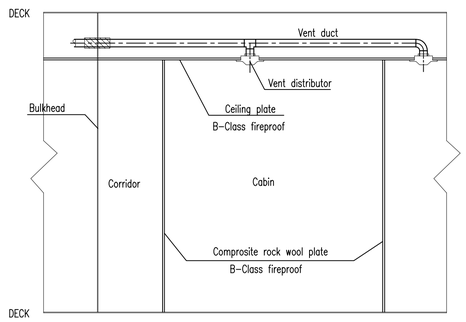
TECHNICAL REQUIREMENTS

1. ANNOTATED SIZES OF PIPE IN THE DRAWING TO BE OUT.DIA(mm).
2. VENTILATION DUCTS SHOULD BE OF NON-COMBUSTIBLE MATERIAL.
3. ALL DUCTS SHOULD BE FIXED WITH HANGER.THE DISTANCE BETWEEN TWO HANGERS IS ABOUT 2 METER, HANGERS SHALL BE INSTALLED HARDLY ACC. TO RELATED REGULATION REQUIREMENT.
4. THE PAINTING OF DUCT SHALL BE PAINTED ACCORDING TO THE SPECIFICATION OF THE SHIP.
5. THE CEILING OR WAINSCOT WHICH IS CLOSED TO THE FIRE DAMPER, REGULATOR AND FAN SHALL BE SETTED INSPECTION DOOR AND MARKED,WHICH IS PRONE TO BE TAKEN DOWN.
6. THE MATERIAL OF DUCK TO BE CAV. STEEL OR PAINTED STEEL.
7. THE MATERIAL OF THE PADS BETWEEN FLANGES SHOULD BE NONCOMBUSTIBLE.
8. ALL VENTILATORS SHOULD BE INSTALLED WITH RATPROOF STAINLESS STEEL GRIDS & MESH.
9. THE FLANGES USED FOR RECTANGULAR DUCTS IN THIS DRAWING SHOULD BE MADE IN ACCORDANCE WITH CB/T64-99.
10. EXCEPT SPECIAL NOTE, THE DUCK THICKNESS REFER TO FOLLOWING REQUIREMENT:
    DUCK WIDTH 0~450mm,THICKNESS 1mm;
    DUCK WIDTH 450~610mm,THICKNESS 1.2mm;
    DUCK WIDTH 610mm~EXCEEDING,THICKNESS 3mm.
    DUCK WIDTH 1000mm~EXCEEDING,THICKNESS 5mm.
11. VENTILATION DUCTS SHALL BE PROVIDED WITH HATCHES FOR INSPECTION AND CLEANING. THE HATCHES SHALL BE LOCATED NEAR THE FIRE DAMPERS.
12. ALL LOUVERS SHOULD BE INSTALLED 1800mm ABOVE DECK WHICH NOT SPECIFIED.
13. PENETRATING PIECES USED FOR DUCTS TO PASS THROUGH THE A CLASS B CLASS BULKHEAD OR DECK SHALL BE PROVIDED IN ACCORDANCE WITH "FIRE INSULATIONPLAN(TYPICAL CONSTRUCTION DETAILS)". SEE(-355-01).
14. THE INSULATION LAYER THICKNESS OF THE SUPPLY AND RETURN AIR DUCT TO BE MORE THAN 15mm.
15. THE STRUCTURE DUCK THICKNESS ≥ 6mm.
16. WATER INLET HEIGHT OF ALL VENTILATORS SHOULD BE NOT LESS THAN 900mm ,AND THE VENTILATORS SHOULD BE PROPERELY STRENGTHING SOPPORTED.

LEGEND			
Symbol	Description	Symbol	Description
	Axial fan		Fire damper
	Duct fan		No return damper
	Centrifugal fan		Ventilation Fence
	Mushroom ventilator		Exhaust air nozzle
	Structure duct	XXX / XX	Air flow rate /h Air change rate
	Weather-tight louver	XXX	Exhaust air flow /h
	Top ventilator	XXXX	Return air flow /h
	Air damper		

B-CLASS PENETRATING TYPICAL

For all B-class fireproof cabins and ceilings



REV 版本号	DATE 日期	DESCRIPTION 描述	DESIGNED 设绘	CHECKED 校对	VERIFIED 审核	APPROVED 审定
Z	2018.04.27	AS BUILT DRAWING	姚俊卿	唐山	林玉璋	李兵

No.	Name	Specifications	Qty.	Remarks
65	TWEEN DECK AHU ROOM EXHAUST FAN	1600m³/hxPs350Pa	1	CENTRIFUGAL FAN
64	SMOKE DAMPER, NO.: SDC.01	200x300	1	
63	FWD MCC ROOM SUPPLY FAN	1600m³/hxPs350Pa	1	CENTRIFUGAL FAN
62	FWD MCC ROOM FAN COIL	CFP-25	1	JOSUN SUPPLY
61	SILENCER	ø350 L=1200	3	
60	SILENCER	ø300 L=1200	1	
59	MUSHROOM VENTILATOR WITH WEATHERTIGHT CLOSING DEVICE	C350 CB/T 295-2000	3	t=10mm
58	MUSHROOM VENTILATOR WITH WEATHERTIGHT CLOSING DEVICE	C300 CB/T 295-2000	1	t=10mm
57	NO RETURN DAMPER	DN125	3	
56	NO RETURN DAMPER	DN100	4	
55	NO RETURN DAMPER	DN250	2	
54	NO RETURN DAMPER	DN160	1	
53	FIRE DAMPER, NO.: FDC.04(AC supply); FDC.05(AC return)	DN250	2	A-60
52	FIRE DAMPER, NO.: FDC.15	DN100	1	A-60
51	FIRE DAMPER, NO.: FDC.01	250x700	1	A-0
50	FIRE DAMPER, NO.: FDC.02	250x600	1	A-0
49	FIRE DAMPER, NO.: FDC.03	250x750	1	A-0
48	FIRE DAMPER, NO.: FDC.06	DN100	1	A-0
47	GOOSENECK VENTILATOR WITH WEATHERTIGHT CLOSING DEVICE	AB150 CB/T 296-1999	2	t=10mm
46	GOOSENECK VENTILATOR WITH WEATHERTIGHT CLOSING DEVICE	CA400-460x290 CB/T 296-1999	3	t=10mm
45	GOOSENECK VENTILATOR WITH WEATHERTIGHT CLOSING DEVICE	AB250 CB/T 296-1999	1	t=10mm
44	GOOSENECK VENTILATOR WITH WEATHERTIGHT CLOSING DEVICE	AB200 CB/T 296-1999	3	t=10mm
43	GOOSENECK VENTILATOR WITH WEATHERTIGHT CLOSING DEVICE	AB300 CB/T 296-1999	5	t=10mm
42	FC-TYPE LOUVER BOX C/W W.T. COVER	300X500	6	RIGHT OPEN t=10mm
41	FC-TYPE LOUVER BOX C/W W.T. COVER	500X600	2	RIGHT OPEN t=10mm
40	FC-TYPE LOUVER BOX C/W W.T. COVER	150X200	5	LEFT OPEN t=10mm
39	FC-TYPE LOUVER BOX C/W W.T. COVER	300X200	5	LEFT OPEN t=10mm
38	FC-TYPE LOUVER BOX C/W W.T. COVER	300X300	4	RIGHT OPEN t=10mm
37	FC-TYPE LOUVER BOX C/W W.T. COVER	500X500	1	RIGHT OPEN t=10mm
36	FC-TYPE LOUVER BOX C/W W.T. COVER	400X500	1	RIGHT OPEN t=10mm
35	VENTILATION FENCE	B600x1000 ▮CB/T 462-1996	2	
34	VENTILATION FENCE	B400x700 ▮CB/T 462-1996	1	
33	VENTILATION FENCE	B400-240x550 CB/T 462-1996	3	
32	VENTILATION FENCE	B350-240x430 CB/T 462-1996	14	
31	VENTILATION FENCE	B150-100x210 CB/T 462-1996	4	
30	VENTILATION FENCE	B250-150x350 CB/T 462-1996	14	
29	TPB-TYPE TOP VENTILATOR	TPB-20	84	0~380m³/h
28	TPB-TYPE TOP VENTILATOR	TPB-17	23	0~300m³/h
27	TPB-TYPE TOP VENTILATOR	TPB-15	40	0~250m³/h
26	EXHAUST AIR NOZZLE	DFT-A-100	65	
25	AIR DAMPER	DN250	10	
24	AIR DAMPER	DN200	18	
23	AIR DAMPER	DN160	1	
22	EXHAUST AIR NOZZLE	DFT-A-125	2	
21	DRY STORE AND BUCHERY ROOM EXHAUST FAN	1550m³/hxPs250Pa	1	AXIAL FAN
20	LAUNDY AND LINEN STORE EXHAUST FAN	2500m³/hxPs250Pa	1	AXIAL FAN
19	CHANGE ROOM EXHAUST FAN	1950m³/hxPs250Pa	1	AXIAL FAN
18	TWEEN DECK TOILET EXHAUST FAN	825m³/hxPs200Pa	1	DUCT FAN
17	INFIRMARY EXHAUST FAN	780m³/hxPs200Pa	1	DUCT FAN
16	SMOKING ROOM EXHAUST FAN	200m³/hxPs200Pa	1	DUCT FAN
15	MEETING ROOM EXHAUST FAN	900m³/hxPs180Pa	1	DUCT FAN
14	MESS(1) EXHAUST FAN	3000m³/hxPs390Pa	1	AXIAL FAN 2-SINGLE SPEED
13	MESS(2) EXHAUST FAN	850m³/hxPs250Pa	1	DUCT FAN 2-SINGLE SPEED
12	B DECK SANITARY EXHAUST FAN	1250m³/hxPs250Pa	2	DUCT FAN
11	A DECK AHU ROOM EXHAUST FAN	1950m³/hxPs200Pa	1	CENTRIFUGAL FAN
10	B DECK AHU ROOM EXHAUST FAN	1950m³/hxPs200Pa	1	CENTRIFUGAL FAN
9	MAIN DECK AHU ROOM EXHAUST FAN	1535m³/hxPs380Pa	1	CENTRIFUGAL FAN
8	MAIN DECK TOILET EXHAUST FAN	600m³/hxPs200Pa	1	DUCT FAN
7	A DECK SANITARY EXHAUST FAN	1050m³/hxPs250Pa	2	DUCT FAN
6	BOW THRUSTER ROOM FAN COIL	CFP-12	1	JOSUN SUPPLY
5	WHEEL HOUSE FAN COIL	CFP-25	2	JOSUN SUPPLY
4	AHU-4	6120m³/h	1	JOSUN SUPPLY
3	AHU-3	8457m³/h	1	JOSUN SUPPLY
2	AHU-2	9439m³/h	1	JOSUN SUPPLY
1	AHU-1	6120m³/h	1	JOSUN SUPPLY

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TITLE 船名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图名	LAYOUT OF ACCOMMODATION AIR-CONDITION VENT DUCT AND MECHANICAL VENTILATION 居住舱室空调风管与机械通风布置图	DWG. NO. 图号	JH316G-542-01
		SCALE 比例	1:80
		WEIGHT 重量	-
		PAGE 页数	1/4
		DATE 日期	

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A1:0.50m²

MAIN DECK

A DECK

LAYOUT OF ACCOMMODATION AIR-CONDITION HEAT DUCT AND MECHANICAL VENTILATION 居住舱室空调风管与机械通风布置图	JH316G-S42-01 R6vZ	PAGE 页数	2/4

B DECK

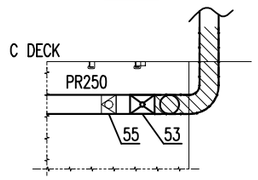
C DECK

TOP DECK

LAYOUT OF ACCOMMODATION AIR-CONDITION VENT DUCT AND MECHANICAL VENTILATION 居住舱室空调风管与机械通风布置图	JH3160-S42-01 R6V2	PAGE 页数	3/4

LAYOUT OF ACCOMMODATION AIR-CONDITION VENT DUCT AND MECHANICAL VENTILATION 居住舱室空调风管与机械通风布置图	JH316G-542-01 RevZ	PAGE 页数	4/4

A–A



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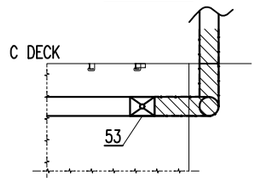

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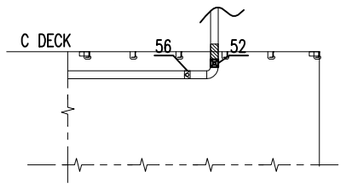
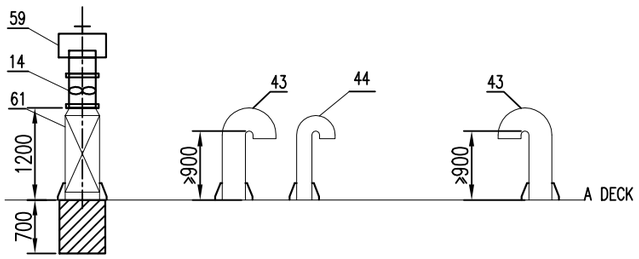
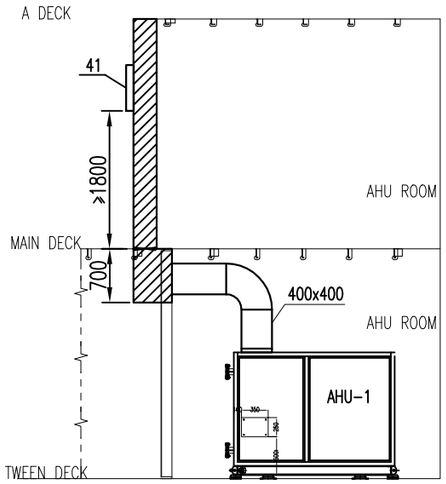


D–D



E–E



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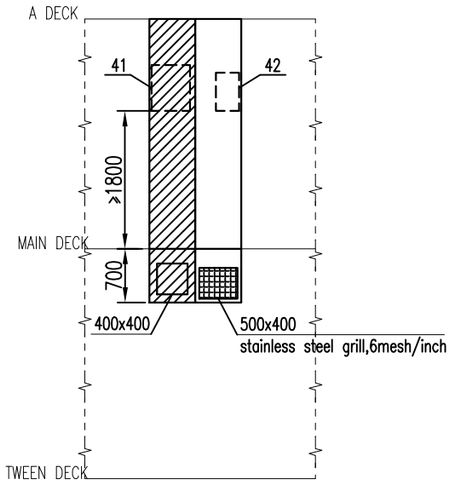
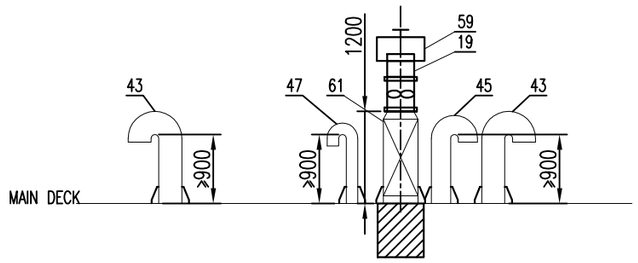
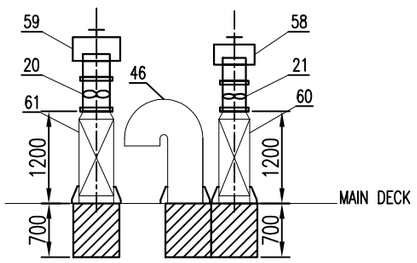


B–B

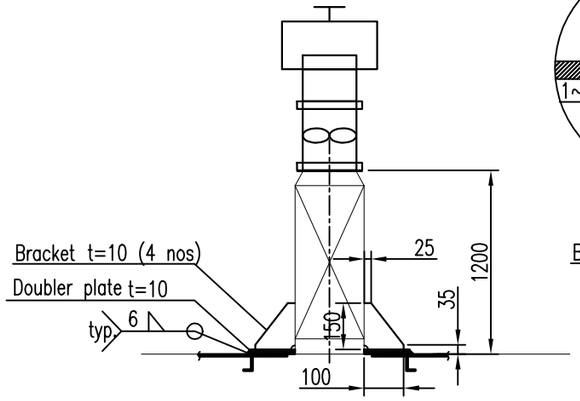


C–C



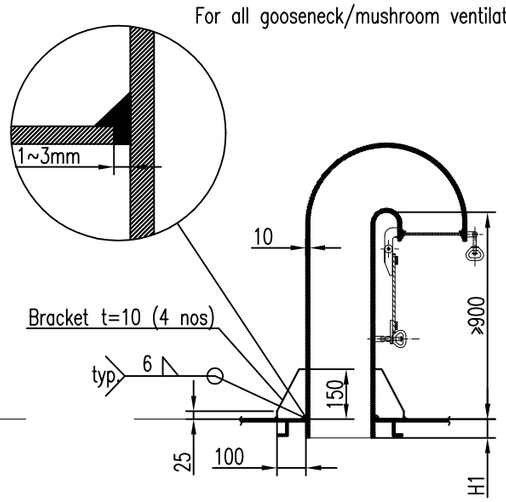
BRACKET TYPICAL

For all mushroom ventilators with silencers



BRACKET TYPICAL

For all gooseneck/mushroom ventilators



Note: 1) For Rectangle Ventilators:
when LXB≥500X300, H1≥150;
when LXB<500X300, 0≤H1≤150;

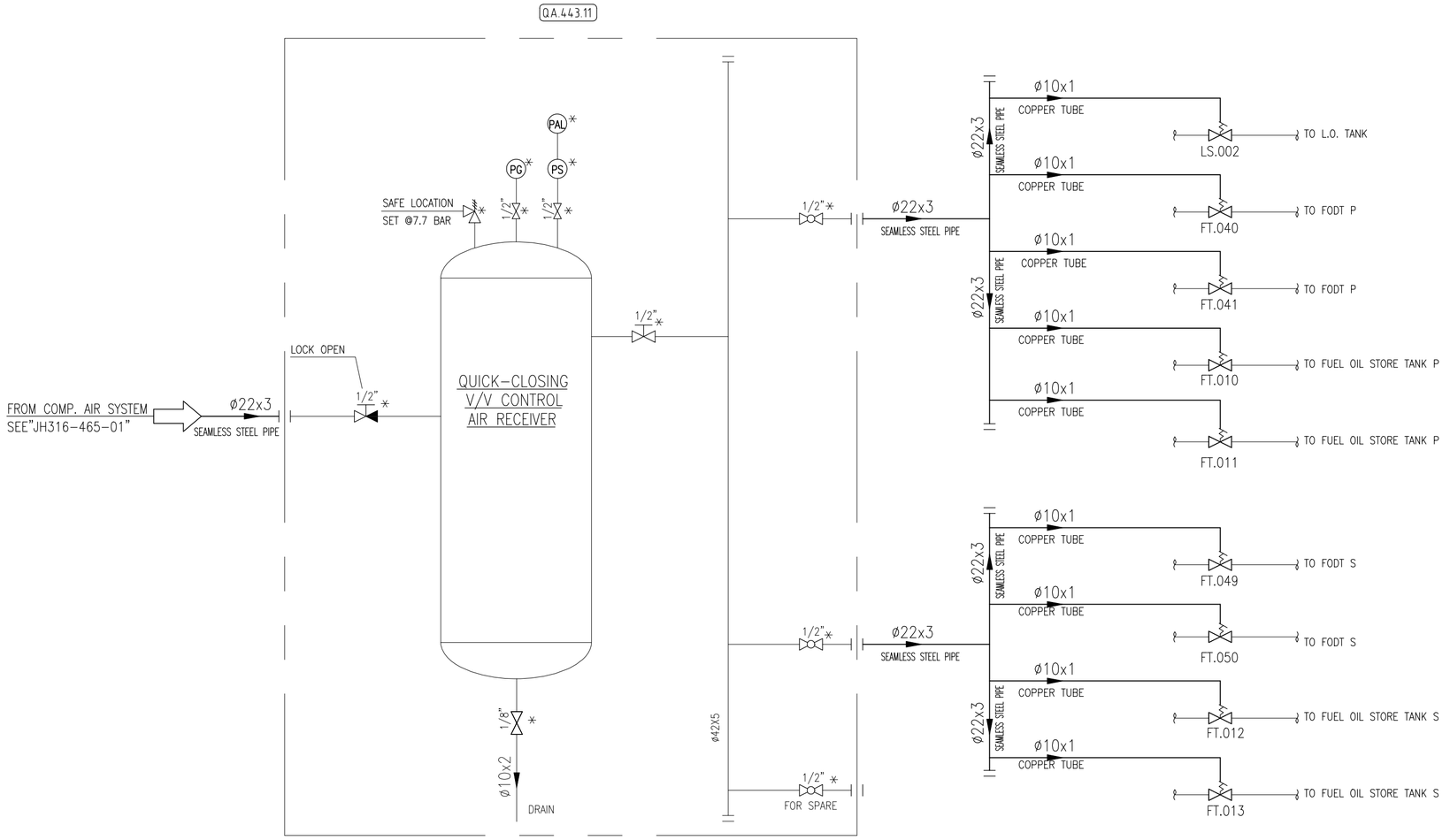
Note: 1) For Cylinder Ventilators:
when ϕD>350, H1≥150;
when ϕD≤350, 0≤H1≤150;

7.6.10 Fire extinguishing systems

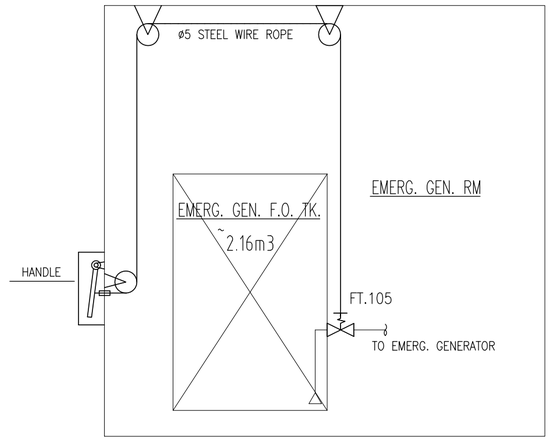
Please refer to the attached files.

JH316G-443-01

REV 版本号	DATE 日期	DESCRIPTION 描述	DESIGNED 设绘	CHECKED 校对	VERIFIED 审核	APPROVED 审定
Z	2018.04.27	AS BUILT DRAWING	ZQQ	CK	XF	LB



NOTE: QUICK CLOSING VALVE CONTROL PANEL LOCATED OUTSIDE THE ENGINE ROOM ON MAIN DECK



NOTE: THE HANDLE CONTROL DEVICE LOCATED OUTSIDE THE EMERG. GEN. ROOM

AIR RECEIVER CAPACITY CALCULATION

1. PIPES
   1.1 ø22x3, L1=~60m:
   $V1=0.785*d^2 *L1=0.785*0.16^2*600=12.06L$
   1.2 ø10x1, L2=~20m:
   $V2=0.785*d^2 *L2=0.785*0.08^2*200=1.05L$
2. VALVES
   2.1 DN40, QUANTITY: n1=8, VALVE CYLINDER HEIGHT h1=5cm.
   $V3=0.785*d^2 *h1*n1=0.785*0.4^2*0.5*8=0.50L$
   2.2 DN25, QUANTITY: n2=1, VALVE CYLINDER HEIGHT h2=5cm.
   $V4=0.785*d^2 *h2*n2=0.785*0.25^2*0.5*1=0.02L$
3. TOTAL CAPACITY V=V1+V2+V3+V4=13.63L
4. P1*V1=P2*V2,AIR PRESSURE P1=7bar,AIR RECEIVER CAPACITY V1=30L
   4.1 FIRST START: P2=P1*V1/(V1+V)=7*30/(30+13.63)=4.81bar
   4.2 SECOND START: P3=P2*V1/(V1+V)=4.81*30/(30+13.62)=3.3bar
5. CONCLUSION
   P3>3bar, OK

SIGN

SYSTEM 系统

PIPING SYSTEM CLASS: 管路系统等级: III	DESIGN WORKING TEMPERATURE: 设计工作温度: < 60 deg.C	JOINTS NDT: 接头无损检测: ——
DESIGN PRESSURE: 设计压力: 0.77 MPa	MEDIA FLASHPOINT: 介质闪点: –	PIPING MATERIAL: 管系材料: See piping spec.
HYDROSTATIC TEST PRESSURE: 试验压力: 1.155 MPa		
INSTALLATION ON BOARD: 装船后: NO LEAKAGE UNDER 0.77 MPa		
Remarks: 备注:		

PIPING SPECIFICATION 管系规格

DN 通径	Piping 管系			Connections 连接件	
	Pipe Type 管子类型	Standard 标准	Material 材料	Type 类型	Standard 标准
ALL SIZE	COPPER PIPE	GB/T 1527-2006	COPPER	Bite union/ threaded joint	
ALL SIZE	SEAMLESS STEEL PIPES	GB/T 8163-2008	20#	Flanged/Sleeve	GB 2506-1989

Remarks:

COOPER

DN 通径	DN6	DN10	DN15	DN20
Outer diameter	10	15	20	25
Wall thickness,general	1	2.0	2.0	2.5
Extra heavy pipes thickness				
Wall thickness, overboard pipes				

Remarks: 备注:

NOTES 说明

GENERAL NOTES:

1. ANNOTATED SIZE OF PIPE IN THE DRAW. TO BE OUT. DIA.xTHICKNESS (mmxmm).
2. AIR RECEIVER HAVE SUFFICIENT CAPACITY TO CLOSE ALL CONNECTED VALVES TWICE REFERRING TO ABS RULE 4-6-4/13.5.3 (b) AND TO BE CERTIFIED BY ABS.
3. THE FITTINGS WITH MARK "*" & " [ ] " IN THE DRAWING ARE SUPPLIED BY MAKER.
4. THE CONTROL AIR RECEIVER IS TO BE ABS CERTIFIED.

CORRESPONDING DRAWINGS

Drawing No. 图号	Drawing title 图名
JH316-465-01	DIAGRAM OF COMPRESSED AIR PIPING SYSTEM

System Code Description

1. Equipment Code:
   XX . XXX . XX
   - Equipment NO.
   - System NO.
   - System code
2. Valves and Accessories Code:
   XX . XXX
   - NO.
   - System code

SYMBOL	NAME	SYMBOL	NAME
	QUICK CLOSING VALVE		BUTTERFLY VALVE(HAND WHEEL TYPE)
	CENTRIFUGAL PUMP	LT	LEVEL TRANSMITTER
P	PRESS. GAUGE & VALVE	LS	LEVEL SWITCH
PV	PRE. VACUUM GAUGE & V.	LAL	LOW LEVEL ALARM
	STOP VALVE	LI	LEVEL INDICATOR
	STOP CHECK VALVE	LAH	HIGH LEVEL ALARM
	BELL MOUTH		FLOWMETER

EQUIPMENT 设备

CODE	QTY.	DESCRIPTION	CHARACTERISTICS	REMARK
QA.443.11	1	QUICK CLOSING VALVE BOX	30L, 0.7MPa	

OWNER 船东	QMS BANI YAS INC.	HULL NO. 工程号	HXLB3007
BUILDER 船厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD 青岛海西重机有限责任公司	CLASS 船级社	ABS
TITLE 船名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图名	DIAGRAM OF QUICK CLOSING VALVE PIPING SYSTEM 快关阀系统管系原理图	DWG. NO. 图号	JH316G-443-01
		SCALE 比例: 1:1 / WEIGHT 重量: - / PAGE 页数: 1/1 / DATE 日期	

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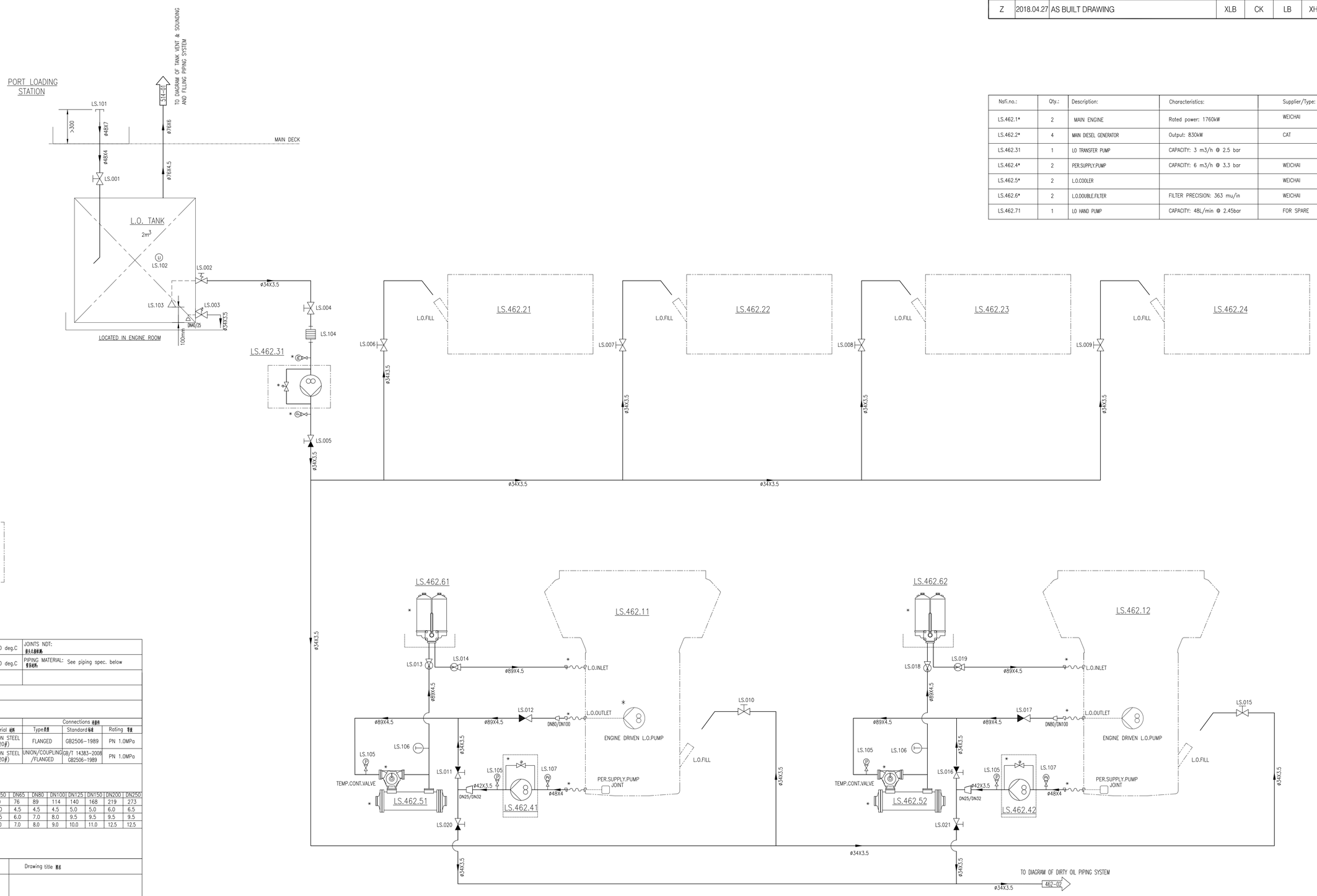
面积:0.25m²

JH316G-462-01

REV 版本号	DATE 日期	DESCRIPTION 描述	DESIGNED 设绘	CHECKED 校对	VERIFIED 审核	APPROVED 审定
Z	2018.04.27	AS BUILT DRAWING	XLB	CK	LB	XHH



Nsfi.no.:	Qty.:	Description:	Characteristics:	Supplier/Type:
LS.462.1*	2	MAIN ENGINE	Rated power: 1760kW	WEICHAI
LS.462.2*	4	MAIN DIESEL GENERATOR	Output: 830kW	CAT
LS.462.31	1	LO TRANSFER PUMP	CAPACITY: 3 m3/h @ 2.5 bar	
LS.462.4*	2	PER.SUPPLY.PUMP	CAPACITY: 6 m3/h @ 3.3 bar	WEICHAI
LS.462.5*	2	L.O.COOLER		WEICHAI
LS.462.6*	2	L.O.DOUBLE.FILTER	FILTER PRECISION: 363 mu/in	WEICHAI
LS.462.71	1	LO HAND PUMP	CAPACITY: 48L/min @ 2.45bar	FOR SPARE

SIGN 会签

SYSTEM 系统

PIPING SYSTEM CLASS: 管路系统等级: III	DESIGN WORKING TEMPERATURE: 设计工作温度: < 60 deg.C	JOINTS NDT: 接头无损检测:
DESIGN PRESSURE: 设计工作压力: 4bar	MEDIA FLASHPOINT: 介质闪点: < 60 deg.C	PIPING MATERIAL: See piping spec. below 管系材料:
HYDROSTATIC TEST PRESSURE: 试验压力: 6bar		
INSTALLATION ON BOARD: NO LEAKAGE UNDER WORKING CONDITION 装船后		
Remarks: 备注:		

PIPING SPECIFICATION 管系说明

DN 通径	Piping 管系			Connections 连接件		
	Pipe Type 管子类型	Standard 标准	Material 材料	Type 类型	Standard 标准	Rating 等级
DN>50	SEAMLESS STEEL PIPES (PICKLING)	GB/T 8163-2008	CARBON STEEL (20#)	FLANGED	GB2506-1989	PN 1.0MPa
DN<50	SEAMLESS STEEL PIPES (PICKLING)	GB/T 8163-2008	CARBON STEEL (20#)	UNION/COUPLING /FLANGED	GB/T 14383-2008 GB2506-1989	PN 1.0MPa

Remarks: 备注: (1) Connections's material to be 20# FS.

GB/T 8163-2008

DN 通径	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100	DN125	DN150	DN200	DN250
Outer diameter 外径	22	27	34	42	48	60	76	89	114	140	168	219	273
Wall thickness,general 普通壁厚	3.0	3.0	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	6.0	6.5
Extra heavy pipes thickness 加厚壁厚	4.0	4.0	5.0	5.0	5.0	5.5	6.0	7.0	8.0	9.5	9.5	9.5	9.5
Wall thickness, overboard pipes 舷外壁厚				7.0	7.0	7.0	7.0	8.0	9.0	10.0	11.0	12.5	12.5

Remarks: 备注: (1) The size of pipe Standard accord to GB/T 8163-2008.

CORRESPONDING DRAWINGS 关联图纸

Drawing No. 图号	Drawing title 图名	Drawing 图号	Drawing title 图名
JH316-514-01	DIAGRAM OF TANK VENT & SOUNDING AND FILLING PIPING SYSTEM		
JH316-462-02	DIAGRAM OF DIRTY OIL PIPING SYSTEM		

NOTES 说明

GENERAL NOTES:

1. Annotated size of pipe in the drawing to be out. diameter x thickness (mmxmm).
2. Pipe fabrication and installation shall refer to "JH316-400-04GY PIPING PRACTICE" or shipyard's standard.
3. Valves and filters is to be readily and easily accessible for manual operation and maintenance.
4. The fittings with mark "*" & " " in the drawing are supplied by maker.
5. The material of gauge pipe to be ø8x1.5 seamless copper.
6. There pipes penetrate through water tight bulkhead or deck to be fitted with penetration pieces according to CB/T3480-92 or shipyard's standard.
7. All piping to be supported securely in order to prevent vibrations and other causes.
8. Pipe that can cause progressive flooding of other intact tanks are to be located at least 1.5m inboard of the side sheel.
9. The quick closing valves are to be "air to close" type, the quick closing valves to be remote shut off by compressed air.
10. Level gauge fitted in lube.oil tanks shall be installed with self closing valves in each end.
11. All flexible hose to be ABS approved type.(TYP.)

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
	GEAR PUMP		QUICK-CLOSING VALVE		PRESS. GAUGE & VALVE
	HAND PUMP		SELF-CLOSING VALVE		PRE. VACUUM GAUGE & V.
	STOP VALVE		OIL STRAINER		THERMOMETER
	STOP CHECK VALVE		BELL MOUTH		REDUCER
	CHECK VALVE		FLEXIBLE HOSE		
	SAFETY VALVE				

System Code Description

1. Equipment Code:
   XX . XXX . XX
   - Equipment NO.
   - System NO.
   - System code
2. Valves and Accessories Code:
   XX . XXX
   - NO.
   - System code

OWNER 船东	QMS BANI YAS INC.	HULL NO. 工程号	HXLB3007
BUILDER 船厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD 青岛海西重机有限责任公司	CLASS 船级社	ABS
TITLE 船名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图名	DIAGRAM OF LUBE OIL PIPING SYSTEM 滑油系统管系原理图	DWG. NO. 图号	JH316G-462-01
		SCALE 比例	1:1
		WEIGHT 重量	-
		PAGE 页数	1/3
		DATE 日期	

上海佳豪船海工程研究设计有限公司
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Tel : 86-21-6085 9800 Fax : 86-21-6085 9842

A1:0.50m²

DIAGRAM OF LUBE OIL PIPING SYSTEM 滑油系统管系原理图								JH316G-462-01 RevZ		PAGE 2 /3
ITEM NO. 编号	STANDARD NO. OR DRAWING NO. 标准号或图号	NAME 名称	DN 通径 mm	PN 压力 MPa	MATERIAL 材料	QTY. 数量	WT. 重量 kg	WORDS ON NAME PLATE 铭牌刻字内容	REMARKS 备注	Rev:/Date 版本/日期
LS.001	AS16040 GB/T590-93	STOP VALVE 截止阀	40	1.6	CAST IRON 铸铁	1	11.00	L.O.TANK IN E/R FILLING		
LS.002	AQS25 GB/T5744-93	QUICK CLOSING VALVE 快关阀	25	0.25	CAST STEEL 铸钢	1	6.60	L.O.TANK IN E/R L.O. OUT		
LS.003	AS25 GB/T601-92	SELF CLOSING VALVE 自闭式放泄阀	25	0.25	CAST STEEL 铸钢	1	3.64	L.O.TANK IN E/R DRAIN		
LS.004	AS16025 GB/T590-93	STOP VALVE 截止阀	25	1.6	CAST IRON 铸铁	1	6.63	L.O. STRAINER INLET		
LS.005	AS16025 GB/T591-93	STOP CHECK VALVE 截止止回阀	25	1.6	CAST IRON 铸铁	1	6.60	LO TRANSFER PUMP OUT		
LS.006	AS16025 GB/T590-93	STOP VALVE 截止阀	25	1.6	CAST IRON 铸铁	1	6.63	NO.1 MAIN DIESEL GENERATOR L.O. FILLING		
LS.007	AS16025 GB/T590-93	STOP VALVE 截止阀	25	1.6	CAST IRON 铸铁	1	6.63	NO.2 MAIN DIESEL GENERATOR L.O. FILLING		
LS.008	AS16025 GB/T590-93	STOP VALVE 截止阀	25	1.6	CAST IRON 铸铁	1	6.63	NO.3 MAIN DIESEL GENERATOR L.O. FILLING		
LS.009	AS16025 GB/T590-93	STOP VALVE 截止阀	25	1.6	CAST IRON 铸铁	1	6.63	NO.4 MAIN DIESEL GENERATOR L.O. FILLING		
LS.010	AS16025 GB/T590-93	STOP VALVE 截止阀	25	1.6	CAST IRON 铸铁	1	6.63	NO.1 MAIN ENGINE L.O. FILLING		
LS.011	AS16025 GB/T591-93	STOP CHECK VALVE 截止止回阀	25	1.6	CAST IRON 铸铁	1	6.60	NO.1 MAIN ENGINE LO PER.SUPPLY.PUMP OUT		
LS.012	AS10080 GB/T592-93	NON RETURN VALVE 止回阀	80	1.0	CAST IRON 铸铁	1	21.60	NO.1 MAIN ENGINE LO OUT		
LS.013	BS10080 GB/T590-93	STOP VALVE 截止阀	80	1.0	CAST IRON 铸铁	1	26.00	NO.1 MAIN ENGINE L.O.DOUBLE.FILTER IN		
LS.014	BS10080 GB/T590-93	STOP VALVE 截止阀	80	1.0	CAST IRON 铸铁	1	26.00	NO.1 MAIN ENGINE L.O.DOUBLE.FILTER OUT		
LS.015	AS16025 GB/T590-93	STOP VALVE 截止阀	25	1.6	CAST IRON 铸铁	1	6.63	NO.2 MAIN ENGINE L.O. FILLING		
LS.016	AS16025 GB/T591-93	STOP CHECK VALVE 截止止回阀	25	1.6	CAST IRON 铸铁	1	6.60	NO.2 MAIN ENGINE LO PER.SUPPLY.PUMP OUT		

AREA:0.0625m^2

DIAGRAM OF LUBE OIL PIPING SYSTEM 滑油系统管系原理图								JH316G-462-01 RevZ		PAGE 3 /3
ITEM NO. 编号	STANDARD NO. OR DRAWING NO. 标准号或图号	NAME 名称	DN 通径 mm	PN 压力 MPa	MATERIAL 材料	QTY. 数量	WT. 重量 kg	WORDS ON NAME PLATE 铭牌刻字内容	REMARKS 备注	Rev:/Date 版本/日期
LS.017	AS10080 GB/T592-93	NON RETURN VALVE 止回阀	80	1.0	CAST IRON 铸铁	1	21.60	NO.2 MAIN ENGINE LO OUT		
LS.018	BS10080 GB/T590-93	STOP VALVE 截止阀	80	1.0	CAST IRON 铸铁	1	26.00	NO.2 MAIN ENGINE L.O.DOUBLE.FILTER IN		
LS.019	BS10080 GB/T590-93	STOP VALVE 截止阀	80	1.0	CAST IRON 铸铁	1	26.00	NO.2 MAIN ENGINE L.O.DOUBLE.FILTER OUT		
LS.020	AS16025 GB/T591-93	STOP CHECK VALVE 截止止回阀	25	1.6	CAST IRON 铸铁	1	6.60	NO.1 MAIN ENGINE LO SUMP PUMP OUT		
LS.021	AS16025 GB/T591-93	STOP CHECK VALVE 截止止回阀	25	1.6	CAST IRON 铸铁	1	6.60	NO.2 MAIN ENGINE LO SUMP PUMP OUT		
LS.101	C40 CB/T 3778-1999	SOUNDING FILLING HEAD 测深注入头	40		CAST STEEL 铸钢	1	0.90			
LS.102	Maker standard	LEVEL GAUGE 液位计			ASSEMBLY 组合件	1			ABS Type Approved	
LS.103	AS25Y CB/T 495-95	BELL MOUTH 吸入口	25		STEEL 钢	1	1.26			
LS.104	AS25-0.4/0.22 CB/T 425-94	OIL STRAINER 低压粗油滤器	25	0.4	ASSEMBLY 组合件	1	12.80			
LS.105	Maker standard	PRESS.GAUGE 压力表			ASSEMBLY 组合件	4			0~1.0MPa	
LS.106	Maker standard	TEMP.GAUGE 温度计			ASSEMBLY 组合件	2			0~100℃	
LS.107	Maker standard	VACCUM PRESS.GAUGE 真空压力表			ASSEMBLY 组合件	2				

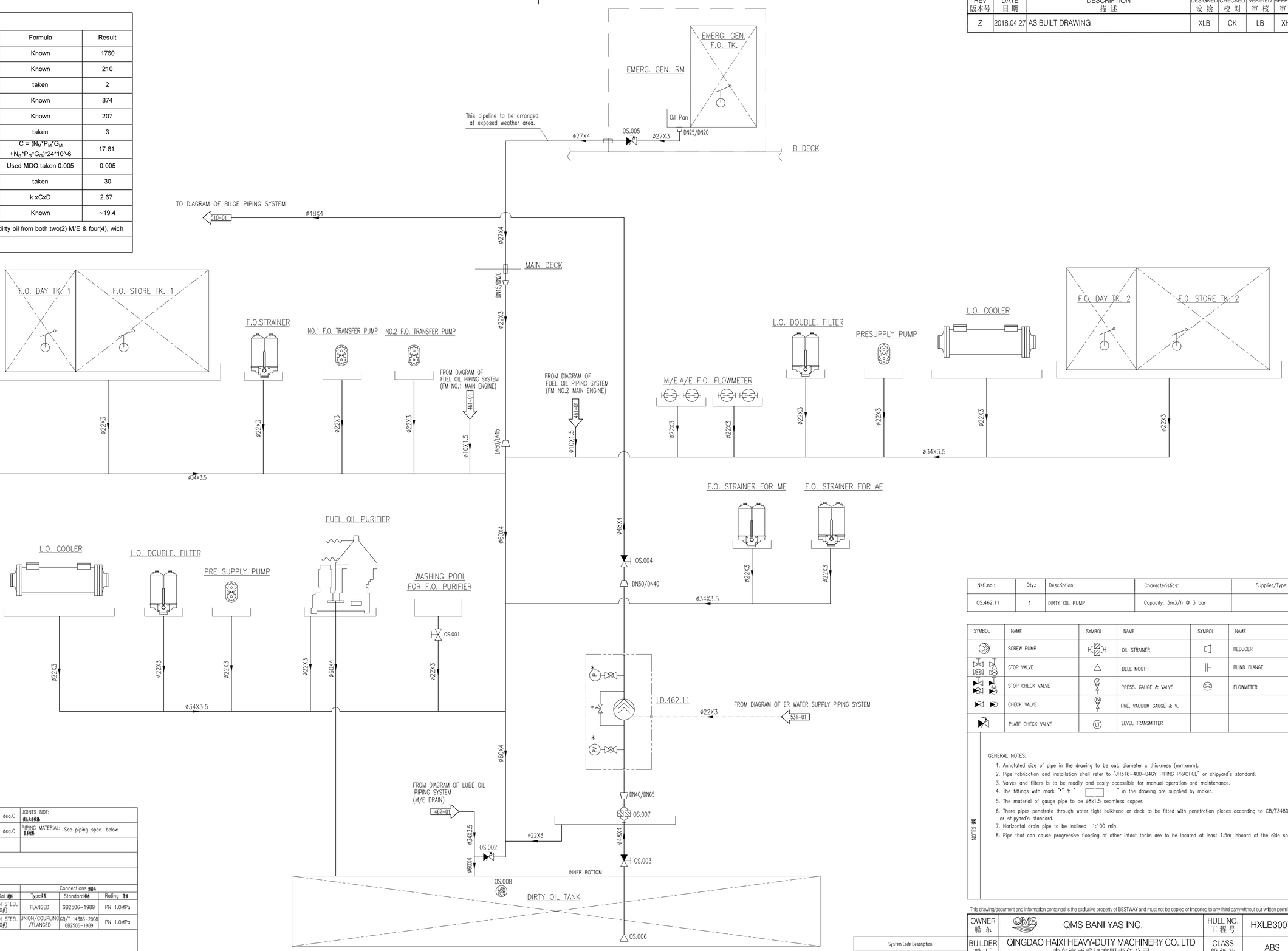
AREA:0.0625m^2

JH316G-462-02

REV 版本号	DATE 日期	DESCRIPTION 描述	DESIGNED 设绘	CHECKED 校对	VERIFIED 审核	APPROVED 审定
Z	2018.04.27	AS BUILT DRAWING	XLB	CK	LB	XHH

Calculation for Capacity of Dirt Oil tank

No.	Item	Symbol	Unit	Formula	Result
1	Continuous power rating of M/E	P_M	kW	Known	1760
2	Fuel oil consumption rate of M/E	G_M	g/kW•h	Known	210
3	Running quantity during navigation of M/E	N_M	set	taken	2
4	Continuous power rating of G/E	P_G	kW	Known	874
5	Fuel oil consumption rate of G/E	G_G	g/kW•h	Known	207
6	Running quantity during navigation of G/E	N_G	set	taken	3
7	Fuel oil daily consumption of M/E & GE	C	t	$C = (N_M*P_M*G_M + N_G*P_G*G_G)*24*10^{-6}$	17.81
8	Coefficient	k		Used MDO,taken 0.005	0.005
9	Service time	D	day	taken	30
10	Required capacity of Dirt Oil tank	V_{st}	m^3	k xCxD	2.67
11	Actual capacity of Dirt Oil tank	V_{SL}	m^3	Known	~19.4
	Note: The volumn of Dirt Oil tank is sufficient for collecting the dirty oil from both two(2) M/E & four(4), wich				
	are running at the same time up to 30 day.				



Nsfi.no.:	Qty.:	Description:	Characteristics:	Supplier/Type:
OS.462.11	1	DIRTY OIL PUMP	Capacity: 3m3/h @ 3 bar	

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
	SCREW PUMP		OIL STRAINER		REDUCER
	STOP VALVE		BELL MOUTH		BLIND FLANGE
	STOP CHECK VALVE	P	PRESS. GAUGE & VALVE		FLOWMETER
	CHECK VALVE	P	PRE. VACUUM GAUGE & V.		
	PLATE CHECK VALVE	LT	LEVEL TRANSMITTER		

NOTES 说明

GENERAL NOTES:

1. Annotated size of pipe in the drawing to be out. diameter x thickness (mmxmm).
2. Pipe fabrication and installation shall refer to "JH316-400-04GY PIPING PRACTICE" or shipyard's standard.
3. Valves and filters is to be readily and easily accessible for manual operation and maintenance.
4. The fittings with mark "•" & " " in the drawing are supplied by maker.
5. The material of gauge pipe to be ø8x1.5 seamless copper.
6. There pipes penetrate through water tight bulkhead or deck to be fitted with penetration pieces according to CB/T3480-92 or shipyard's standard.
7. Horizontal drain pipe to be inclined 1:100 min.
8. Pipe that can cause progressive flooding of other intact tanks are to be located at least 1.5m inboard of the side sheel.

SIGN 会签

SYSTEM 系统

PIPING SYSTEM CLASS: 管路系统等级: III	DESIGN WORKING TEMPERATURE: 设计工作温度: < 60 deg.C	JOINTS NDT: 接头无损检测:	
DESIGN PRESSURE: 设计工作压力: 4bar	MEDIA FLASHPOINT: 介质闪点: < 60 deg.C	PIPING MATERIAL: See piping spec. below 管系材料:	
HYDROSTATIC TEST PRESSURE: 试验压力: 6bar			
INSTALLATION ON BOARD: NO LEAKAGE UNDER WORKING CONDITION 装船后			
Remarks: 备注:			

PIPING SPECIFICATION 管系说明

DN 通径	Piping 管系			Connections 连接件		
	Pipe Type 管子类型	Standard 标准	Material 材料	Type 类型	Standard 标准	Rating 等级
DN≥50	SEAMLESS STEEL PIPES (PICKLING)	GB/T 8163-2008	CARBON STEEL (20#)	FLANGED	GB2506-1989	PN 1.0MPa
DN<50	SEAMLESS STEEL PIPES (PICKLING FOR F.O. PIPE)	GB/T 8163-2008	CARBON STEEL (20#)	UNION/COUPLING /FLANGED	GB/T 14383-2008 GB2506-1989	PN 1.0MPa

Remarks: 备注: (1) Connections's material to be 20# FS.

GB/T 8163-2008

DN 通径	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100	DN125	DN150	DN200	DN250
Outer diameter 外径	22	27	34	42	48	60	76	89	114	140	168	219	273
Wall thickness,general 普通壁厚	3.0	3.0	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	6.0	6.5
Extra heavy pipes thickness 加厚壁厚	4.0	4.0	5.0	5.0	5.0	5.5	6.0	7.0	8.0	9.5	9.5	9.5	9.5
Wall thickness, overboard pipes 舷外壁厚				7.0	7.0	7.0	7.0	8.0	9.0	10.0	11.0	12.5	12.5

Remarks: 备注: (1) The size of pipe Standard accord to GB/T 8163-2008.

CORRESPONDING DRAWINGS 关联图

Drawing No. 图号	Drawing title 图名	Drawing No. 图号	Drawing title 图名
JH316-461-01	DIAGRAM OF FUEL OIL PIPING SYSTEM	JH316-462-01	DIAGRAM OF LUBE OIL PIPING SYSTEM
JH316-510-01	DIAGRAM OF BILGE PIPING SYSTEM		
JH316-531-01	DIAGRAM OF ER WATER SUPPLY PIPING SYSTEM		

System Code Description

1. Equipment Code:
   XX . XXX . XX
   - Equipment NO.
   - System NO.
   - System code
2. Valves and Accessories Code:
   XX . XXX
   - NO.
   - System code

OWNER 船东	QMS BANI YAS INC.	HULL NO. 工程号	HXLB3007
BUILDER 船厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD 青岛海西重机有限责任公司	CLASS 船级社	ABS
TITLE 船名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图名	DIAGRAM OF DIRTY OIL PIPING SYSTEM 污油系统管系原理图	DWG. NO. 图号	JH316G-462-02
		SCALE 比例: 1:1 / WEIGHT 重量: - / PAGE 页数: 1/2 / DATE 日期:	

BESTWAY 威时沃
上海佳豪船海工程研究设计有限公司
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Tel : 86-21-6085 9800 Fax : 86-21-6085 9842

A1:0.50m²

DIAGRAM OF DIRTY OIL PIPING SYSTEM 污油系统管系原理图								JH316G-462-02 RevZ		PAGE 2 / 2
ITEM NO. 编号	STANDARD NO. OR DRAWING NO. 标准号或图号	NAME 名称	DN 通径 mm	PN 压力 MPa	MATERIAL 材料	QTY. 数量	WT. 重量 kg	WORDS ON NAME PLATE 铭牌刻字内容	REMARKS 备注	Rev:/Date 版本/日期
OS.001	AS6015 GB/T587-93	STOP VALVE 截止阀	15	0.6	BRONZE 青铜	1	3.90	WASHING POOL DRAIN		
OS.002	10050 GB/T3819-99	CHECK VALVE 板式止回阀	50	1.0	BRONZE 青铜	1	1.05			
OS.003	AS16040 GB/T591-93	STOP CHECK VALVE 截止止回阀	40	1.6	CAST IRON 铸铁	1	10.80	DIRTY OIL PUMP IN		
OS.004	AS16040 GB/T591-93	STOP CHECK VALVE 截止止回阀	40	1.6	CAST IRON 铸铁	1	10.80	DIRTY OIL PUMP OUT		
OS.005	10020 CB/T3819-99	CHECK VALVE 板式止回阀	20	1.0	BRONZE 青铜	1	0.65			
OS.006	AS40Y CB/T 495-95	BELL MOUTH 吸入口	40		STEEL 钢	1	2.18			
OS.007	AS40-0.75/0.26 CB/T 425-94	OIL STRAINER 低压粗油滤器	40	0.4	ASSEMBLY 组合件	1	24.20			
OS.008	UQK-652-C	LEVEL SWITCH 液位开关			ASSEMBLY 组合件	1				

AREA:0.0625m^2

JH316G-510-01

REV 版本号	DATE 日期	DESCRIPTION 描述	DESIGNED 设绘	CHECKED 校对	VERIFIED 审核	APPROVED 审定
Z	2018.04.27	AS BUILT DRAWING	XLB	CK	LB	XHH

1.Internal diameter of branch bilge suction

d_B=2.15(A)$^{0.5}$ +25 ,mm

CABIN	DIMENTIONS L (m)	B (m)	H (m)	WETTED AREAS BASE (m2)	SIDES (m2)	TOTAL (m2)	d_B' CAL. DIA (mm)	d_B ACT.ID. (mm)	ACT.DIMENSION DN	ODx THICK. (mm x mm)
RUDDER PROPELLER ROOM P	8.4	9	6	75.6	104.4	180	53.8	67.0	65	76 X 4.5
RUDDER PROPELLER ROOM S	8.4	9	6	75.6	104.4	180	53.8	67.0	65	76 X 4.5
ENGINE ROOM	19.8	26.4	4.5	522.7	207.9	730.6	83.1	80.0	2X80	89 X 4.5
JACK HOUSE 3#	7.2	7	13.3	50.4	188.9	239.3	58.3	67.0	65	76 X 4.5
JACK HOUSE 4#	7.2	7	13.3	50.4	188.9	239.3	58.3	67.0	65	76 X 4.5
VOID 5P	12	7	6	84	114	198	55.3	67.0	65	76 X 4.5
VOID 5S	12	7	6	84	114	198	55.3	67.0	65	76 X 4.5
VOID 4P	1.8	7	6	12.6	52.8	65.4	42.4	52.0	50	60 X 4
VOID 4S	1.8	7	6	12.6	52.8	65.4	42.4	52.0	50	60 X 4
VOID 3P	12.6	13.2	3	166.3	77.4	243.7	58.6	67.0	65	76 X 4.5
VOID 3S	12.6	13.2	3	166.3	77.4	243.7	58.6	67.0	65	76 X 4.5
CHILLER ROOM	7.2	12	3	86.4	57.6	144	50.8	67.0	65	76 X 4.5
VOID 2P	12.6	13.2	3	166.3	77.4	243.7	58.6	67.0	65	76 X 4.5
VOID 2S	12.6	13.2	3	166.3	77.4	243.7	58.6	67.0	65	76 X 4.5
1# PUMP ROOM	10.8	7	3	75.6	53.4	129	49.4	67.0	65	76 X 4.5
2# PUMP ROOM	10.8	7	3	75.6	53.4	129	49.4	67.0	65	76 X 4.5
EMERG. FIRE FIGHTING PUMP ROOM	7.2	7.2	3	51.84	43.2	95.04	46.0	67.0	65	76 X 4.5
JACK HOUSE 1#	7.2	7	13.3	50.4	188.9	239.3	58.3	67.0	65	76 X 4.5
FWD.MCC ROOM	7.2	11.4	3	82.08	55.8	137.9	50.2	67.0	65	76 X 4.5
JACK HOUSE 2#	7.2	7	13.3	50.4	188.9	239.3	58.3	67.0	65	76 X 4.5
B/T ROOM	6	3.6	6	21.6	57.6	79.2	44.1	67.0	65	76 X 4.5
VOID 1P	3.41	7	6	23.87	62.46	86.34	45.0	67.0	65	76 X 4.5
VOID 1S	3.41	7	6	23.87	62.46	86.34	45.0	67.0	65	76 X 4.5

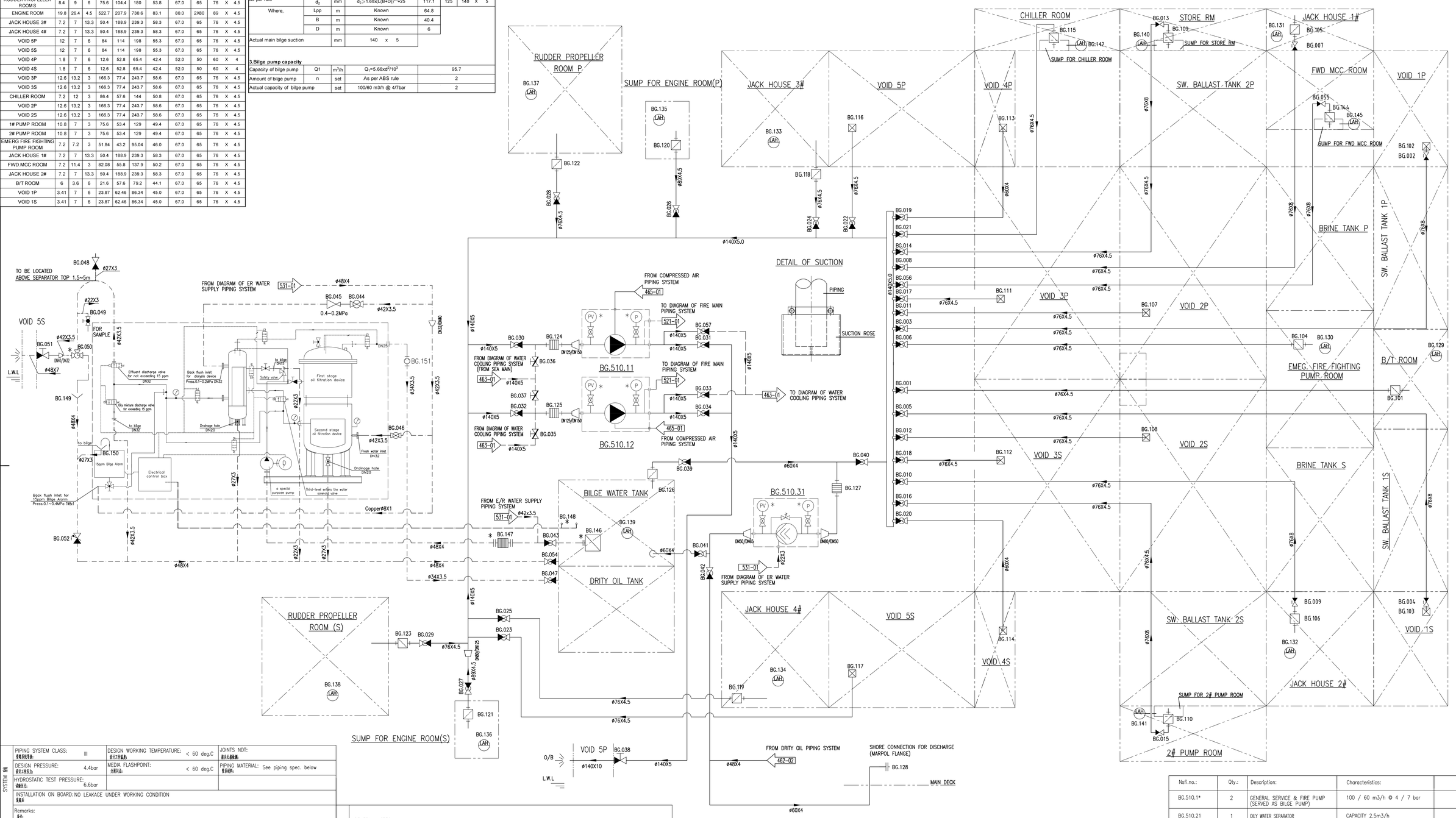
2.Internal diameter of main bilge suction

Name	Sym	Unit	Formular	Cal. value	ACT.DIMENSION DN	ODx THICK. (mm x mm)
The max ID of brance bilge suction	$d_{1\,max}$	mm	Known	83.1	2X80	89 X 4.5
ID of main bilge suction as per rule	d_1	mm	$d_1 \geq (d_{1\,max}{}^2+d_{2\,max}{}^2)^{0.5}$	113.1	125	140 X 5
	d_2	mm	$d_2 \geq 1.68x(L(B+D))^{0.5}+25$	117.1	125	140 X 5
Where,	Lpp	m	Known	64.8		
	B	m	Known	40.4		
	D	m	Known	6		
Actual main bilge suction		mm	140 x 5			

3.Bilge pump capacity

Capacity of bilge pump	Q1	m^3/h	Q_1=5.66xd^2/10^3	95.7
Amount of bilge pump	n	set	As per ABS rule	2
Actual capacity of bilge pump		set	100/60 m3/h @ 4/7bar	2

Bilge pipe
Oily bilge pipe
Sea water pipe



SYSTEM 系统			
PIPING SYSTEM CLASS: 管路系统等级: III	DESIGN WORKING TEMPERATURE: 设计工作温度: < 60 deg.C	JOINTS NDT: 接头无损检测:	
DESIGN PRESSURE: 设计工作压力: 4.4bar	MEDIA FLASHPOINT: 介质闪点: < 60 deg.C	PIPING MATERIAL: See piping spec. below 管系材料:	
HYDROSTATIC TEST PRESSURE: 试验压力: 6.6bar			
INSTALLATION ON BOARD: NO LEAKAGE UNDER WORKING CONDITION 装船后			
Remarks: 备注:			

PIPING SPECIFICATION 管系规格

DN 通径	Piping 管系			Connections 连接件		
	Pipe Type 管子类型	Standard 标准	Material 材料	Type 类型	Standard 标准	Rating 等级
DN>50	SEAMLESS STEEL PIPES (HOT DIP GALV.)	GB/T 8163-2008	CARBON STEEL (20#)	FLANGED	GB2506-1989	PN 1.0MPa
DN<50	SEAMLESS STEEL PIPES (GALV.)	GB/T 8163-2008	CARBON STEEL (20#)	UNION/COUPLING /FLANGED	GB/T 14383-2008 GB2506-1989	PN 1.0MPa

Remarks: (1) Connections's material to be 20# FS.
备注: (2) connections to be hot dip galv. or galv. as pipes with different DN.

GB/T 8163-2008

DN 通径	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100	DN125	DN150	DN200	DN250
Outer diameter 外径	22	27	34	42	48	60	76	89	114	140	168	219	273
Wall thickness,general 普通壁厚	3.0	3.0	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	6.0	6.5
Extra heavy pipes thickness 加厚壁厚	4.0	4.0	5.0	5.0	5.0	5.5	6.0	7.0	8.0	9.5	9.5	9.5	9.5
Wall thickness, overboard pipes 舷外壁厚					7.0	7.0	7.0	7.0	8.0	9.0	10.0	11.0	12.5	12.5

Remarks: (1) The size of pipe Standard accord to GB/T 8163-2008
备注:

CORRESPONDING DRAWINGS 相关图纸

Drawing No. 图号	Drawing title 图名	Drawing title 图名	Drawing title 图名
JH316-462-02	DIAGRAM OF DRITY OIL PIPING SYSTEM	JH316-463-01	DIAGRAM OF SEA WATER COOLING PIPING SYSTEM
JH316-465-01	DIAGRAM OF COMPRESSED AIR PIPING SYSTEM	JH316-512-01	DIAGRAM OF BALLAST PIPING SYSTEM
JH316-531-01	DIAGRAM OF ER WATER SUPPLY PIPING SYSTEM	JH316-521-01	DIAGRAM OF FIRE MAIN PIPING SYSTEM

NOTES 说明

GENERAL NOTES:
1. Annotated size of pipe in the drawing to be out. diameter x thickness (mmxmm).
2. Pipe fabrication and installation shall refer to "JH316-400-04GY PIPING PRACTICE" or shipyard's standard.
3. Valves and filters is to be readily and easily accessible for manual operation and maintenance.
4. Each valve shall be labelled with its function and valve number with S.S. tag.
5. The fittings with mark "*" & " " in the drawing are supplied by maker.
6. The material of gauge pipe to be ø8x1.5 seamless copper.
7. There pipes penetrate through water tight bulkhead or deck to be fitted with penetration pieces according to CB/T3480-92 or shipyard's standard.
8. All piping to be supported securely in order to prevent vibrations and other causes.
9. The bilge pipe of pass through ballast tank should be extra-heavy as per 4-2-1/3.9 of modu rules..
10. All bilge piping installed through deep tanks, shall be installed to take care of expansion and having all joints within the tank welded or extra-heavy flanged joints(amount to be kept to a minimum).
11. Pipe that can cause progressive flooding of other intact tanks are to be located at least 1.5m inboard of the side sheel.
12. Pipe connections fitted between the shell and the valves are to have a minimum wall thickness not less than that specified in the table of 4-2-2/21.3 of modu rules and is to be as short as possible.
13. Suction strainers provided for compartments other than machinery spaces having an open arer of not less three times the area of the suction pipe.

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
	CENTRIFUGAL PUMP		SCREW PUMP	P	PRESS. GAUGE & VALVE
	STOP VALVE		SIMPLEX STRAINER	PV	PRE. VACUUM GAUGE & V.
	STOP CHECK VALVE		MUD BOX	LAH	HIGH LEVEL ALARM
	CHECK VALVE		SUCTION STRAINER		FUNNEL
	BUTTERFLY VALVE(HAND WHEEL TYPE)		INTERNATIONAL SHORE CONN.		BELL MOUTH
	COCK		BUTTERFLY TYPE CHECK VALVE		REDUCER
	BALL VALVE		PRESS. REDUCE VALVE		PLATE CHECK VALVE

System Code Description

1. Equipment Code:
XX . XXX - XX
Equipment NO.
System NO.
System code

2. Valves and Accessories Code:
XX . XXX
NO.
System code

Nsfi.no.:	Qty.:	Description:	Characteristics:	Supplier/Type:
BG.510.1*	2	GENERAL SERVICE & FIRE PUMP (SERVED AS BILGE PUMP)	100 / 60 m3/h @ 4 / 7 bar	
BG.510.21	1	OILY WATER SEPARATOR	CAPACITY 2.5m3/h	
BG.510.31	1	BILGE DAILY PUMP	5m3/h @ 3 bar	

OWNER 船东	QMS BANI YAS INC.	HULL NO. 工程号	HXLB3007
BUILDER 船厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD 青岛海西重机有限责任公司	CLASS 船级社	ABS
TITLE 船名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图名	DIAGRAM OF BILGE PIPING SYSTEM 舱底水管系原理图	DWG. NO. 图号	JH316G-510-01
		SCALE 比例 1:1 / WEIGHT 重量 - / PAGE 页数 1/8 / DATE 日期	

上海佳豪船海工程研究设计有限公司
SHANGHAI BESTWAY MARINE ENGINEERING DESIGN CO.,LTD
BESTWAY WWW.BESTWAYSH.COM No.10 Building, No.518 Xinzhuan Road Shanghai, CHINA P.C : 201612 Web : www.bestwaysh.com
Tel : 86-21-6085 9800 Fax : 86-21-6085 9842

A1:0.50m²

DIAGRAM OF BILGE PIPING SYSTEM								JH316G-510-01		PAGE
舱底水管系原理图								RevZ		2 / 8
ITEM NO.	STANDARD NO. OR DRAWING NO.	NAME	DN	PN	MATERIAL	QTY.	WT.	WORDS ON NAME PLATE	REMARKS	Rev:/Date
编号	标准号或图号	名称	通径 mm	压力 MPa	材料	数量	重量 kg	铭牌刻字内容	备注	版本/日期
BG.001	BS10065 GB/T591-93	STOP CHECK VALVE 截止止回阀	65	1.0	CAST IRON 铸铁	1	21.10	BILGE SCUTION FROM B/T ROOM		
BG.002	RS65T GB3478-92	NON RETURN VALVE 吸入止回阀	65		CAST IRON 铸铁	1	5.49			
BG.003	BS10065 GB/T591-93	STOP CHECK VALVE 截止止回阀	65	1.0	CAST IRON 铸铁	1	21.10	BILGE SCUTION FROM VOID 1P		
BG.004	RS65T GB3478-92	NON RETURN VALVE 吸入止回阀	65		CAST IRON 铸铁	1	5.49			
BG.005	BS10065 GB/T591-93	STOP CHECK VALVE 截止止回阀	65	1.0	CAST IRON 铸铁	1	21.10	BILGE SCUTION FROM VOID 1S		
BG.006	BS10065 GB/T591-93	STOP CHECK VALVE 截止止回阀	65	1.0	CAST IRON 铸铁	1	21.10	BILGE SCUTION FROM EMEG. FIRE FIGHTING PUMP ROOM		
BG.007	AS10065 GB/T 592-93	NON RETURN VALVE 止回阀	65	1.0	CAST IRON 铸铁	1	18.10			
BG.008	AS10065 GB/T591-93	STOP CHECK VALVE 截止止回阀	65	1.0	CAST IRON 铸铁	1	21.10	BILGE SCUTION FROM JACK HOUSE 1#		
BG.009	AS10065 GB/T 592-93	NON RETURN VALVE 止回阀	65	1.0	CAST IRON 铸铁	1	18.10			
BG.010	AS10065 GB/T591-93	STOP CHECK VALVE 截止止回阀	65	1.0	CAST IRON 铸铁	1	21.10	BILGE SCUTION FROM JACK HOUSE 2#		
BG.011	BS10065 GB/T591-93	STOP CHECK VALVE 截止止回阀	65	1.0	CAST IRON 铸铁	1	21.10	BILGE SCUTION FROM VOID 2P		
BG.012	BS10065 GB/T591-93	STOP CHECK VALVE 截止止回阀	65	1.0	CAST IRON 铸铁	1	21.10	BILGE SCUTION FROM VOID 2S		
BG.013	AS10065 GB/T 592-93	NON RETURN VALVE 止回阀	65	1.0	CAST IRON 铸铁	1	18.10			
BG.014	AS10065 GB/T591-93	STOP CHECK VALVE 截止止回阀	65	1.0	CAST IRON 铸铁	1	21.10	BILGE SCUTION FROM STORE ROOM		
BG.015	AS10065 GB/T 592-93	NON RETURN VALVE 止回阀	65	1.0	CAST IRON 铸铁	1	18.10			
BG.016	BS10065 GB/T591-93	STOP CHECK VALVE 截止止回阀	65	1.0	CAST IRON 铸铁	1	21.10	BILGE SCUTION FROM 2# PUMP ROOM		

AREA:0.0625m^2

DIAGRAM OF BILGE PIPING SYSTEM								JH316G-510-01		PAGE
舱底水管系原理图								RevZ		3 / 8
ITEM NO.	STANDARD NO. OR DRAWING NO.	NAME	DN	PN	MATERIAL	QTY.	WT.	WORDS ON NAME PLATE	REMARKS	Rev:/Date
编号	标准号或图号	名称	通径 mm	压力 MPa	材料	数量	重量 kg	铭牌刻字内容	备注	版本/日期
BG.017	BS10065 GB/T591-93	STOP CHECK VALVE 截止止回阀	65	1.0	CAST IRON 铸铁	1	21.10	BILGE SCUTION FROM VOID 3P		
BG.018	BS10065 GB/T591-93	STOP CHECK VALVE 截止止回阀	65	1.0	CAST IRON 铸铁	1	21.10	BILGE SCUTION FROM VOID 3S		
BG.019	BS16050 GB/T591-93	STOP CHECK VALVE 截止止回阀	50	1.6	CAST IRON 铸铁	1	14.10	BILGE SCUTION FROM VOID 4P		
BG.020	BS16050 GB/T591-93	STOP CHECK VALVE 截止止回阀	50	1.6	CAST IRON 铸铁	1	14.10	BILGE SCUTION FROM VOID 4S		
BG.021	AS10065 GB/T591-93	STOP CHECK VALVE 截止止回阀	65	1.0	CAST IRON 铸铁	1	21.10	BILGE SCUTION FROM CHILLER ROOM		
BG.022	AS10065 GB/T591-93	STOP CHECK VALVE 截止止回阀	65	1.0	CAST IRON 铸铁	1	21.10	BILGE SCUTION FROM VOID 5P		
BG.023	AS10065 GB/T591-93	STOP CHECK VALVE 截止止回阀	65	1.0	CAST IRON 铸铁	1	21.10	BILGE SCUTION FROM VOID 5S		
BG.024	AS10065 GB/T591-93	STOP CHECK VALVE 截止止回阀	65	1.0	CAST IRON 铸铁	1	21.10	BILGE SCUTION FROM JACK HOUSE 3#		
BG.025	AS10065 GB/T591-93	STOP CHECK VALVE 截止止回阀	65	1.0	CAST IRON 铸铁	1	21.10	BILGE SCUTION FROM JACK HOUSE 4#		
BG.026	AS10080 GB/T591-93	STOP CHECK VALVE 截止止回阀	80	1.0	CAST IRON 铸铁	1	25.60	BILGE SCUTION FROM SUMP FOR ENGINE ROOM(P)		
BG.027	AS10080 GB/T591-93	STOP CHECK VALVE 截止止回阀	80	1.0	CAST IRON 铸铁	1	25.60	BILGE SCUTION FROM SUMP FOR ENGINE ROOM(S)		
BG.028	AS10065 GB/T591-93	STOP CHECK VALVE 截止止回阀	65	1.0	CAST IRON 铸铁	1	21.10	BILGE SCUTION FROM RUDDER PROPELLER ROOM(P)		
BG.029	AS10065 GB/T591-93	STOP CHECK VALVE 截止止回阀	65	1.0	CAST IRON 铸铁	1	21.10	BILGE SCUTION FROM RUDDER PROPELLER ROOM(S)		
BG.030	AS10125 GB/T591-93	STOP CHECK VALVE 截止止回阀	125	1.0	CAST IRON 铸铁	1	43.90	NO.1 GENERAL SERVICE & FIRE PUMP BILGE IN		
BG.031	AS10125 GB/T591-93	STOP CHECK VALVE 截止止回阀	125	1.0	CAST IRON 铸铁	1	43.90	NO.1 GENERAL SERVICE & FIRE PUMP BILGE OUT		
BG.032	AS10125 GB/T591-93	STOP CHECK VALVE 截止止回阀	125	1.0	CAST IRON 铸铁	1	43.90	NO.2 GENERAL SERVICE & FIRE PUMP BILGE IN		

AREA:0.0625m^2

DIAGRAM OF BILGE PIPING SYSTEM 舱底水管系原理图								JH316G-510-01 RevZ		PAGE 4 / 8
ITEM NO. 编号	STANDARD NO. OR DRAWING NO. 标准号或图号	NAME 名称	DN 通径 mm	PN 压力 MPa	MATERIAL 材料	QTY. 数量	WT. 重量 kg	WORDS ON NAME PLATE 铭牌刻字内容	REMARKS 备注	Rev:/Date 版本/日期
BG.033	AS10125 GB/T591-93	STOP CHECK VALVE 截止止回阀	125	1.0	CAST IRON 铸铁	1	43.90	NO.2 GENERAL SERVICE & FIRE PUMP OUT TO B.W.TK.		
BG.034	AS10125 GB/T591-93	STOP CHECK VALVE 截止止回阀	125	1.0	CAST IRON 铸铁	1	43.90	NO.2 GENERAL SERVICE & FIRE PUMP BILGE OUT		
BG.035	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1		B.W.TO NO.2 GENERAL SERVICE & FIRE PUMP		
BG.036	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1		S.W FM. SEA MAIN TO NO.1 G. S. & FIRE PUMP		
BG.037	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1		S.W FM. SEA MAIN TO NO.2 G. S. & FIRE PUMP		
BG.038	BS6125 GB/T1853-94	STOP CHECK VALVE 截止止回阀	125	0.6	CAST STEEL 铸钢	1	45.80	BILGE WATER OVERBOARD	ABS CERT.	
BG.039	AS16050 GB/T591-93	STOP CHECK VALVE 截止止回阀	50	1.6	CAST IRON 铸铁	1	14.10	BILGE SCUTION FROM BILGE WATER TANK		
BG.040	AS16050 GB/T591-93	STOP CHECK VALVE 截止止回阀	50	1.6	CAST IRON 铸铁	1	14.10	BILGE SCUTION FROM BILGE MAIN		
BG.041	AS16050 GB/T591-93	STOP CHECK VALVE 截止止回阀	50	1.6	CAST IRON 铸铁	1	14.10	BILGE WATER TO BILGE WATER TANK		
BG.042	AS16050 GB/T591-93	STOP CHECK VALVE 截止止回阀	50	1.6	CAST IRON 铸铁	1	14.10	BILGE WATER TO SHORE		
BG.043	AS16040 GB/T591-93	STOP CHECK VALVE 截止止回阀	40	1.6	CAST IRON 铸铁	1	10.80	BILGE TO SEPARATOR		
BG.044	AS16032 GB/T590-93	STOP VALVE 截止阀	32	1.6	CAST IRON 铸铁	1	8.74	BACK FLUSH FOR DIALYSIS DEVICE		
BG.045	maker standard	REDUCING VALVE 水减压阀		0.4~0.2 MPa	组合件	1				
BG.046	AS16032 GB/T590-93	STOP VALVE 截止阀	32	1.6	CAST IRON 铸铁	1	8.74	FRESH WATER TO SEPARATOR		
BG.047	AS16025 GB/T591-93	STOP CHECK VALVE 截止止回阀	25	1.6	CAST IRON 铸铁	1	6.60	OILY TO BILGE WATER TANK		
BG.048	AS16020 GB/T592-93	NON RETURN VALVE 止回阀	20	1.6	CAST IRON 铸铁	1	4.82	VACUUM BRAKER		

AREA:0.0625m^2

DIAGRAM OF BILGE PIPING SYSTEM								JH316G-510-01		PAGE
舱底水管系原理图								RevZ		5 / 8
ITEM NO.	STANDARD NO. OR DRAWING NO.	NAME	DN	PN	MATERIAL	QTY.	WT.	WORDS ON NAME PLATE	REMARKS	Rev:/Date
编号	标准号或图号	名称	通径 mm	压力 MPa	材料	数量	重量 kg	铭牌刻字内容	备注	版本/日期
BG.049	maker standard	BALL VALVE 球阀	15	0.6	ST.STEEL 不锈钢	1		FOR SAMPLE		
BG.050	maker standard	COCK 三通旋塞	32		BRONZE 青铜	1		CLEAN BILGE OVERBOARD OR FOR TEST	SUPPLIED BY SEPARATOR	
BG.051	AS6040 GB/T1853-94	STOP CHECK VALVE 截止止回阀	40	0.6	CAST STEEL 铸钢	1	8.20	CLEAN BILGE OVERBOARD	ABS CERT.	
BG.052	10040 CB/T3819-99	CHECK VALVE 板式止回阀	40	1.0	BRONZE 青铜	1	0.95			
BG.054	AS16040 GB/T591-93	STOP CHECK VALVE 截止止回阀	40	1.6	CAST IRON 铸铁	1	10.80	UNQUALIFIED BILGE BACK TO BILGE WATER TANK		
BG.055	AS10065 GB/T 592-93	NON RETURN VALVE 止回阀	65	1.0	CAST IRON 铸铁	1	18.10			
BG.056	AS10065 GB/T591-93	STOP CHECK VALVE 截止止回阀	65	1.0	CAST IRON 铸铁	1	21.10	BILGE SCUTION FROM FWD.MCC ROOM		
BG.057	AS10125 GB/T591-93	STOP CHECK VALVE 截止止回阀	125	1.0	CAST IRON 铸铁	1	43.90	NO.1 GENERAL SERVICE & FIRE PUMP OUT TO B.W.TK.		
BG.101	BS1065 CB/T3198-94	MUD BOX 泥箱	65	0.1	CAST IRON 铸铁	1	28.50			
BG.102	A65 CBx623-80	SUCTION ROSE 吸入滤网	65		STEEL 钢	1	0.94			
BG.103	A65 CBx623-80	SUCTION ROSE 吸入滤网	65		STEEL 钢	1	0.94			
BG.104	BS1065 CB/T3198-94	MUD BOX 泥箱	65	0.1	CAST IRON 铸铁	1	28.50			
BG.105	BS1065 CB/T3198-94	MUD BOX 泥箱	65	0.1	CAST IRON 铸铁	1	28.50			
BG.106	BS1065 CB/T3198-94	MUD BOX 泥箱	65	0.1	CAST IRON 铸铁	1	28.50			
BG.107	A65 CBx623-80	SUCTION ROSE 吸入滤网	65		STEEL 钢	1	0.94			
BG.108	A65 CBx623-80	SUCTION ROSE 吸入滤网	65		STEEL 钢	1	0.94			

AREA:0.0625m^2

DIAGRAM OF BILGE PIPING SYSTEM 舱底水管系原理图								JH316G-510-01 RevZ		PAGE 6 / 8
ITEM NO. 编号	STANDARD NO. OR DRAWING NO. 标准号或图号	NAME 名称	DN 通径 mm	PN 压力 MPa	MATERIAL 材料	QTY. 数量	WT. 重量 kg	WORDS ON NAME PLATE 铭牌刻字内容	REMARKS 备注	Rev:/Date 版本/日期
BG.109	BS1065 CB/T3198-94	MUD BOX 泥箱	65	0.1	CAST IRON 铸铁	1	28.50			
BG.110	BS1065 CB/T3198-94	MUD BOX 泥箱	65	0.1	CAST IRON 铸铁	1	28.50			
BG.111	A65 CBx623-80	SUCTION ROSE 吸入滤网	65		STEEL 钢	1	0.94			
BG.112	A65 CBx623-80	SUCTION ROSE 吸入滤网	65		STEEL 钢	1	0.94			
BG.113	A50 CBx623-80	SUCTION ROSE 吸入滤网	50		STEEL 钢	1	0.87			
BG.114	A50 CBx623-80	SUCTION ROSE 吸入滤网	50		STEEL 钢	1	0.87			
BG.115	BS1065 CB/T3198-94	MUD BOX 泥箱	65	0.1	CAST IRON 铸铁	1	28.50			
BG.116	A65 CBx623-80	SUCTION ROSE 吸入滤网	65		STEEL 钢	1	0.94			
BG.117	A65 CBx623-80	SUCTION ROSE 吸入滤网	65		STEEL 钢	1	0.94			
BG.118	BS1065 CB/T3198-94	MUD BOX 泥箱	65	0.1	CAST IRON 铸铁	1	28.50			
BG.119	BS1065 CB/T3198-94	MUD BOX 泥箱	65	0.1	CAST IRON 铸铁	1	28.50			
BG.120	BS1080 CB/T3198-94	MUD BOX 泥箱	80	0.1	CAST IRON 铸铁	1	32.60			
BG.121	BS1080 CB/T3198-94	MUD BOX 泥箱	80	0.1	CAST IRON 铸铁	1	32.60			
BG.122	BS1065 CB/T3198-94	MUD BOX 泥箱	65	0.1	CAST IRON 铸铁	1	28.50			
BG.123	BS1065 CB/T3198-94	MUD BOX 泥箱	65	0.1	CAST IRON 铸铁	1	28.50			
BG.124	AS125 GB/T497-94	FILTER 滤器	125	0.1	STEEL 钢	1	43.40			

AREA:0.0625m^2

DIAGRAM OF BILGE PIPING SYSTEM								JH316G-510-01		PAGE
舱底水管系原理图								RevZ		7 / 8
ITEM NO.	STANDARD NO. OR DRAWING NO.	NAME	DN	PN	MATERIAL	QTY.	WT.	WORDS ON NAME PLATE	REMARKS	Rev:/Date
编号	标准号或图号	名称	通径 mm	压力 MPa	材料	数量	重量 kg	铭牌刻字内容	备注	版本/日期
BG.125	AS125 GB/T497-94	FILTER 滤器	125	0.1	STEEL 钢	1	43.40			
BG.126	BS1050 CB/T3198-94	MUD BOX 泥箱	50	0.1	CAST IRON 铸铁	1	16.20			
BG.127	AS50 GB/T497-94	FILTER 滤器	50	0.1	STEEL 钢	1	13.20			
BG.128	AS6050 CB/T3657-94	INTER. SHORE CONN. 油污水国际通岸接头	50	0.6	STEEL 钢	1	12.90			
BG.129	UQK-652-C	LEVEL SWITCH 液位开关			ASSEMBLY 组合件	1				
BG.130	UQK-652-C	LEVEL SWITCH 液位开关			ASSEMBLY 组合件	1				
BG.131	UQK-652-C	LEVEL SWITCH 液位开关			ASSEMBLY 组合件	1				
BG.132	UQK-652-C	LEVEL SWITCH 液位开关			ASSEMBLY 组合件	1				
BG.133	UQK-652-C	LEVEL SWITCH 液位开关			ASSEMBLY 组合件	1				
BG.134	UQK-652-C	LEVEL SWITCH 液位开关			ASSEMBLY 组合件	1				
BG.135	UQK-652-C	LEVEL SWITCH 液位开关			ASSEMBLY 组合件	1				
BG.136	UQK-652-C	LEVEL SWITCH 液位开关			ASSEMBLY 组合件	1				
BG.137	UQK-652-C	LEVEL SWITCH 液位开关			ASSEMBLY 组合件	1				
BG.138	UQK-652-C	LEVEL SWITCH 液位开关			ASSEMBLY 组合件	1				
BG.139	UQK-652-C	LEVEL SWITCH 液位开关			ASSEMBLY 组合件	1				
BG.140	UQK-652-C	LEVEL SWITCH 液位开关			ASSEMBLY 组合件	1				

AREA:0.0625m^2

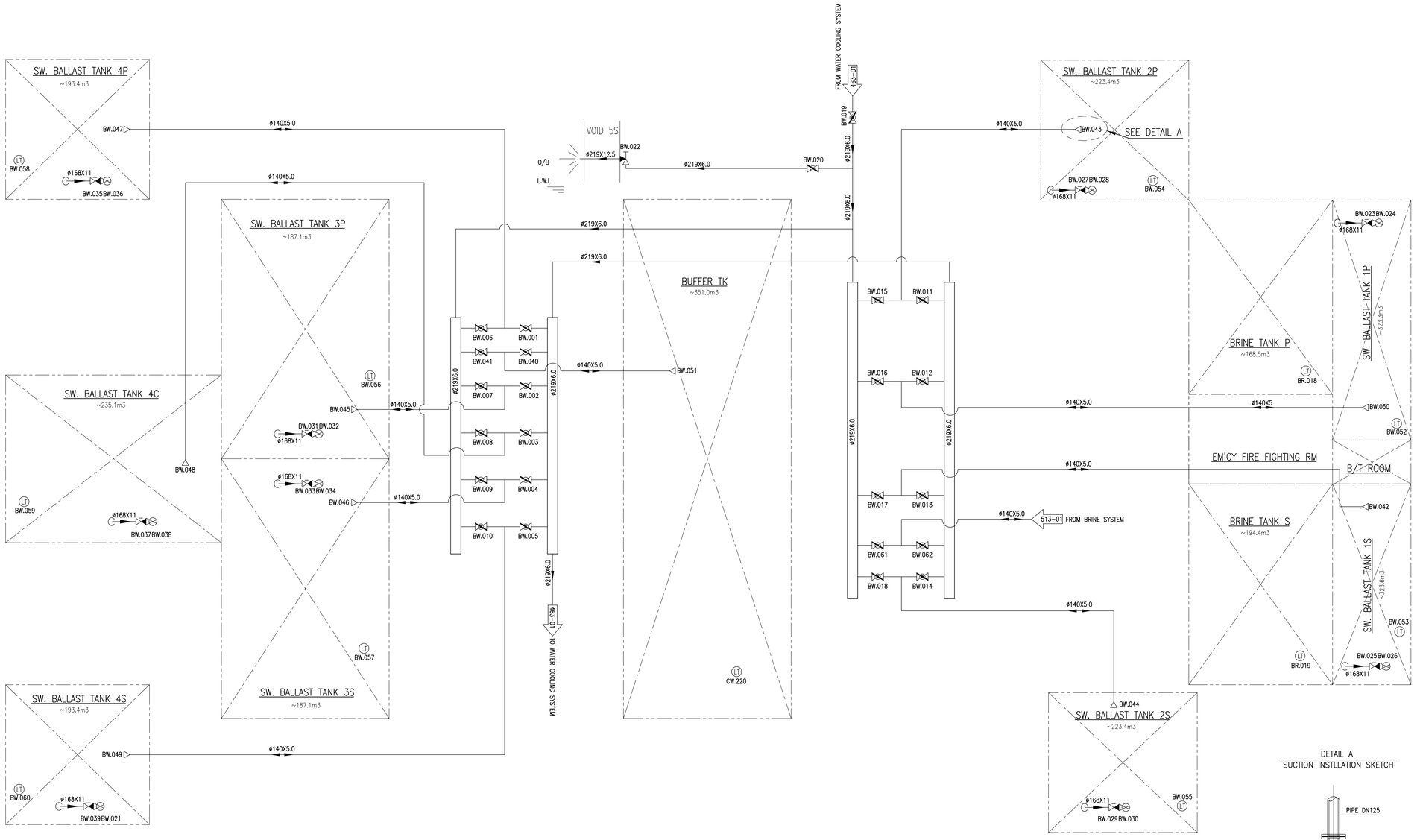
DIAGRAM OF BILGE PIPING SYSTEM 舱底水管系原理图								JH316G-510-01 RevZ		PAGE 8 / 8
ITEM NO. 编号	STANDARD NO. OR DRAWING NO. 标准号或图号	NAME 名称	DN 通径 mm	PN 压力 MPa	MATERIAL 材料	QTY. 数量	WT. 重量 kg	WORDS ON NAME PLATE 铭牌刻字内容	REMARKS 备注	Rev:/Date 版本/日期
BG.141	UQK-652-C	LEVEL SWITCH 液位开关			ASSEMBLY 组合件	1				
BG.142	UQK-652-C	LEVEL SWITCH 液位开关			ASSEMBLY 组合件	1				
BG.143		FUNNEL 漏斗			STEEL 钢	1			SUPPLIED BY YARD	
BG.144	BS1065 CB/T3198-94	MUD BOX 泥箱	65	0.1	CAST IRON 铸铁	1	28.50			
BG.145	UQK-652-C	LEVEL SWITCH 液位开关			ASSEMBLY 组合件	1				
BG.146	marker standard	SUCTION COLANDER 吸入滤器总成	40			1			SUPPLIED BY SEPARATOR	
BG.147	marker standard	Y STRAINER Y型滤器	40			1			SUPPLIED BY SEPARATOR	
BG.148	marker standard	LIQUID LEVEL CONTROLLER 液位控制器				1			SUPPLIED BY SEPARATOR	
BG.149	marker standard	FUNNEL 漏斗			STEEL 钢	1			SUPPLIED BY YARD	
BG.150	marker standard	FUNNEL 漏斗			STEEL 钢	1			SUPPLIED BY YARD	
BG.151	TS1025 CB/T422-93	LIQUID SIGHT GLASS 液流观察器	25	0.1	ASSEMBLY 组合件	1	1.65			

AREA:0.0625m^2

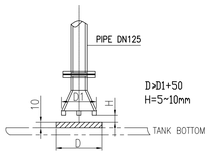
JH316G-512-01

REV 版本号	DATE 日期	DESCRIPTION 描述	DESIGNED 设绘	CHECKED 校对	VERIFIED 审核	APPROVED 审定
Z	2018.04.27	AS BUILT DRAWING	LYF	CK	XF	LB

SIGN 会签



DETAIL A
SUCTION INSTLLATION SKETCH



SYSTEM 系统

PIPING SYSTEM CLASS: 管路系统等级: III	DESIGN WORKING TEMPERATURE: 设计工作温度:	JOINTS NDT: 接头无损检测: ———	
DESIGN PRESSURE: 设计工作压力: 0.44 Mpa	SEA WATER: < 50 deg.C	PIPING MATERIAL: See piping spec. below 管系材料:	
HYDROSTATIC TEST PRESSURE: 试验压力: 0.66 Mpa			
INSTALLATION ON BOARD: NO LEAKAGE UNDER 安装后: 工作压力无泄漏			
Remarks: 备注:			

PIPING SPECIFICATION

DN 通径	Piping 管系			Connections 连接件	
	Pipe Type 管子类型	Standard 标准	Material 材料	Type 类型	Standard 标准
ALL SIZE	SEAMLESS STEEL PIPES	GB/T 8163-2008	CARBON STEEL	Flanged/Sleeve	GB 2506-1989

Remarks: (1) All seamless steel pipes are to be hot dip galv.
备注:

GB/T 8163-2008

DN	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100	DN125	DN150	DN200
Outer diameter										140	168	219
Wall thickness,general										5.0	5.0	6.0
Extra heavy pipes thickness										9.5	9.5	9.5
Wall thickness, overboard pipes											11	12.5

Remarks:
备注: (1) The size of pipe Standard accord to GB/T 8163-2008.

CORRESPONDING DRAWINGS

Drawing No. 图号	Drawing title 图名
JH316-463-01	DIAGRAM OF WATER COOLING PIPING SYSTEM

NOTES 说明

GENERAL NOTES:

1. Annotated size of pipe in the drawing to be out. diameter x thickness (mmxmm).
2. Pipe fabrication and installation shall refer to "JH316-400-04GY PIPING PRACTICE" or shipyard's standard.
3. Where pipe passing through bulkheads, deck and tank tops, an adequate penetration fitting is to be provided to ensure the watertight, firetight or smoketight integrity of the structure.
4. All ballast piping installed through deep tanks, shall be installed to take care of expansion.
5. Ballast tank must be added a plate under sprue.
6. Pipe that can cause progressive flooding of other intact tanks are to be located at least 1.5m inboard of the side sheel.
7. Pipe connections fitted between the shell and the valves are to have a minimum wall thickness not less than that specified in the table of 4-2-2/21.3 of modu rules and is to be as short as possible.
8. Pipe inside liquid tank should be extra-heavy pipe, as per 4-2-1/3.9 of MODU Rules.
9. Brine system connected with ballast system with isolating valves to allow brine tanks to be used as additional ballast tanks when required and brine not being carried.

SYMBOL	DESCRIPTION
⋈	BUTTERFLY VALVE(HAND WHEEL TYPE)
⋈	STOP VALVE
⋈	CHECK VALVE
⋈	STOP CHECK VALVE
△ ⊘	BELL MOUTH
▷	REDUCER
(LI)	LEVEL INDICATOR

VALVE FUNCTION	VALVE N.O.	TERMINATE LOCATION OF SHAFT DRIVING HANDWHEEL
drain from sw. ballast tank 1P	BW.024	main deck- 3 men office (205)
drain from sw. ballast tank 1S	BW.026	main deck- mess (1)
drain from sw. ballast tank 2P	BW.028	tween deck- 1# pump room
drain from sw. ballast tank 2S	BW.030	tween deck- 2# pump room
drain from sw. ballast tank 3P	BW.032	above engine room floor (P)
drain from sw. ballast tank 3S	BW.034	above engine room floor(S)
drain from sw. ballast tank 4P	BW.036	above the floor-rudder propeller room (P) side wall
drain from sw. ballast tank 4C	BW.038	above the floor-engine room (S) aft wall
drain from sw. ballast tank 4S	BW.021	above the floor-rudder propeller room (S)side wall

System Code Description

1. Equipment Code:
XX XXX XX
- Equipment NO.
- System NO.
- System code

2. Valves and Accessories Code:
XX XXX
- NO.
- System code

OWNER 船东	QMS BANI YAS INC.	HULL NO. 工程号	HXLB3007
BUILDER 船厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD 青岛海西重机有限责任公司	CLASS 船级社	ABS
TITLE 船名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图名	DIAGRAM OF BALLAST PIPING SYSTEM 压载系统管系原理图	DWG. NO. 图号	JH316G-512-01
		SCALE 比例	1:1
		WEIGHT 重量	-
		PAGE 页数	1/6
		DATE 日期	

BESTWAY WMMP
上海佳豪船海工程研究设计有限公司
SHANGHAI BESTWAY MARINE ENGINEERING DESIGN CO.,LTD
No.10 Building, No.518 Xinzhuan Road Shanghai, CHINA P.C : 201612 Web : www.bestwaysh.com
Tel : 86-21-6085 9800 Fax : 86-21-6085 9842

A1:0.50m²

DIAGRAM OF BALLAST PIPING SYSTEM								JH316G-512-01		PAGE
压载管系系统原理图								RevZ		2 / 6
ITEM NO.	STANDARD NO. OR DRAWING NO.	NAME	DN	PN	MATERIAL	QTY.	WT.	WORDS ON NAME PLATE	REMARKS	Rev:/Date
编号	标准号或图号	名称	通径 mm	压力 MPa	材料	数量	重量 kg	铭牌刻字内容	备注	版本/日期
BW.001	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1	14.70	BW SUCTION FM. BSWT. 4P		
BW.002	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1	14.70	BW SUCTION FM. BSWT. 3P		
BW.003	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1	14.70	BW SUCTION FM. BSWT. 4C		
BW.004	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1	14.70	BW SUCTION FM. BSWT. 3S		
BW.005	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1	14.70	BW SUCTION FM. BSWT. 4S		
BW.006	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1	14.70	BW FILLING TO BSWT. 4P		
BW.007	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1	14.70	BW FILLING TO BSWT. 3P		
BW.008	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1	14.70	BW FILLING TO BSWT. 4C		
BW.009	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1	14.70	BW FILLING TO BSWT.3S		
BW.010	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1	14.70	BW FILLING TO BSWT. 4S		
BW.011	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1	14.70	BW SUCTION FM. BSWT. 2P		
BW.012	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1	14.70	BW SUCTION FM. BSWT. 1P		

AREA:0.0625m^2

DIAGRAM OF BALLAST PIPING SYSTEM								JH316G-512-01		PAGE
压载管系系统原理图								RevZ		3 / 6
ITEM NO.	STANDARD NO. OR DRAWING NO.	NAME	DN	PN	MATERIAL	QTY.	WT.	WORDS ON NAME PLATE	REMARKS	Rev:/Date
编号	标准号或图号	名称	通径 mm	压力 MPa	材料	数量	重量 kg	铭牌刻字内容	备注	版本/日期
BW.013	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1	14.70	BW SUCTION FM. BSWT. 1S		
BW.014	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1	14.70	BW SUCTION FM. BSWT. 2S		
BW.015	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1	14.70	BW FILLING TO BSWT. 2P		
BW.016	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1	14.70	BW FILLING TO BSWT. 1P		
BW.017	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1	14.70	BW FILLING TO BSWT. 1S		
BW.018	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1	14.70	BW FILLING TO BSWT. 2S		
BW.019	CS10200 GB/T3036-94	BUTTERFLY VALVE 蝶阀	200	1.0	NODULAR IRON 球墨铸铁	1	23.54	BW FM WATER COOLING SYSTEM		
BW.020	CS10200 GB/T3036-94	BUTTERFLY VALVE 蝶阀	200	1.0	NODULAR IRON 球墨铸铁	1	23.54	OVERBOARD		
BW.021	BS6150 GB/T587-93	STOP VALVE 截止阀	150	0.6	BRONZE 青铜	1	62.9	OVERBOARD FROM SW.BALLAST TK 4S	ABS CERT.	
BW.022	BS6200 GB/T1853-94	STOP CHECK VALVE 船侧截止止回阀	200	0.6	CAST STEEL 铸钢	1	78.3	OVERBOARD	ABS CERT.	
BW.023	AS6150 GB/T592-93	CHECK VALVE 止回阀	150	0.6	CAST IRON 铸铁	1	52			
BW.024	BS6150 GB/T587-2008	STOP VALVE 截止阀	150	0.6	BRONZE 青铜	1	62.9	GRAVITY DRAINAGE FM.SW.BALLAST TK 1P	ABS CERT.	
BW.025	AS6150 GB/T592-93	CHECK VALVE 止回阀	150	0.6	CAST IRON 铸铁	1	52			

AREA:0.0625m^2

DIAGRAM OF BALLAST PIPING SYSTEM								JH316G-512-01		PAGE
压载管系系统原理图								RevZ		4 / 6
ITEM NO.	STANDARD NO. OR DRAWING NO.	NAME	DN	PN	MATERIAL	QTY.	WT.	WORDS ON NAME PLATE	REMARKS	Rev:/Date
编号	标准号或图号	名称	通径 mm	压力 MPa	材料	数量	重量 kg	铭牌刻字内容	备注	版本/日期
BW.026	BS6150 GB/T587-2008	STOP VALVE 截止阀	150	0.6	BRONZE 青铜	1	62.9	GRAVITY DRAINAGE FM. SW.BALLAST TK 1S	ABS CERT.	
BW.027	AS6150 GB/T592-93	CHECK VALVE 止回阀	150	0.6	CAST IRON 铸铁	1	52			
BW.028	BS6150 GB/T587-2008	STOP VALVE 截止阀	150	0.6	BRONZE 青铜	1	62.9	GRAVITY DRAINAGE FM. SW.BALLAST TK 2P	ABS CERT.	
BW.029	AS6150 GB/T592-93	CHECK VALVE 止回阀	150	0.6	CAST IRON 铸铁	1	52			
BW.030	BS6150 GB/T587-2008	STOP VALVE 截止阀	150	0.6	BRONZE 青铜	1	62.9	GRAVITY DRAINAGE FM. SW.BALLAST TK 2S	ABS CERT.	
BW.031	AS6150 GB/T592-93	CHECK VALVE 止回阀	150	0.6	CAST IRON 铸铁	1	52			
BW.032	BS6150 GB/T587-2008	STOP VALVE 截止阀	150	0.6	BRONZE 青铜	1	62.9	GRAVITY DRAINAGE FM. SW.BALLAST TK 3P	ABS CERT.	
BW.033	AS6150 GB/T592-93	CHECK VALVE 止回阀	150	0.6	CAST IRON 铸铁	1	52			
BW.034	BS6150 GB/T587-2008	STOP VALVE 截止阀	150	0.6	BRONZE 青铜	1	62.9	GRAVITY DRAINAGE FM. SW.BALLAST TK 3S	ABS CERT.	
BW.035	AS6150 GB/T592-93	CHECK VALVE 止回阀	150	0.6	CAST IRON 铸铁	1	52			
BW.036	BS6150 GB/T587-2008	STOP VALVE 截止阀	150	0.6	BRONZE 青铜	1	62.9	GRAVITY DRAINAGE FM. SW.BALLAST TK 4P	ABS CERT.	
BW.037	AS6150 GB/T592-93	CHECK VALVE 止回阀	150	0.6	CAST IRON 铸铁	1	52			
BW.038	BS6150 GB/T587-2008	STOP VALVE 截止阀	150	0.6	BRONZE 青铜	1	62.9	GRAVITY DRAINAGE FM.BALLAST TK 4C	ABS CERT.	

AREA:0.0625m^2

DIAGRAM OF BALLAST PIPING SYSTEM 压载管系系统原理图								JH316G-512-01 RevZ		PAGE 5 / 6
ITEM NO. 编号	STANDARD NO. OR DRAWING NO. 标准号或图号	NAME 名称	DN 通径 mm	PN 压力 MPa	MATERIAL 材料	QTY. 数量	WT. 重量 kg	WORDS ON NAME PLATE 铭牌刻字内容	REMARKS 备注	Rev:/Date 版本/日期
BW.039	AS6150 GB/T592-93	CHECK VALVE 止回阀	150	0.6	CAST IRON 铸铁	1	52			
BW.040	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1	8.95	BW SUCTION FM. BUFFER TANK		
BW.041	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1	8.95	BW FILLING TO BUFFER TANK		
BW.042	AS125S CB/T495-1995	SUCTION INLET 吸入口	125		Q235A	1	8.43			
BW.043	AS125S CB/T495-1995	SUCTION INLET 吸入口	125		Q235A	1	8.43			
BW.044	AS125S CB/T495-1995	SUCTION INLET 吸入口	125		Q235A	1	8.43			
BW.045	AS125S CB/T495-1995	SUCTION INLET 吸入口	125		Q235A	1	8.43			
BW.046	AS125S CB/T495-1995	SUCTION INLET 吸入口	125		Q235A	1	8.43			
BW.047	AS125S CB/T495-1995	SUCTION INLET 吸入口	125		Q235A	1	8.43			
BW.048	AS125S CB/T495-1995	SUCTION INLET 吸入口	125		Q235A	1	8.43			
BW.049	AS125S CB/T495-1995	SUCTION INLET 吸入口	125		Q235A	1	8.43			
BW.050	AS125S CB/T495-1995	SUCTION INLET 吸入口	125		Q235A	1	8.43			
BW.051	AS125S CB/T495-1995	SUCTION INLET 吸入口	125		Q235A	1	8.43			

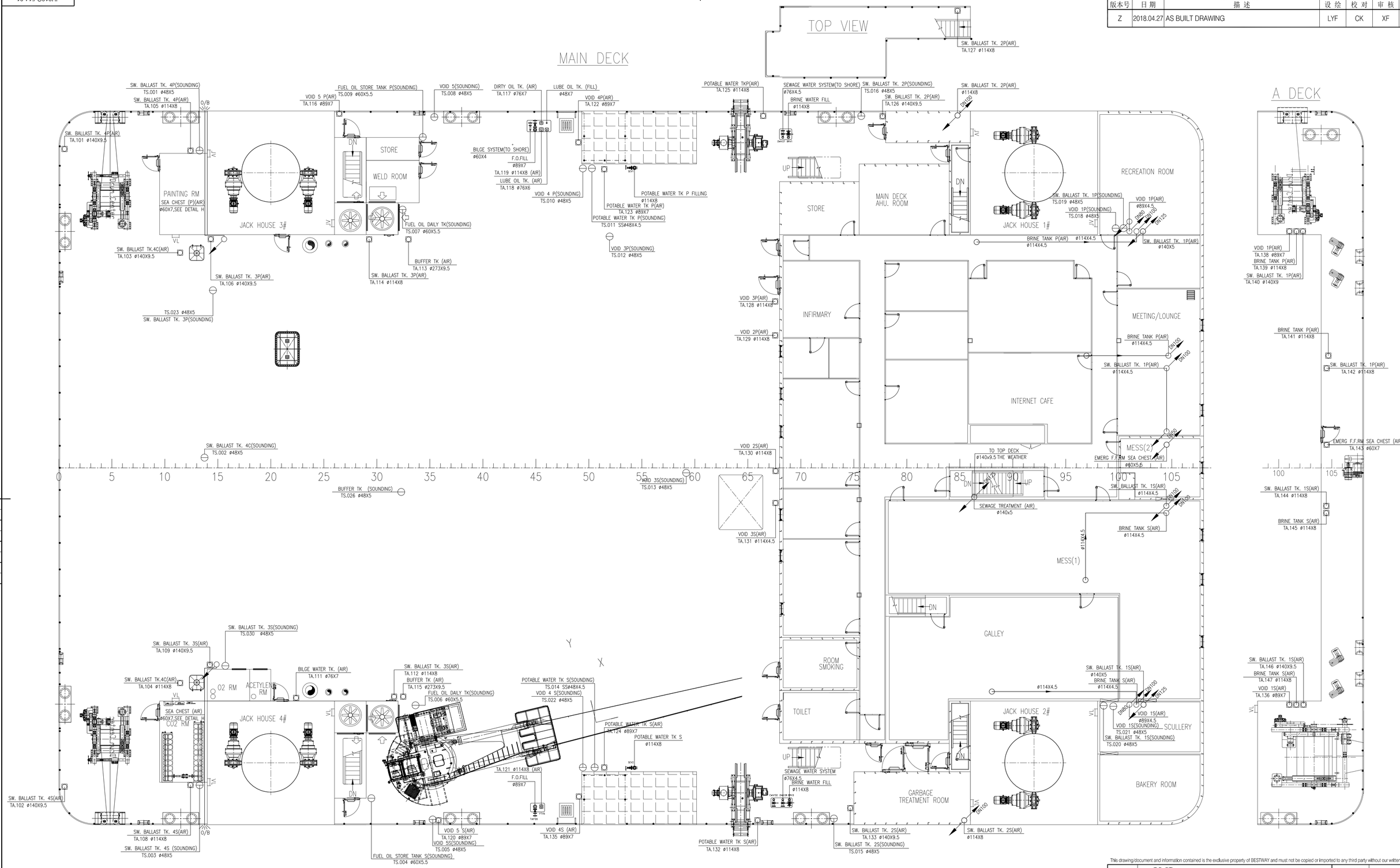
AREA:0.0625m^2

DIAGRAM OF BALLAST PIPING SYSTEM 压载管系系统原理图								JH316G-512-01 RevZ		PAGE 6 / 6
ITEM NO. 编号	STANDARD NO. OR DRAWING NO. 标准号或图号	NAME 名称	DN 通径 mm	PN 压力 MPa	MATERIAL 材料	QTY. 数量	WT. 重量 kg	WORDS ON NAME PLATE 铭牌刻字内容	REMARKS 备注	Rev:/Date 版本/日期
BW.052		LEVEL TRANSMITTER 液位传感器			ASSEMBLY 组合件	1				
BW.053		LEVEL TRANSMITTER 液位传感器			ASSEMBLY 组合件	1				
BW.054		LEVEL TRANSMITTER 液位传感器			ASSEMBLY 组合件	1				
BW.055		LEVEL TRANSMITTER 液位传感器			ASSEMBLY 组合件	1				
BW.056		LEVEL TRANSMITTER 液位传感器			ASSEMBLY 组合件	1				
BW.057		LEVEL TRANSMITTER 液位传感器			ASSEMBLY 组合件	1				
BW.058		LEVEL TRANSMITTER 液位传感器			ASSEMBLY 组合件	1				
BW.059		LEVEL TRANSMITTER 液位传感器			ASSEMBLY 组合件	1				
BW.060		LEVEL TRANSMITTER 液位传感器			ASSEMBLY 组合件	1				
BW.061	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1	14.70	BW SUCTION FM. BRINE TK		
BW.062	CS10125 GB/T3036-94	BUTTERFLY VALVE 蝶阀	125	1.0	NODULAR IRON 球墨铸铁	1	14.70	BW SUCTION FM. BRINE TK		

AREA:0.0625m^2

JH316G-514-01

REV 版本号	DATE 日期	DESCRIPTION 描述	DESIGNED 设绘	CHECKED 校对	VERIFIED 审核	APPROVED 审定
Z	2018.04.27	AS BUILT DRAWING	LYF	CK	XF	LB



SIGN

PIPING SPECIFICATION 管系规格

DN 通径	Piping 管系			Connections 连接件	
	Pipe Type 管子类型	Standard 标准	Material 材料	Type 类型	Standard 标准
ALL SIZE	SEAMLESS STEEL PIPES	GB/T 8163-2008	20#	Flanged/Sleeve	GB 2506-1989

Remarks:
(1) The pipes served for water tank to be hot galvanized and the pipes served for oil tank to be acid pickling after prefabrication.

GB/T 8163-2008

DN 通径	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100	DN125	DN150	DN200	DN250	DN300
Outer diameter	22	27	34	42	48	60	76	89	114	140	168	219	273	325
Wall thickness,general	3.0	3.0	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0	6.0	6.5	7.0
Extra heavy pipes thickness	4.0	4.0	5.0	5.0	5.0	5.5	6.0	7.0	8.0	9.5	9.5	9.5	9.5	9.5
Wall thickness, overboard pipes				7.0	7.0	7.0	7.0	8.0	9.0	10.0	11.0	12.5	12.5	12.5

Remarks:
备注:
(1) The size of pipe Standard accord to GB/T 8163-2008.

CORRESPONDING DRAWINGS

Drawing No. 附号	Drawing title 附名
JH316-533-02	DIAGRAM OF SEWAGE DRAIN PIPING SYSTEM
JH316-462-01	DIAGRAM OF LUBE OIL PIPING SYSTEM

NOTES 说明

GENERAL NOTES:
1. Annotated size of pipe in the drawing to be out. diameter x thickness (mmxmm).
2. No leakage under working condition to be allowed, after assembled ,to be pipe watertight test with tank.
3. No piping to be mounted over electrical equipment and no flanges to be installed near electrical equipment.
4. Where pipe passing through bulkheads, deck and tank tops, all adequate penetration fitting is to be provided to ensure the watertight, firetight or smoketight integrity of the structure.
5. Vent pipes on decks exposed to the weather are to have the following heights:
   i) 760mm for those on the freeboard deck;
   ii) 450mm for those on the superstructure deck.
   the volume of coaming of each air head for oil tank shall be more than 160l.
6. The oil coaming with drain plug shall be provided around erery air pipe of oil tank.
7. The piping system to be supported securely in order to prevent damages from and other causes.

SYMBOL	NAME	SYMBOL	NAME
	CAP TYPE AIR PIPE HEAD		SOUNDING OR FILLING HEAD WITH CAP
	GOOSE NECK TYPE AIR PIPE HEAD		SOUNDING HEAD WITH SELF-CLOSING
	FLAME SCREEN		STOP VALVE
	GOOSE NECK AIR PIPE HEAD FOR WATER TANK		

System Code Description

1. Equipment Code:
XX XXX XX
- Equipment NO.
- System NO.
- System code

2. Valves and Accessories Code:
XX XXX
- NO.
- System code

OWNER 船东	QMS BANI YAS INC.	HULL NO. 工程号	HXLB3007
BUILDER 船厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD 青岛海西重机有限责任公司	CLASS 船级社	ABS
TITLE 船名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图名	DIAGRAM OF TANK VENT & SOUNDING AND FILLING PIPING SYSTEM 舱室透气、测深、注入系统管系原理图	DWG. NO. 图号	JH316G-514-01
		SCALE 比例	1:100
		WEIGHT 重量	-
		PAGE 页数	1/10
		DATE 日期	

BESTWAY 威海海西
上海佳豪船海工程研究设计有限公司
SHANGHAI BESTWAY MARINE ENGINEERING DESIGN CO.,LTD
No.10 Building, No.518 Xinzhuan Road Shanghai, CHINA P.C : 201612 Web : www.bestwaysh.com
Tel : 86-21-6085 9800 Fax : 86-21-6085 9842

A1:0.50m²

SIGN 会签

TANK TOP & TWEEN DECK

SW BALLAST TANK 4P
SW BALLAST TANK 4C
SW BALLAST TANK 4S
SW BALLAST TANK 1P
SW BALLAST TANK 1S
JACK HOUSE 3#
JACK HOUSE 4#
JACK HOUSE 1#
JACK HOUSE 2#
FUEL OIL STORE TANK P
FUEL OIL STORE TANK S
VENT FOOT P
VENT FOOT S
OIL TRAY
VOID 5P
VOID 4P
VOID 4S
VOID 5S
VOID 1P
VOID 1S
POTABLE WATER TANK P
POTABLE WATER TANK S
ENGINE ROOM
CHILLER ROOM
CHILLER
HAWIN
FREEZER
DRY STORE
BUTCHERY ROOM
STORE ROOM
AHU ROOM
PRAYER ROOM
CHANGE ROOM
ELECTRIC WORKSHOP
TOILET
C/E OFFICE
FWD MCC ROOM
STAIR ROOM
B/T ROOM
LAUNDRY
LINEN STORE
GYMNASIUM
2# PUMP ROOM
RUDDER PROPELLER ROOM S

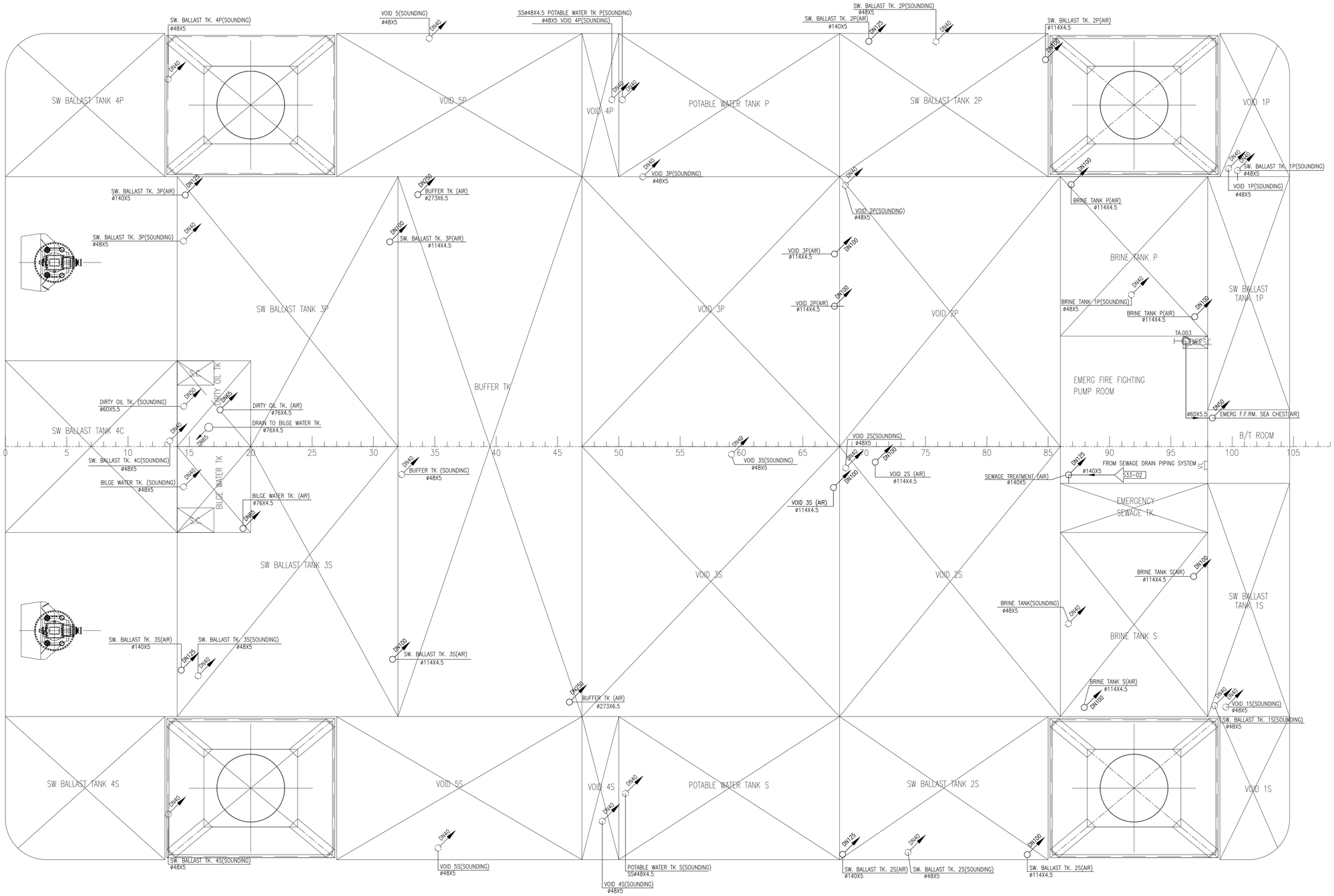
SW. BALLAST TK. 4P(AIR) ø114X4.5
SW. BALLAST TK. 4P(SOUNDING) ø48X5
SW. BALLAST TK. 4P(AIR) ø140X5
SW. BALLAST TK. 3P(AIR) ø140X5
SW. BALLAST TK. 4C(AIR)
SW. BALLAST TK. 3P(SOUNDING) ø48X5
TS.023 ø48X5
SW. BALLAST TK. 4C(SOUNDING) ø48X5
SW. BALLAST TK. 3P(AIR) ø114X4.5
SW. BALLAST TK. 4S (AIR) ø140X5
SW. BALLAST TK. 4S(AIR) ø114X4.5
SW. BALLAST TK. 4S(SOUNDING) ø48X5
SW. BALLAST TK. 3S(AIR) ø140X5
SW. BALLAST TK. 3S(SOUNDING) ø48X5
SW. BALLAST TK. 2P(AIR) ø140X5
SW. BALLAST TK. 2P(SOUNDING) ø48X5
SW. BALLAST TK. 1P(SOUNDING) ø48X5
SW. BALLAST TK. 1P (AIR) ø114X4.5
SW. BALLAST TK. 1P (AIR) ø140X5
SW. BALLAST TK. 1S (AIR) ø114X4.5
SW. BALLAST TK. 1S (AIR) ø140X5
SW. BALLAST TK. 1S(SOUNDING) ø48X5
SW. BALLAST TK. 2S(SOUNDING) ø48X5
SW. BALLAST TK. 2S(AIR) ø140X5
SW. BALLAST TK. 2S(AIR) ø114X4.5

FUEL OIL STORE TK. P(AIR) ø76X4.5
VOID 5(SOUNDING) ø48X5
VOID 5(AIR) ø89X4.5
FUEL OIL STORE TANK P(SOUNDING) ø60X5.5
SEE DETAIL A
FOOT P(AIR) ø76X4.5
FUEL OIL DAILY TK (SOUNDING) ø60X5.5
FUEL OIL STORE TK.P (AIR) ø76X4.5
BUFFER TK (AIR) ø273X6.5
FROM LUBE OIL PIPING SYSTEM 462-01
VOID 4P(SOUNDING) ø48X5
VOID TK. 4P(AIR) ø89X4.5
(AIR) ø114X4.5
POTABLE WATER TK P(SOUNDING) SS ø48X4.5
POTABLE WATER TKP(AIR) ø89X4.5
POTABLE WATER TKP(AIR) ø114X4.5
VOID 3P(SOUNDING) ø48X5
VOID 2P(SOUNDING) TS.017 ø48X5
VOID 3P(AIR) ø114X4.5
VOID 2P(AIR) ø114X4.5
VOID 2S(AIR) ø114X4.5
VOID 3S(SOUNDING) ø48X5
VOID 2S(SOUNDING) TS.029 ø48X5
VOID 3S(AIR) ø114X4.5
VOID 1P(SOUNDING) ø48X5
VOID 1P (AIR) ø89X4.5
VOID 1S(AIR) ø89X4.5
VOID 1S(SOUNDING) ø48X5
BRINE TANK P(AIR) ø114X4.5
BRINE TANK P(SOUNDING) TS.027 ø48X5
BRINE TANK S(AIR) ø114X4.5
BRINE TANK S(SOUNDING) TS.028 ø48X5
SEWAGE TREATMENT (AIR) ø140x5
EMERG F.F.RM.SEA CHEST (AIR) ø60X5.5
SEA CHEST (P)(AIR) ø60X5.5
(DRAIN) TO DIRTY OIL TANK ø76X4.5
SEA CHEST (S)(AIR) ø60X5.5
BILGE WATER TK. (AIR) ø76X4.5
DIRTY OIL TK. (SOUNDING) TS.024 ø60X5.5
TS.025 ø48X5 BILGE WATER TK. (SOUNDING)
BUFFER TK (SOUNDING) ø48X5
FUEL OIL DAILY TK (SOUNDING) ø60X5.5
FUEL OIL STORE TANK S(SOUNDING) ø60X5.5
VOID 5S (AIR) ø89X4.5
VOID 5S(SOUNDING) ø48X5
VOID 4S (SOUNDING) ø48X5
VOID 4S (AIR) ø89X4.5
POTABLE WATER TK S(AIR) SS ø48X4.5
POTABLE WATER TK S(SOUNDING) ø89X4.5
POTABLE WATER TK S(AIR) ø114X4.5
FUEL OIL STORE TK. S(AIR) ø76X4.5
FOOT S(AIR) ø76X4.5
BUFFER TK (AIR) ø273X6.5
SW. BALLAST TK. 3S(AIR) ø114X4.5
TA.001
TA.002
TA.148
HATCH Z ABOVE

A1:0.50m²

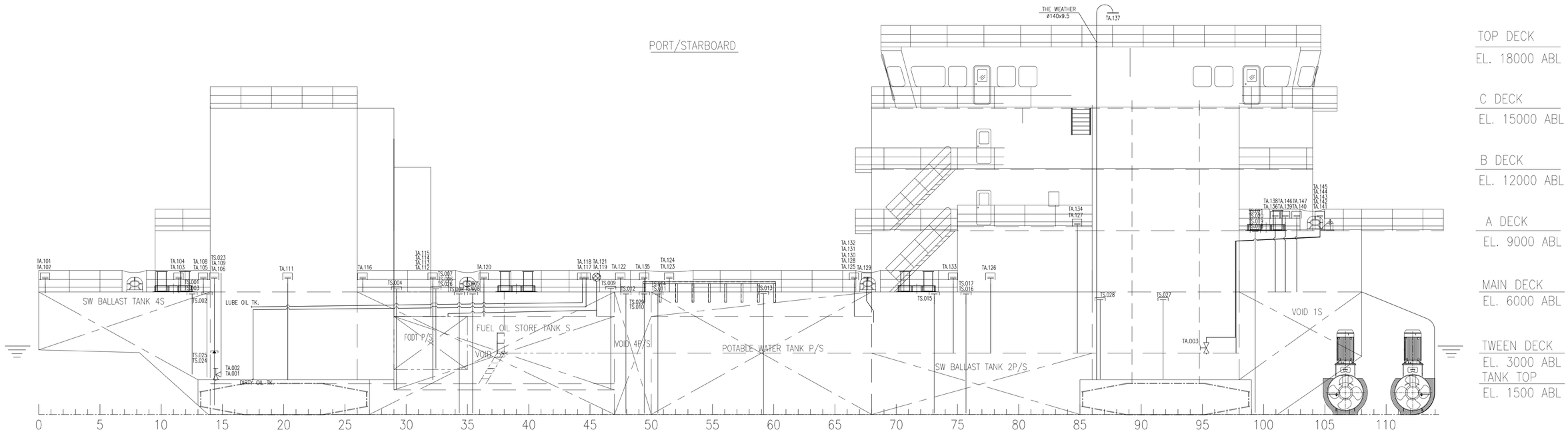
SIGN
会 签

DOUBLE BOTTOM

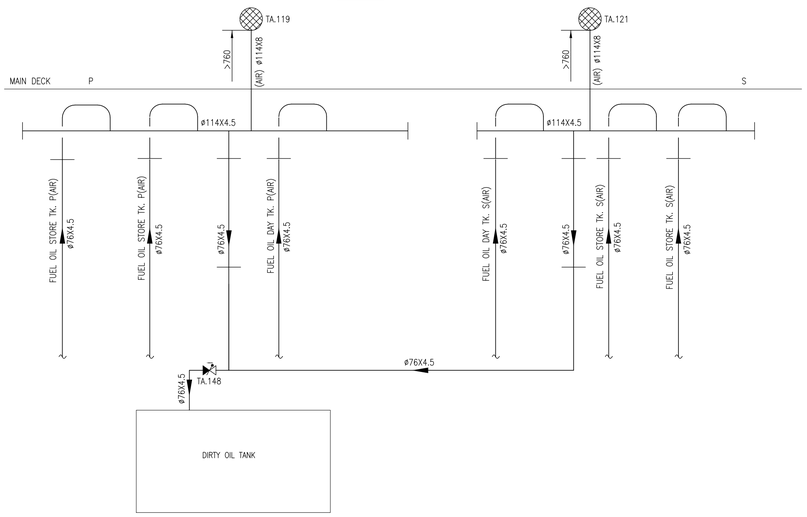


SIGN 会签

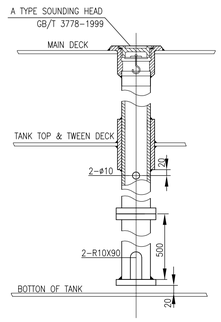
PORT/STARBOARD



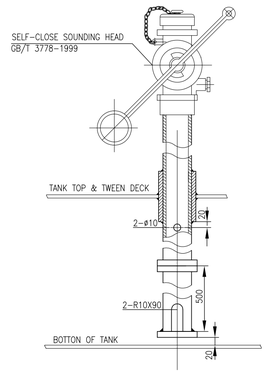
DETAIL A



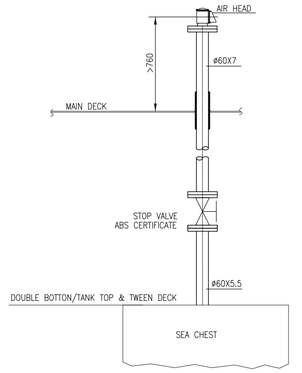
DETAIL B
A TYPE SOUNDING HEAD



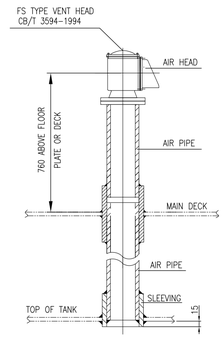
DETAIL C
SELF-CLOSE SOUNDING HEAD



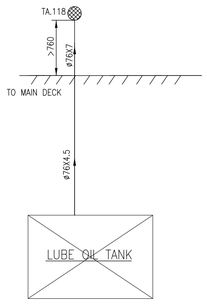
DETAIL D
TYP. VENT DETAIL FOR SEA CHEST



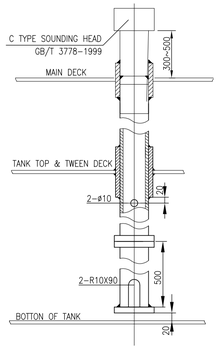
DETAIL E
FS TYPE VENT HEAD
FOR WATER/OIL TANK



DETAIL F
LUBE OIL TANK

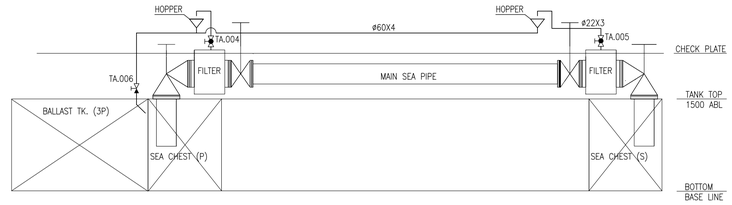


DETAIL G
C TYPE SOUNDING HEAD



DETAIL H

DETAIL I
TYP. VENT DETAIL FOR MAIN FILTER



A1:0.50m²

DIAGRAM OF TANK VENT & SOUNDING AND FILLING PIPING SYSTEM								JH316G-514-01		PAGE
舱室透气、注入系统								RevZ		5 / 10
ITEM NO.	STANDARD NO. OR DRAWING NO.	NAME	DN	PN	MATERIAL	QTY.	WT.	WORDS ON NAME PLATE	REMARKS	Rev:/Date
编号	标准号或图号	名称	通径 mm	压力 MPa	材料	数量	重量 kg	铭牌刻字内容	备注	版本/日期
TA.001	BS16050 CB/T3196-95	STOP VALVE 截止阀	50	1.6	CAST STEEL 铸钢	1	10	SEA CHEST(P) AIR	ABS cert.	
TA.002	BS16050 CB/T3196-95	STOP VALVE 截止阀	50	1.6	CAST STEEL 铸钢	1	10	SEA CHEST(S) AIR	ABS cert.	
TA.003	AS16050 CB/T3196-95	STOP VALVE 截止阀	50	1.6	CAST STEEL 铸钢	1	12	EMERG F.F.RM.SEA CHEST AIR	ABS cert.	
TA.004		FEMALE THREAD BALL VALVE 内螺纹球阀	15	1.6	STAINLESS STEEL 不锈钢	1		AIR VENT OF SEA CHEST FILTER (P)		
TA.005		FEMALE THREAD BALL VALVE 内螺纹球阀	15	1.6	STAINLESS STEEL 不锈钢	1		AIR VENT OF SEA CHEST FILTER (S)		
TA.006	AS6050 GB/T588-2009	STOP CHECK VALVE 截止止回阀	50	0.6	BRONZE	1	11.50	MAIN S.W. FILTER VENT RETURN BALLAST 3P		
TA.101	FS125QT CB/T3594-94	AIR PIPE HEAD 空气管头	125		NODULAR IRON 球墨铸铁	1	49.8	SW. BALLAST TK. 4P(AIR)	ABS Approval type	
TA.102	FS125QT CB/T3594-94	AIR PIPE HEAD 空气管头	125		NODULAR IRON 球墨铸铁	1	49.8	SW. BALLAST TK. 4S(AIR)	ABS Approval type	
TA.103	FS125QT CB/T3594-94	AIR PIPE HEAD 空气管头	125		NODULAR IRON 球墨铸铁	1	49.8	SW. BALLAST TK. 4C(AIR)	ABS Approval type	
TA.104	FS100QT CB/T3594-94	AIR PIPE HEAD 空气管头	100		NODULAR IRON 球墨铸铁	1	34.4	SW. BALLAST TK. 4C(AIR)	ABS Approval type	
TA.105	FS100QT CB/T3594-94	AIR PIPE HEAD 空气管头	100		NODULAR IRON 球墨铸铁	1	34.4	SW. BALLAST TK. 4P(AIR)	ABS Approval type	
TA.106	FS125QT CB/T3594-94	AIR PIPE HEAD 空气管头	125		NODULAR IRON 球墨铸铁	1	49.8	SW. BALLAST TK. 3P(AIR)	ABS Approval type	
TA.108	FS100QT CB/T3594-94	AIR PIPE HEAD 空气管头	100		NODULAR IRON 球墨铸铁	1	34.4	SW. BALLAST TK. 4S(AIR)	ABS Approval type	
TA.109	FS125QT CB/T3594-94	AIR PIPE HEAD 空气管头	125		NODULAR IRON 球墨铸铁	1	49.8	SW. BALLAST TK. 3S(AIR)	ABS Approval type	
TA.111	FS65QT CB/T3594-94	AIR PIPE HEAD 空气管头	65		NODULAR IRON 球墨铸铁	1	19.2	BILGE WATER TK. (AIR)	ABS Approval type	

AREA:0.0625m^2

DIAGRAM OF TANK VENT & SOUNDING AND FILLING PIPING SYSTEM 舱室透气、注入系统								JH316G-514-01 RevZ		PAGE 6 / 10
ITEM NO. 编号	STANDARD NO. OR DRAWING NO. 标准号或图号	NAME 名称	DN 通径 mm	PN 压力 MPa	MATERIAL 材料	QTY. 数量	WT. 重量 kg	WORDS ON NAME PLATE 铭牌刻字内容	REMARKS 备注	Rev:/Date 版本/日期
TA.112	FS100QT CB/T3594-94	AIR PIPE HEAD 空气管头	100		NODULAR IRON 球墨铸铁	1	34.4	SW. BALLAST TK. 3S(AIR)	ABS Approval type	
TA.113	FS250QT CB/T3594-94	AIR PIPE HEAD 空气管头	250		NODULAR IRON 球墨铸铁	1	223	BUFFER TK (AIR)	ABS Approval type	
TA.114	FS100QT CB/T3594-94	AIR PIPE HEAD 空气管头	100		NODULAR IRON 球墨铸铁	1	34.4	SW. BALLAST TK. 3P(AIR)	ABS Approval type	
TA.115	FS250QT CB/T3594-94	AIR PIPE HEAD 空气管头	250		NODULAR IRON 球墨铸铁	1	223	BUFFER TK (AIR)	ABS Approval type	
TA.116	FS80QT CB/T3594-94	AIR PIPE HEAD 空气管头	80		NODULAR IRON 球墨铸铁	1	22.6	VOID 5P (AIR)	ABS Approval type	
TA.117	FS65QT CB/T3594-94	AIR PIPE HEAD 空气管头	65		NODULAR IRON 球墨铸铁	1	19.1	DIRTY OIL TK. (AIR)	With flame screen/ ABS Approval type	
TA.118	FS65QT CB/T3594-94	AIR PIPE HEAD 空气管头	65		NODULAR IRON 球墨铸铁	1	19.1	LUBE OIL TK. (AIR)	With flame screen/ ABS Approval type	
TA.119	FS100QT CB/T3594-94	AIR PIPE HEAD 空气管头	100		NODULAR IRON 球墨铸铁	1	34.1	FUEL OIL MAINLINE P(AIR)	With flame screen/ ABS Approval type	
TA.120	FS80QT CB/T3594-94	AIR PIPE HEAD 空气管头	80		NODULAR IRON 球墨铸铁	1	22.6	VOID 5S (AIR)	ABS Approval type	
TA.121	FS100QT CB/T3594-94	AIR PIPE HEAD 空气管头	100		NODULAR IRON 球墨铸铁	1	34.1	FUEL OIL MAINLINE S(AIR)	With flame screen/ ABS Approval type	
TA.122	FS80QT CB/T3594-94	AIR PIPE HEAD 空气管头	80		NODULAR IRON 球墨铸铁	1	22.6	VOID 4P (AIR)	ABS Approval type	
TA.123	FS80QT CB/T3594-94	AIR PIPE HEAD 空气管头	80		NODULAR IRON 球墨铸铁	1	22.6	POTABLE WATER TK P(AIR)	ABS Approval type	
TA.124	FS80QT CB/T3594-94	AIR PIPE HEAD 空气管头	80		NODULAR IRON 球墨铸铁	1	22.6	POTABLE WATER TK S(AIR)	ABS Approval type	
TA.125	FS100QT CB/T3594-94	AIR PIPE HEAD 空气管头	100		NODULAR IRON 球墨铸铁	1	34.4	POTABLE WATER TK P(AIR)	ABS Approval type	

AREA:0.0625m^2

DIAGRAM OF TANK VENT & SOUNDING AND FILLING PIPING SYSTEM 舱室透气、注入系统								JH316G-514-01 RevZ		PAGE 7 / 10
ITEM NO. 编号	STANDARD NO. OR DRAWING NO. 标准号或图号	NAME 名称	DN 通径 mm	PN 压力 MPa	MATERIAL 材料	QTY. 数量	WT. 重量 kg	WORDS ON NAME PLATE 铭牌刻字内容	REMARKS 备注	Rev:/Date 版本/日期
TA.126	FS125QT CB/T3594-94	AIR PIPE HEAD 空气管头	125		NODULAR IRON 球墨铸铁	1	49.8	SW. BALLAST TK. 2P(AIR)	ABS Approval type	
TA.127	FS100QT CB/T3594-94	AIR PIPE HEAD 空气管头	100		NODULAR IRON 球墨铸铁	1	34.4	SW. BALLAST TK. 2P(AIR)	ABS Approval type	
TA.128	FS100QT CB/T3594-94	AIR PIPE HEAD 空气管头	100		NODULAR IRON 球墨铸铁	1	34.4	VOID 3P (AIR)	ABS Approval type	
TA.129	FS100QT CB/T3594-94	AIR PIPE HEAD 空气管头	100		NODULAR IRON 球墨铸铁	1	34.4	VOID 2P (AIR)	ABS Approval type	
TA.130	FS100QT CB/T3594-94	AIR PIPE HEAD 空气管头	100		NODULAR IRON 球墨铸铁	1	34.4	VOID 2S (AIR)	ABS Approval type	
TA.131	FS100QT CB/T3594-94	AIR PIPE HEAD 空气管头	100		NODULAR IRON 球墨铸铁	1	34.4	VOID 3S (AIR)	ABS Approval type	
TA.132	FS100QT CB/T3594-94	AIR PIPE HEAD 空气管头	100		NODULAR IRON 球墨铸铁	1	34.4	POTABLE WATER TK S(AIR)	ABS Approval type	
TA.133	FS125QT CB/T3594-94	AIR PIPE HEAD 空气管头	125		NODULAR IRON 球墨铸铁	1	49.8	SW. BALLAST TK. 2S(AIR)	ABS Approval type	
TA.134	FS100QT CB/T3594-94	AIR PIPE HEAD 空气管头	100		NODULAR IRON 球墨铸铁	1	34.4	SW. BALLAST TK. 2S(AIR)	ABS Approval type	
TA.135	FS80QT CB/T3594-94	AIR PIPE HEAD 空气管头	80		NODULAR IRON 球墨铸铁	1	22.6	VOID 4S (AIR)	ABS Approval type	
TA.136	FS80QT CB/T3594-94	AIR PIPE HEAD 空气管头	80		NODULAR IRON 球墨铸铁	1	22.6	VOID 1S (AIR)	ABS Approval type	
TA.137	AS125 CB604-93	FLAME SCREEN 防火网	125		STAINLESS STEEL 不锈钢	1	0.615	SEWAGE TREATMENT (AIR)		
TA.138	FS80QT CB/T3594-94	AIR PIPE HEAD 空气管头	80		NODULAR IRON 球墨铸铁	1	22.6	VOID 1P(AIR)	ABS Approval type	
TA.139	FS100QT CB/T3594-94	AIR PIPE HEAD 空气管头	100		NODULAR IRON 球墨铸铁	1	34.4	BRINE TANK P(AIR)	ABS Approval type	

AREA:0.0625m^2

DIAGRAM OF TANK VENT & SOUNDING AND FILLING PIPING SYSTEM 舱室透气、注入系统								JH316G-514-01 RevZ		PAGE 8 / 10
ITEM NO. 编号	STANDARD NO. OR DRAWING NO. 标准号或图号	NAME 名称	DN 通径 mm	PN 压力 MPa	MATERIAL 材料	QTY. 数量	WT. 重量 kg	WORDS ON NAME PLATE 铭牌刻字内容	REMARKS 备注	Rev:/Date 版本/日期
TA.140	FS125QT CB/T3594-94	AIR PIPE HEAD 空气管头	125		NODULAR IRON 球墨铸铁	1	49.8	SW. BALLAST TK. 1P(AIR)	ABS Approval type	
TA.141	FS100QT CB/T3594-94	AIR PIPE HEAD 空气管头	100		NODULAR IRON 球墨铸铁	1	34.4	BRINE TANK P(AIR)	ABS Approval type	
TA.142	FS100QT CB/T3594-94	AIR PIPE HEAD 空气管头	100		NODULAR IRON 球墨铸铁	1	34.4	SW. BALLAST TK. 1P(AIR)	ABS Approval type	
TA.143	FS50QT CB/T3594-94	AIR PIPE HEAD 空气管头	50		NODULAR IRON 球墨铸铁	1	12.6	EMERG F.F.RM SEA CHEST (AIR)	ABS Approval type	
TA.144	FS100QT CB/T3594-94	AIR PIPE HEAD 空气管头	100		NODULAR IRON 球墨铸铁	1	34.4	SW. BALLAST TK. 1S(AIR)	ABS Approval type	
TA.145	FS100QT CB/T3594-94	AIR PIPE HEAD 空气管头	100		NODULAR IRON 球墨铸铁	1	34.4	BRINE TANK S(AIR)	ABS Approval type	
TA.146	FS125QT CB/T3594-94	AIR PIPE HEAD 空气管头	125		NODULAR IRON 球墨铸铁	1	49.8	SW. BALLAST TK. 1S(AIR)	ABS Approval type	
TA.147	FS100QT CB/T3594-94	AIR PIPE HEAD 空气管头	100		NODULAR IRON 球墨铸铁	1	34.4	BRINE TANK S(AIR)	ABS Approval type	
TA.148	10065 CB/T3819-1999	PLATE CHECK VALVE 板式止回阀	65		BRONZE 青铜	1	1.63	DRAIN TO DIRTY OIL TANK		
TS.001	A40 CB/T3778-1999	SOUNDING HEAD 测深头	40		STEEL 钢	1	0.96	SW. BALLAST TK. 4P(SOUNDING)		
TS.002	A40 CB/T3778-1999	SOUNDING HEAD 测深头	40		STEEL 钢	1	0.96	SW. BALLAST TK. 4C(SOUNDING)		
TS.003	A40 CB/T3778-1999	SOUNDING HEAD 测深头	40		STEEL 钢	1	0.96	SW. BALLAST TK. 4S (SOUNDING)		
TS.004	C50 CB/T3778-1999	SOUNDING HEAD 测深头	50		STEEL 钢	1	0.9	FUEL OIL STORE TANK S(SOUNDING)		
TS.005	A40 CB/T3778-1999	SOUNDING HEAD 测深头	40		STEEL 钢	1	0.96	VOID 5S(SOUNDING)		

AREA:0.0625m^2

DIAGRAM OF TANK VENT & SOUNDING AND FILLING PIPING SYSTEM 舱室透气、注入系统								JH316G-514-01 RevZ		PAGE 9 / 10
ITEM NO. 编号	STANDARD NO. OR DRAWING NO. 标准号或图号	NAME 名称	DN 通径 mm	PN 压力 MPa	MATERIAL 材料	QTY. 数量	WT. 重量 kg	WORDS ON NAME PLATE 铭牌刻字内容	REMARKS 备注	Rev:/Date 版本/日期
TS.006	C50 CB/T3778-1999	SOUNDING HEAD 测深头	50		STEEL 钢	1	0.9	FUEL OIL DAILY TK(SOUNDING)		
TS.007	C50 CB/T3778-1999	SOUNDING HEAD 测深头	50		STEEL 钢	1	0.9	FUEL OIL DAILY TK(SOUNDING)		
TS.008	A40 CB/T3778-1999	SOUNDING HEAD 测深头	40		STEEL 钢	1	0.96	VOID 5(SOUNDING)		
TS.009	C50 CB/T3778-1999	SOUNDING HEAD 测深头	50		STEEL 钢	1	0.9	FUEL OIL STORE TANK P(SOUNDING)		
TS.010	A40 CB/T3778-1999	SOUNDING HEAD 测深头	40		STEEL 钢	1	0.96	VOID 4 P(SOUNDING)		
TS.011	C40 CB/T3778-1999	SOUNDING HEAD 测深头	40		SUS304 不锈钢	1	0.9	POTABLE WATER TK P(SOUNDING)		
TS.012	A40 CB/T3778-1999	SOUNDING HEAD 测深头	40		STEEL 钢	1	0.96	VOID 3P(SOUNDING)		
TS.013	A40 CB/T3778-1999	SOUNDING HEAD 测深头	40		STEEL 钢	1	0.96	VOID 3S(SOUNDING)		
TS.014	C40 CB/T3778-1999	SOUNDING HEAD 测深头	40		SUS304 不锈钢	1	0.9	POTABLE WATER TK S(SOUNDING)		
TS.015	A40 CB/T3778-1999	SOUNDING HEAD 测深头	40		STEEL 钢	1	0.96	SW. BALLAST TK. 2S(SOUNDING)		
TS.016	A40 CB/T3778-1999	SOUNDING HEAD 测深头	40		STEEL 钢	1	0.96	SW. BALLAST TK. 2P(SOUNDING)		
TS.017	C40 CB/T3778-1999	SOUNDING HEAD 测深头	40		STEEL 钢	1	0.9	VOID 2P(SOUNDING)		
TS.018	C40 CB/T3778-1999	SOUNDING HEAD 测深头	40		STEEL 钢	1	0.9	VOID 1P(SOUNDING)		
TS.019	C40 CB/T3778-1999	SOUNDING HEAD 测深头	40		STEEL 钢	1	0.9	SW. BALLAST TK. 1P(SOUNDING)		

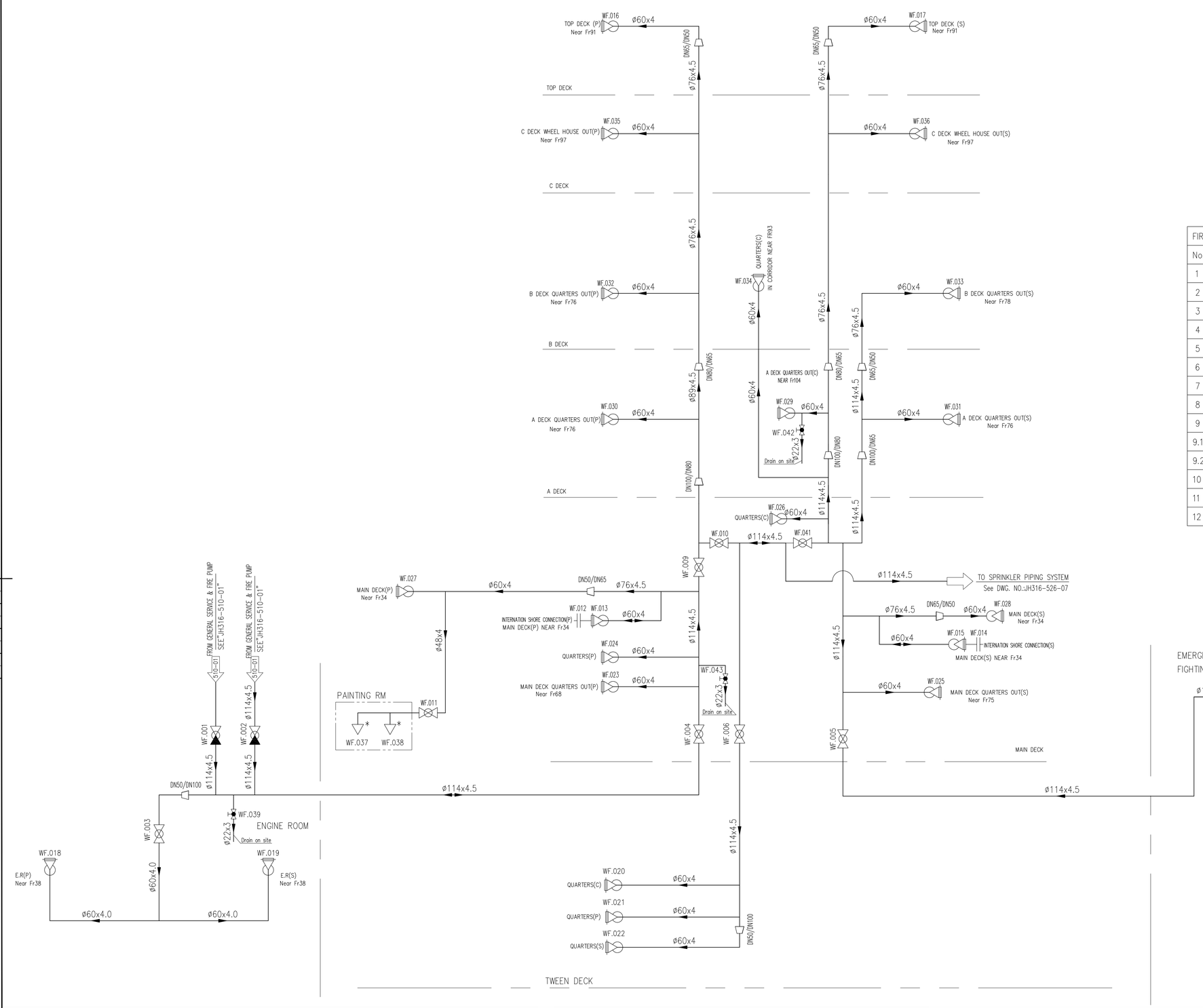
AREA:0.0625m^2

DIAGRAM OF TANK VENT & SOUNDING AND FILLING PIPING SYSTEM 舱室透气、注入系统								JH316G-514-01 RevZ		PAGE 10 / 10
ITEM NO.	STANDARD NO. OR DRAWING NO.	NAME	DN	PN	MATERIAL	QTY.	WT.	WORDS ON NAME PLATE	REMARKS	Rev:/Date
编号	标准号或图号	名称	通径 mm	压力 MPa	材料	数量	重量 kg	铭牌刻字内容	备注	版本/日期
TS.020	C40 CB/T3778-1999	SOUNDING HEAD 测深头	40		STEEL 钢	1	0.9	SW. BALLAST TK. 1S(SOUNDING)		
TS.021	C40 CB/T3778-1999	SOUNDING HEAD 测深头	40		STEEL 钢	1	0.9	VOID 1S(SOUNDING)		
TS.022	A40 CB/T3778-1999	SOUNDING HEAD 测深头	40		STEEL 钢	1	0.96	VOID 4 S(SOUNDING)		
TS.023	A40 CB/T3778-1999	SOUNDING HEAD 测深头	40		STEEL 钢	1	0.9	SW. BALLAST TK. 3P(SOUNDING)		
TS.024	50 CB/T3778-1999	SOUND. SELF-CLOSING V. 测深自闭阀	50		BRONZE 青铜	1	6.85	DIRTY OIL TK. (SOUNDING)		
TS.025	40 CB/T3778-1999	SOUND. SELF-CLOSING V. 测深自闭阀	40		BRONZE 青铜	1	6.38	BILGE WATER TK. (SOUNDING)		
TS.026	A40 CB/T3778-1999	SOUNDING HEAD 测深头	40		STEEL 钢	1	0.96	BUFFER TK (SOUNDING)		
TS.027	C40 CB/T3778-1999	SOUNDING HEAD 测深头	40		STEEL 钢	1	0.9	BRINE TANK P(SOUNDING)		
TS.028	C40 CB/T3778-1999	SOUNDING HEAD 测深头	40		STEEL 钢	1	0.9	BRINE TANK S(SOUNDING)		
TS.029	C40 CB/T3778-1999	SOUNDING HEAD 测深头	40		STEEL 钢	1	0.9	VOID 2S(SOUNDING)		
TS.030	A40 CB/T3778-1999	SOUNDING HEAD 测深头	40		STEEL 钢	1	0.9	SW. BALLAST TK. 3S(SOUNDING)		

AREA:0.0625m^2

JH316G-S21-01

REV 版本号	DATE 日期	DESCRIPTION 描述	DESIGNED 设绘	CHECKED 校对	VERIFIED 审核	APPROVED 审定
Z	2018.04.27	AS BUILT DRAWING	ZQQ	CK	XF	LB



FIRE	PUMP CAPACITY CALCULATION				
No.	Item	Symbol	Unit	Formula	Result
1	One jet of water capacity	Q_1	m^3/h		25
2	No. of hydrant water need by rules	n			2
3	Required min. capacity of each fire pump	Q_2	m^3/h	$Q_1 * n$	50
4	Minimum quantity of required fire pumps	N			2
5	Minimum pressures at any hydrant	h_1	MPa	by rules	0.35
6	Static pressure at the highest/furthest hydrant	h_2	MPa		0.168
7	Pipe resistance loss at the highest/furthest hydrant	h_3	MPa		0.12
8	Required head of fire pump	h	MPa	$h_1 + h_2 + h_3$	0.638
9	Actual performance data				
9.1	General Service & Fire pump			$100/60 m^3/h$ x 0.4/0.70MPa	2Sets
9.2	Emergency Firefighting pump			$60 m^3/h$ x 0.70MPa	1Set
10	Fire water speed	v	m/s	take	2.4
11	Internal dia. of main fire line	d'	mm	d'=18.8xsqrt(Q/v)	94
12	Internal dia. of main fire line selected	d	mm	114x4.5	105

NOTES 说明

GENERAL NOTES:

1. ANNOTATED SIZE OF PIPE IN THE DRAW. TO BE OUT. DIA.xTHICKNESS (mmxmm).
2. WHERE PIPES PENETRATE THROUGH WATERTIGHT BULKHEADS, DECKS OR TANK TOPS, TO BE FITTED WITH PENETRATION PIECES ACC. TO "JH316-400-04GY PIPING PRACTICE" OR SHIPYARD STANDARD.
3. THE PIPING SYSTEM TO BE SUPPORTED SECURELY IN ORDER TO PREVENT DAMAGES FROM VIBRATIONS AND OTHER CAUSES.
4. THE FITTINGS WITH MARK "*" & " [ ] " IN THE DRAWING ARE SUPPLIED BY MAKER.
5. THE MATERIAL OF GAUGE PIPE TO BE SEAMLESS COPPER.
6. ALL VALVES ARE TO BE LOCATED IN A READILY ACCESSIBLE POSITION.
7. PIPE THAT CAN CAUSE PROGRESSIVE FLOODING OF OTHER INTACT TANKS ARE TO BE LOCATED AT LEAST 1.5M INBOARD OF THE SIDE SHEEL.

SIGN 会签

CORRESPONDING DRAWINGS

Drawing No. 图号	Drawing title 图名
JH316-510-01	DIAGRAM OF BILGE PIPING SYSTEM
JH316-465-01	DIAGRAM OF COMPRESSED AIR PIPING SYSTEM
JH316-526-06	DIAGRAM OF FOAM FIREFIGHTING PIPING SYSTEM FOR HELIDECK

System Code Description

1. Equipment Code:
XX XXX XX
Equipment NO.
System NO.
System code
2. Valves and Accessories Code:
XX XXX
NO.
System code

SYSTEM 系统

PIPING SYSTEM CLASS: 管路系统等级: III
DESIGN WORKING TEMPERATURE: < 60 deg.C 设计工作温度:
JOINTS NDT: 接头无损检测: –
DESIGN PRESSURE: 设计压力: 0.77 MPa
MEDIA FLASHPOINT: 介质闪点: –
PIPING MATERIAL: See piping spec. below 管系材料:
HYDROSTATIC TEST PRESSURE: 试验压力: 1.155 MPa
INSTALLATION ON BOARD NO LEAKAGE UNDER 0.77 MPa 装船后:
Remarks: 备注:

EQUIPMENT 设备

CODE	QTY.	DESCRIPTION	CHARACTERISTICS	REMARK
WF.521.11	1	EMERGENCY FIRE FIGHTING PUMP	~60m3/h x 0.70 MPa	CENTRIFUGER PUMP

PIPING SPECIFICATION 管系规格

DN 通径	Piping 管系			Connections 连接件	
	Pipe Type 管子类型	Standard 标准	Material 材料	Type 类型	Standard 标准
ALL SIZE	SEAMLESS STEEL PIPES	GB/T 8163-2008	20#	Flanged/Sleeve	GB 2506-1989

Remarks:
(1) Hot dip galv. after prefabrication.

GB/T 8163-2008

DN 通径	DN6	DN8	DN10	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100	DN125	DN150
Outer diameter	10	14	17	22	27	34	42	48	60	76	89	114	140	168
Wall thickness,general	1.5	2.0	2.5	3.0	3.0	3.5	3.5	4.0	4.0	4.5	4.5	5.0	5.0	
Extra heavy pipes thickness	2.0	2.5	3.0	4.0	4.0	5.0	5.0	5.0	5.5	6.0	7.0	8.0	9.5	9.5
Wall thickness, overboard pipes							7.0	7.0	7.0	7.0	8.0	9.0	10.0	11.0

Remarks:
(1) The size of pipe Standard accord to GB/T 8163-2008.

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
	FIRE HYDRANT (WATER)		STOP VALVE		PRESS. GAUGE & VALVE	LT	LEVEL TRANSMITTER
	INTERNATIONAL SHORE CONN.		STOP CHECK VALVE		PR. VACUUM GAUGE & V.	LS	LEVEL SWITCH
	GATE VALVE		CHECK VALVE		SIMPLEX STRAINER	LAL	LOW LEVEL ALARM
	REDUCER		BELL MOUTH	LAH	HIGH LEVEL ALARM	LI	LEVEL INDICATOR
	FLEXIBLE HOSE		QUICK CONNECT		NOZZLE		BALL VALVE

OWNER 船东	QMS BANI YAS INC.	HULL NO. 工程号	HXLB3007
BUILDER 船厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD 青岛海西重机有限责任公司	CLASS 船级社	ABS
TITLE 船名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图名	DIAGRAM OF FIRE MAIN PIPING SYSTEM 主消防系统管系原理图	DWG. NO. 图号	JH316G-521-01
		SCALE 比例	1:1
		WEIGHT 重量	-
		PAGE 页数	1/4
		DATE 日期	

BESTWAY 上海佳豪船海工程研究设计有限公司
SHANGHAI BESTWAY MARINE ENGINEERING DESIGN CO.,LTD
No.10 Building, No.518 Xinzhuan Road Shanghai, CHINA P.C : 201612 Web : www.bestwaysh.com
Tel : 86-21-6085 9800 Fax : 86-21-6085 9842

AREA:0.50m²

DIAGRAM OF FIRE MAIN PIPING SYSTEM								JH316G-521-01		PAGE
主消防系统管系原理图								RevZ		2 / 4
ITEM NO.	STANDARD NO. OR DRAWING NO.	NAME	DN	PN	MATERIAL	QTY.	WT.	WORDS ON NAME PLATE	REMARKS	Rev:/Date
编号	标准号或图号	名称	通径 mm	压力 MPa	材料	数量	重量 kg	铭牌刻字内容	备注	版本/日期
WF.001	AS16100 GB/T585-1999	STOP CHECK VALVE 截止止回阀	100	1.6	CAST STEEL 铸钢	1	34.2	FROM 1#GENERAL SERVICE & FIRE PUMP		
WF.002	AS16100 GB/T585-1999	STOP CHECK VALVE 截止止回阀	100	1.6	CAST STEEL 铸钢	1	34.2	FROM 2#GENERAL SERVICE & FIRE PUMP		
WF.003	AS25050 GB/T584-1999	STOP VALVE 截止阀	50	2.5	CAST STEEL 铸钢	1	14.5	TO ENGEINE ROOM FIRE HYDRANT		
WF.004	AS16100 GB/T584-1999	STOP VALVE 截止阀	100	1.6	CAST STEEL 铸钢	1	35.4	FROM GENERAL SERVICE & FIRE PUMPS		
WF.005	AS16100 GB/T584-1999	STOP VALVE 截止阀	100	1.6	CAST STEEL 铸钢	1	35.4	FROM EMERGENCY FIRE FIGHTING PUMP		
WF.006	AS16100 GB/T584-1999	STOP VALVE 截止阀	100	1.6	CAST STEEL 铸钢	1	35.4	TO TWEEN DECK FIRE HYDRANT		
WF.007	AS16100 GB/T585-1999	STOP CHECK VALVE 截止止回阀	100	1.6	CAST STEEL 铸钢	1	34.2	EMERGENCY FIRE FIGHTING PUMP OUT		
WF.008	CS10100 GB/T3036-1994	BUTTERFLY V. 蝶阀	100	1.0	NODULAR CAST IRON 球墨铸铁	1	12.0	FROM EMERGENCY SEA CHEST& BUFFER TANK		
WF.009	AS16100 GB/T584-1999	STOP VALVE 截止阀	100	1.6	CAST STEEL 铸钢	1	35.4	TO LIVE QUARTER P		
WF.010	AS16100 GB/T584-1999	STOP VALVE 截止阀	100	1.6	CAST STEEL 铸钢	1	35.4	ISOLATE VALVE		
WF.011	AS25040 GB/T584-1999	STOP VALVE 截止阀	40	2.5	CAST STEEL 铸钢	1	11.2	TO PAINT ROOM		
WF.012	D16050 GB/T2031-94	INTERNATIONAL SHORE CONN 国际通岸接头	50	1.6	BRONZE 铜	1	1.8	INTERNATIONAL SHORE CONN P		
WF.013	BS10050 GB/T2032-93	FIRE HYDRANT 消火栓	50	1.0	BRONZE 铜	1	8.3			
WF.014	D16050 GB/T2031-94	INTERNATIONAL SHORE CONN 国际通岸接头	50	1.6	BRONZE 铜	1	1.8	INTERNATIONAL SHORE CONN S		
WF.015	BS10050 GB/T2032-93	FIRE HYDRANT 消火栓	50	1.0	BRONZE 铜	1	8.3			

AREA:0.0625m^2

DIAGRAM OF FIRE MAIN PIPING SYSTEM								JH316G-521-01		PAGE
主消防系统管系原理图								RevZ		3 / 4
ITEM NO.	STANDARD NO. OR DRAWING NO.	NAME	DN	PN	MATERIAL	QTY.	WT.	WORDS ON NAME PLATE	REMARKS	Rev:/Date
编号	标准号或图号	名称	通径 mm	压力 MPa	材料	数量	重量 kg	铭牌刻字内容	备注	版本/日期
WF.016	BS10050 GB/T2032-93	FIRE HYDRANT 消火栓	50	1.0	BRONZE 铜	1	8.3			
WF.017	BS10050 GB/T2032-93	FIRE HYDRANT 消火栓	50	1.0	BRONZE 铜	1	8.3			
WF.018	BS10050 GB/T2032-93	FIRE HYDRANT 消火栓	50	1.0	BRONZE 铜	1	8.3			
WF.019	BS10050 GB/T2032-93	FIRE HYDRANT 消火栓	50	1.0	BRONZE 铜	1	8.3			
WF.020	BS10050 GB/T2032-93	FIRE HYDRANT 消火栓	50	1.0	BRONZE 铜	1	8.3			
WF.021	BS10050 GB/T2032-93	FIRE HYDRANT 消火栓	50	1.0	BRONZE 铜	1	8.3			
WF.022	BS10050 GB/T2032-93	FIRE HYDRANT 消火栓	50	1.0	BRONZE 铜	1	8.3			
WF.023	BS10050 GB/T2032-93	FIRE HYDRANT 消火栓	50	1.0	BRONZE 铜	1	8.3			
WF.024	BS10050 GB/T2032-93	FIRE HYDRANT 消火栓	50	1.0	BRONZE 铜	1	8.3			
WF.025	BS10050 GB/T2032-93	FIRE HYDRANT 消火栓	50	1.0	BRONZE 铜	1	8.3			
WF.026	BS10050 GB/T2032-93	FIRE HYDRANT 消火栓	50	1.0	BRONZE 铜	1	8.3			
WF.027	BS10050 GB/T2032-93	FIRE HYDRANT 消火栓	50	1.0	BRONZE 铜	1	8.3			
WF.028	BS10050 GB/T2032-93	FIRE HYDRANT 消火栓	50	1.0	BRONZE 铜	1	8.3			
WF.029	BS10050 GB/T2032-93	FIRE HYDRANT 消火栓	50	1.0	BRONZE 铜	1	8.3			
WF.030	BS10050 GB/T2032-93	FIRE HYDRANT 消火栓	50	1.0	BRONZE 铜	1	8.3			

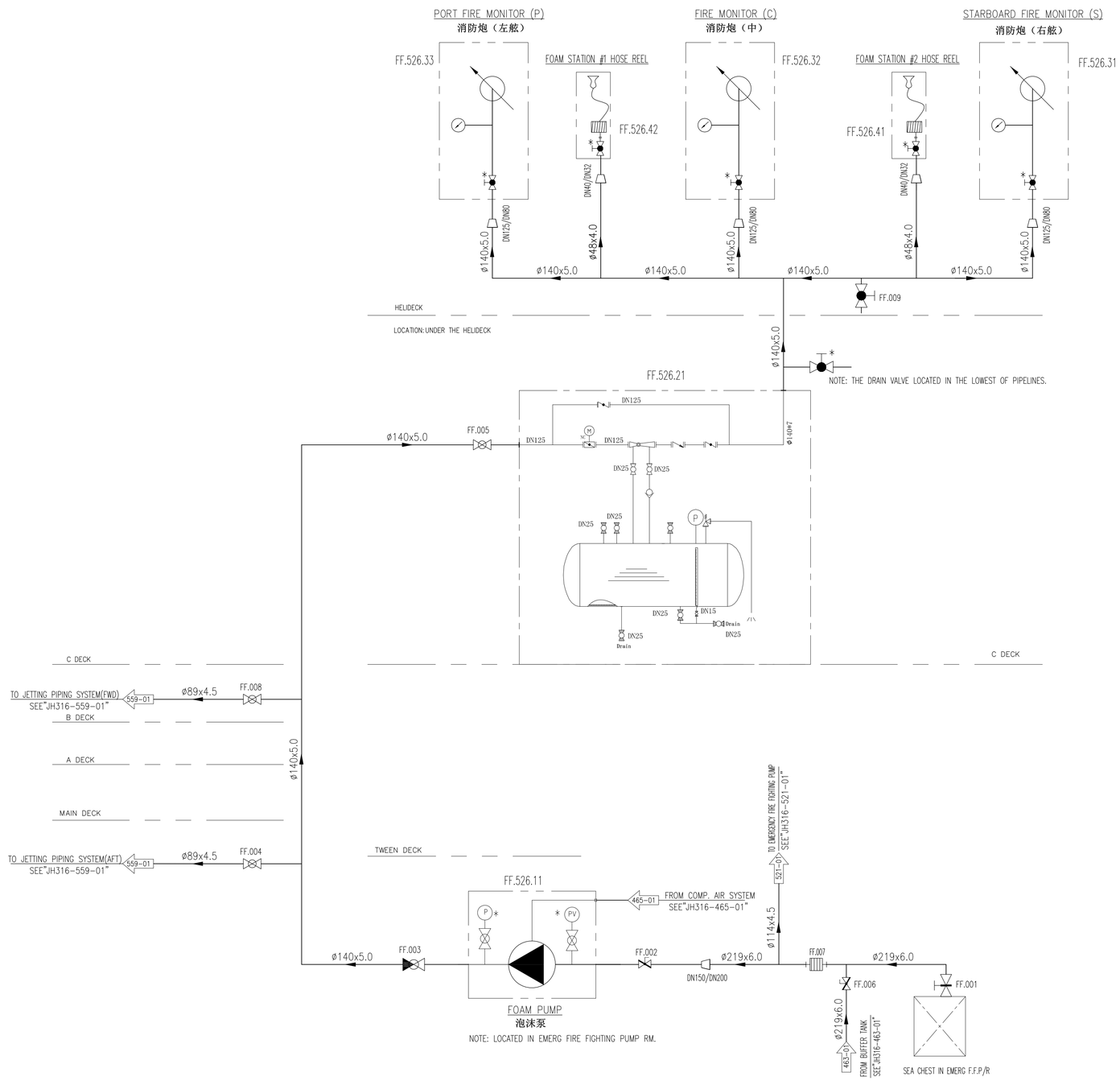
AREA:0.0625m^2

DIAGRAM OF FIRE MAIN PIPING SYSTEM								JH316G-521-01		PAGE
主消防系统管系原理图								RevZ		4 / 4
ITEM NO.	STANDARD NO. OR DRAWING NO.	NAME	DN	PN	MATERIAL	QTY.	WT.	WORDS ON NAME PLATE	REMARKS	Rev:/Date
编号	标准号或图号	名称	通径 mm	压力 MPa	材料	数量	重量 kg	铭牌刻字内容	备注	版本/日期
WF.031	BS10050 GB/T2032-93	FIRE HYDRANT 消火栓	50	1.0	BRONZE 铜	1	8.3			
WF.032	BS10050 GB/T2032-93	FIRE HYDRANT 消火栓	50	1.0	BRONZE 铜	1	8.3			
WF.033	BS10050 GB/T2032-93	FIRE HYDRANT 消火栓	50	1.0	BRONZE 铜	1	8.3			
WF.034	BS10050 GB/T2032-93	FIRE HYDRANT 消火栓	50	1.0	BRONZE 铜	1	8.3			
WF.035	BS10050 GB/T2032-93	FIRE HYDRANT 消火栓	50	1.0	BRONZE 铜	1	8.3			
WF.036	BS10050 GB/T2032-93	FIRE HYDRANT 消火栓	50	1.0	BRONZE 铜	1	8.3			
WF.037	ZSTWC-22/120	NOZZLE 喷头			ASSEMBLY 组合件	1			MAKER'S STANDARD	
WF.038	ZSTWC-22/120	NOZZLE 喷头			ASSEMBLY 组合件	1			MAKER'S STANDARD	
WF.039		BALL VALVE 螺纹球阀	15	1.6	STAINLESS TEEL 不锈钢	1		DRAIN 1		
WF.040		BALL VALVE 螺纹球阀	15	1.6	STAINLESS TEEL 不锈钢	1		DRAIN 2		
WF.041	AS16100 GB/T584-1999	STOP VALVE 截止阀	100	1.6	CAST STEEL 铸钢	1	35.4	ISOLATE VALVE		
WF.042		BALL VALVE 螺纹球阀	15	1.6	STAINLESS TEEL 不锈钢	1		DRAIN 3		
WF.043		BALL VALVE 螺纹球阀	15	1.6	STAINLESS TEEL 不锈钢	1		DRAIN 4		

AREA:0.0625m^2

JH316G-526-06

REV 版本号	DATE 日期	DESCRIPTION 描述	DESIGNED 设绘	CHECKED 校对	VERIFIED 审核	APPROVED 审定
Z	2018.04.27	AS BUILT DRAWING	ZQQ	CK	XF	LB



SIGN 会签

NOTES 说明

GENERAL NOTES:

1. ANNOTATED SIZE OF PIPE IN THE DRAW. TO BE OUT. DIA.xTHICKNESS (mmxmm).
2. WHERE PIPES PENETRATE THROUGH WATERTIGHT BULKHEADS, DECKS OR TANK TOPS, TO BE FITTED WITH PENETRATION PIECES ACC. TO "JH316-400-04GY PIPING PRACTICE" OR SHIPYARD STANDARD.
3. THE PIPING SYSTEM TO BE SUPPORTED SECURELY IN ORDER TO PREVENT DAMAGES FROM VIBRATIONS AND OTHER CAUSES.
4. THE FITTINGS WITH MARK "*" & " [ ] " IN THE DRAWING ARE SUPPLIED BY MAKER.
5. THE MATERIAL OF GAUGE PIPE TO BE SEAMLESS COPPER.
6. ALL VALVES ARE TO BE LOCATED IN A READILY ACCESSIBLE POSITION.
7. PIPE THAT CAN CAUSE PROGRESSIVE FLOODING OF OTHER INTACT TANKS ARE TO BE LOCATED AT LEAST 1.5M INBOARD OF THE SIDE SHEEL.

CORRESPONDING DRAWINGS

Drawing No. 图号	Drawing title 图名
JH316-559-01	DIAGRAM OF JETTING PIPING SYSTEM
JH316-465-01	DIAGRAM OF COMPRESSED AIR PIPING SYSTEM
JH316-521-01	DIAGRAM OF FIRE MAIN PIPING SYSTEM
JH316-463-01	DIAGRAM OF WATER COOLING PIPING SYSTEM

System Code Description

1. Equipment Code:
   XX XXX XX
   - Equipment NO.
   - System NO.
   - System code
2. Valves and Accessories Code:
   XX XXX
   - NO.
   - System code

SYSTEM 系统

PIPING SYSTEM CLASS: 管路系统等级:	III	DESIGN WORKING TEMPERATURE: 设计工作温度:	< 60 deg.C
DESIGN PRESSURE: 设计工作压力:	1.21MPa	JOINTS NDT: 接头无损检测:	–
HYDROSTATIC TEST PRESSURE: 试验压力:	1.82 MPa	MEDIA FLASHPOINT: 介质闪点:	–
INSTALLATION ON BOARD: 安装点:	NO LEAKAGE UNDER WORKING CONDITION	PIPING MATERIAL: 管系材料:	See piping spec. below
Remarks: 备注:			

EQUIPMENT 设备

CODE	QTY.	DESCRIPTION	CHARACTERISTICS	REMARK
FF.526.11	1	FOAM PUMP	220m3/h x1.1 MPa	CENTRIFUGER PUMP
FF.526.21	1	FOAM TANK SKID WITH PROPORTIONER	800L	
FF.526.3*	3	FOAM MONITOR	2400L/min	
FF.526.4*	2	FOAM STATION HOSE REEL	480L/min	

PIPING SPECIFICATION 管系规格

DN 通径	Piping 管系			Connections 连接件	
	Pipe Type 管子类型	Standard 标准	Material 材料	Type 类型	Standard 标准
ALL SIZE	SEAMLESS STEEL PIPES	GB/T 8163-2008	20#	Flanged/Sleeve	GB 2506-1989

Remarks: (1) Hot dip galv. after prefabrication.

GB/T 8163-2008

DN 通径	DN6	DN8	DN10	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100	DN125	DN150
Outer diameter	10	14	17	22	27	34	42	48	60	76	89	114	140	168
Wall thickness,general	1.5	2.0	2.5	3.0	3.0	3.5	3.5	4.0	4.0	4.5	4.5	4.5	5.0	5.0
Extra heavy pipes thickness	2.0	2.5	3.0	4.0	4.0	5.0	5.0	5.0	5.5	6.0	7.0	8.0	9.5	9.5
Wall thickness, overboard pipes							7.0	7.0	7.0	7.0	8.0	9.0	10.0	11.0

Remarks: 备注: (1) The size of pipe Standard accord to GB/T 8163-2008.

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
	BALL VALVE		CENTRIFUGER PUMP	P	PRESS. GAUGE & VALVE	LT	LEVEL TRANSMITTER
	GATE VALVE		STOP VALVE	P	PRE. VACUUM GAUGE & V.	LS	LEVEL SWITCH
	REDUCER		STOP CHECK VALVE		SIMPLEX STRAINER	LAH	LOW LEVEL ALARM
	FLEXIBLE HOSE		CHECK VALVE	LAH	HIGH LEVEL ALARM	LI	LEVEL INDICATOR
	BUTTERFLY VALVE						

OWNER 船东	QMS BANI YAS INC.	HULL NO. 工程号	HXLB3007
BUILDER 船厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD 青岛海西重机有限责任公司	CLASS 船级社	ABS
TITLE 船名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图名	DIAGRAM OF FOAM FIREFIGHTING PIPING SYSTEM FOR HELIDECK 直升机平台泡沫灭火系统原理图	DWG. NO. 图号	JH316G-526-06
		SCALE 比例	1:1
		WEIGHT 重量	-
		PAGE 页数	1/2
		DATE 日期	

BESTWAY 威时海
上海佳豪船海工程研究设计有限公司
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No.10 Building, No.518 Xinzhuan Road Shanghai, CHINA P.C : 201612 Web : www.bestwaysh.com
Tel : 86-21-6085 9800 Fax : 86-21-6085 9842

AREA:0.50m²

DIAGRAM OF FOAM FIREFIGHTING PIPING SYSTEM FOR HELIDECK 直升机平台泡沫灭火系统原理图								JH316G-526-06 RevZ		PAGE 2 / 2
ITEM NO. 编号	STANDARD NO. OR DRAWING NO. 标准号或图号	NAME 名称	DN 通径 mm	PN 压力 MPa	MATERIAL 材料	QTY. 数量	WT. 重量 kg	WORDS ON NAME PLATE 铭牌刻字内容	REMARKS 备注	Rev:/Date 版本/日期
FF.001	AS4200 CB/T466-95	GATE VALVE 闸阀	200	0.4	CAST STEEL 铸钢	1	80.0	FROM EMERGENCY SEA CHEST	ABS CERTIFICATE	
FF.002	CS10150 GB/T3036-1994	BUTTERFLY V. 蝶阀	150	1.0	NODULAR CAST IRON 球墨铸铁	1	16.6	FOAM PUMP INLET		
FF.003	AS16125 CB/T3197-1995	STOP CHECK VALVE 截止止回阀	125	1.6	CAST STEEL 铸钢	1	62.0	FOAM PUMP OUTLET		
FF.004	AS16080 CB/T3196-1995	STOP VALVE 截止阀	80	1.6	CAST STEEL 铸钢	1	26.0	TO JETTING PIPING SYSTEM（AFT）		
FF.005	AS16125 CB/T3196-1995	STOP VALVE 截止阀	125	1.6	CAST STEEL 铸钢	1	62.0	FOAM TANK SKID INLET		
FF.006	CS10200 GB/T3036-1994	BUTTERFLY V. 蝶阀	200	1.0	NODULAR CAST IRON 球墨铸铁	1	23.5	BEFORE BUFFER TANK		
FF.007	AS200 CB/T497-94	STRAINER 滤器	200	0.1	STEEL 钢	1	92.7			
FF.008	AS16080 CB/T3196-1995	STOP VALVE 截止阀	80	1.6	CAST STEEL 铸钢	1	26.0	TO JETTING PIPING SYSTEM（FWD）		
FF.009	MAKER STANDARD	BALL VALVE 内螺纹球阀	15	1.6	STAINLESS STEEL 不锈钢	1		FOAM SYS. DRAIN （N.C)		

AREA:0.0625m^2

7.6.11 Electrical one line diagrams of main power and emergency power systems

Please refer to the attached files.

REV 版本号	DATE 日 期	DESCRIPTION 描 述	DESIGNED 设 绘	CHECKED 校 对	VERIFIED 审 核	APPROVED 审 定
Z	2018.04.27	AS BUILT DRAWING	SGH	WY	ZN	

SIGN
会 签

OWNER 船 东	QMS BANI YAS INC.	HULL NO. 工程号	HXLB3007
BUILDER 船 厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD. 青岛海西重机有限责任公司	CLASS 船级社	ABS
TITLE 船 名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图 名	ELECTRIC LOAD BALANCE CALCULATION 电力负荷计算书	DWG. NO. 图 号	JH316G-601-01JS

SCALE 比 例	WEIGHT 重 量	PAGE 页 码	DATE 日 期
		1/13	

BESTWAY WMMP
上 海 佳 豪 船 海 工 程 研 究 设 计 有 限 公 司
SHANGHAI BESTWAY MARINE ENGINEERING DESIGN CO., LTD
No.10 Building, No.518 Xinzhuan Road Shanghai, CHINA P.C : 201612 Web : www.bestwaysh.com
Tel : 86-21-6085 9800 Fax : 86-21-6085 9842

JH316G-601-01JS	电力负荷计算（夏季）ELECTRICAL LOAD BALANCE CALCULATION(SUMMER)																																			
No.	CONSUMERS	PARAMETER				FIELD TRANSIT				ELEVATING (WATER FREE)				LOWERING				DP				IN/OUT PORT				OPERATION/HARBOUR				BLACKOUT RECOVERY				FIRE			
		Installed unit	Rated power (kW)	Efficiency (%)	Need power (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)
	380V POWER SYSTEM																																			
A	PROPULSION																																			
	艏侧推主电机Bow Thruster Main Motor	2	600	0.96	625.0													2	100	1250.0		2	50		625											
	艏侧推回转伺服泵站Bow Thruster turning Servo Pump	2	5.5	0.87	6.3													2	90	11.4		2	70	8.9											
	舵桨回转冷却泵Ruder propeller steering&cooling pump	2	45	0.92	48.9	2	70	68.5										2	85	83.2		2	70	68.5											
	主机滑油预供泵 M/E Pre-lub pump	2	4	0.87	4.6																					2	80	7.4								
B	JACK-UP SYSTEM																																			
	升降装置主电源Jacking System Main Power(electric motor driven)	4	259	0.9	288					4	70	805.8		4	30	345		4	33	379.9																
	升降装置制动泵Jacking System Brake pump	4	5.5	0.88	6.3					4	80		20.0	4	60		15.0	4	80		20.0														
	升降装置润滑泵Jacking System Lub. Pump	4	5.5	0.87	6.3					4	60		15.2	4	60		15.2	4	60		15.2														
	升降装置制动电阻风机Jacking System Brake Resistance Fan	2	7.5	0.89	8.4									2	80	13.5																			
C	ENGINE ROOM MECHINE																																			
	燃油输送泵Fuel Oil Transfer Pump	2	2.2	0.85	2.6	1	50		1.3	1	50		1.3	1	50		1.3	1	50		1.3	1	50		1.3	1	50		1.3							
	滑油输送泵Lub Oil Transfer Pump	1	1.5	0.8	1.9																															
	发电机海水冷却泵D/G S.W.Cooling Pump	2	15	0.9	16.7	1	60	10.0		1	80	13.3		1	80	13.3		2	80	26.7		1	80	13.3		1	80	13.3								
	主推进海水冷却泵Main propulsion S.W. cooling pump	2	7.5	0.9	8.3	1	80	6.7										1	80	6.7		1	80	6.7												
	1#潜水泵No.1 Submerged Pump (MSB)	1	75	0.94	80					1	80	63.8		1	80	63.8										1	80	63.8								
	1#潜水泵绞车No.1 Submerged Pump Winch (MSB)	1	9.2	0.86	11																															
	2#潜水泵No.2 Submerged Pump (ESB)	1	75	0.94	80																									1	80	63.8		1	100	79.8	
	2#潜水泵绞车No.2 Submerged Pump Winch (ESB)	1	9.2	0.86	11																															
	1#机舱送风机No.1 E/R Supply fan	1	18.5	0.92	20	1	80	16.1		1	80	16.1		1	80	16.1		1	80	16.1		1	80	16.1		1	80	16.1								
	2#机舱送风机No.2 E/R Supply fan(ESB)(Reversible)	1	18.5	0.92	20	1	80	16.1		1	80	16.1		1	80	16.1		1	80	16.1		1	80	16.1						1	80	16.1				
	1#机舱抽风机No.1 E/R Exhaust fan	1	15	0.91	16	1	80	13.2		1	80	13.2		1	80	13.2		1	80	13.2		1	80	13.2		1	80	13.2								
	2#机舱抽风机No.2 E/R Exhaust fan	1	15	0.91	16	1	80	13.2		1	80	13.2		1	80	13.2		1	80	13.2		1	80	13.2												
	配电间送风机 Switchboard room supply fan	1	1.1	0.85	1	1	80	1.0		1	80	1.0		1	80	1.0		1	80	1.0		1	80	1.0		1	80	1.0								
	污油泵Dirty Oil Pump	1	1.5	0.85	1.76																															
	压载总用泵Ballast G.S.pump	1	37	0.93	39.78	1	20	8.0		1	20	8.0		1	20	8.0		1	20	8.0		1	50	19.9		1	20	8.0								
	消防总用泵Frie G.S. Pump	2	45	0.93	48.39	1	20	9.7		1	20	9.7		1	20	9.7		1	20	9.7		1	50	24.2		1	20	9.7								
	日用舱底泵Daily Bilge Pump	1	2.2	0.85	2.59	1	80		2.1	1	80		2.1	1	80		2.1	1	80		2.1	1	80		2.1	1	30		0.8						
	应急消防泵Emergency Fire Fighting Pump(ESB)	1	30	0.93	32.26																												1	100	32.3	
	盐水输送泵Brine Transfer Pump	1	30	0.92	32.61																					1	80	26.1								
	盐水循环泵Brine Circulation Pump	2	3	0.85	3.53	1	80	2.8		1	80	2.8						1	80	2.8		1	80	2.8		1	80	2.8								
	冲桩泵Jetting Pump	1	132	0.95	138.9									1	95	132.0																				

JH316G-601-01JS	电力负荷计算（夏季）ELECTRICAL LOAD BALANCE CALCULATION(SUMMER)																																			
No.	CONSUMERS	PARAMETER				FIELD TRANSIT				ELEVATING (WATER FREE)				LOWERING				DP				IN/OUT PORT				OPERATION/HARBOUR				BLACKOUT RECOVERY				FIRE			
		Installed unit	Rated power (kW)	Efficiency (%)	Need power (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)
	淡水输送泵F.S. Transfer Pump	1	4	0.86	4.7																															
	泡沫消防泵Helideck Foam Fire Pump	1	132	0.95	138.9																															
	水幕泵Water curtain pump	1	37	0.93	39.8																															
	水喷淋水泵Water Sprinkler Water Pump(ESB)	1	37	0.93	39.8																											1	100	39.8	
	水喷淋保压泵Water Sprinkler System Jockey Pump(ESB)	1	5.5	0.89	6.2																											1	100	6.2	
	电热水柜 Electric Hot Water Hydrophore	1	60	1	60.0	1	60	36.0		1	60	36.0		1	60	36.0		1	60	36.0		1	60	36.0		1	60	36.0								
	热水循环泵 Hot Water Circulating Pump	2	1.5	0.86	1.7	1	80	1.4		1	80	1.4		1	80	1.4		1	80	1.4		1	80	1.4		1	80	1.4								
	燃油分油机FO Purifier	1	6	0.9	6.7	1	60			1	60		4.0	1	60		4.0	1	60		4.0	1	60		4.0	1	60		4.0								
	1#主空压机No.1 Main Air Compressor	1	6.8	0.88	7.7	1	80		6.2	1	80		6.2	1	80		6.2	1	80		6.2	1	80		6.2	1	80		6.2								
	2#主空压机No.2 Main Air Compressor (ESB)	1	6.8	0.88	7.7																									1	80		6.2				
	服务空压机Air Compressor for Client	1	45	0.92	48.9	1	30		14.7	1	30		14.7	1	30		14.7	1	30		14.7	1	30		14.7	1	80		39.1								
	制淡装置带增压泵F.W. maker with booster pump	2	25	0.9	27.8																	1	80		22.2	2	80		44.4								
	生活污水处理装置Sewage Treatment Plant	2	6.3	0.88	7.2	2	70	10.0		2	70	10.0		2	70	10.0		2	70	10.0		2	70	10.0		2	70	10.0								
	油水分离器Oily Water Separator	1	0.25	0.75	0.3	1	80		0.3	1	80		0.3	1	80		0.3	1	80		0.3	1	80		0.3	1	80		0.3								
	淡水日用循环泵Fresh Water daily circulation pump	4	5	0.86	5.8	2	70	8.1		2	70	8.1		2	70	8.1		2	70	8.1		2	70	8.1		2	70	8.1								
	海水日用循环泵S.W. daily circulation pump	4	5.5	0.86	6.4	2	70	9.0		2	70	9.0		2	70	9.0		2	70	9.0		2	70	9.0		2	70	9.0								
D	HVAC																																			
	中央空调压缩机Central Air Condition Compressor	3	150	0.92	163.0	2	65	212.0		2	65	212.0		2	65	212.0		2	65	212.0		2	65	212.0		2	65	212.0								
	空调冷媒水泵Chiller Water Cir. Pump	3	18.5	0.91	20.3	2	80	32.5		2	80	32.5		2	80	32.5		2	80	32.5		2	80	32.5		2	80	32.5								
	空调海水泵A/C S.W. Cooling Pump	2	37	0.93	39.8	2	80	63.7		2	80	63.7		2	80	63.7		2	80	63.7		2	80	63.7		2	80	63.7								
	二甲板空调器风机Tween Deck Central Air Condition AHU Fan	1	5.5	0.89	6.2	1	80	4.9		1	80	4.9		1	80	4.9		1	80	4.9		1	80	4.9		1	80	4.9								
	主甲板空调器风机Main Deck Central Air Condition AHU Fan	1	7.5	0.89	8.4	1	80	6.7		1	80	6.7		1	80	6.7		1	80	6.7		1	80	6.7		1	80	6.7								
	A甲板空调器风机A Deck Central Air Condition AHU Fan	1	7.5	0.89	8.4	1	80	6.7		1	80	6.7		1	80	6.7		1	80	6.7		1	80	6.7		1	80	6.7								
	B甲板空调器风机B Deck Central Air Condition AHU Fan	1	15	0.89	16.9	1	80	13.5		1	80	13.5		1	80	13.5		1	80	13.5		1	80	13.5		1	80	13.5								
	二甲板空调器加热器Tween Deck Central Air Condition AHU Heater	1	58	1	58.0																															
	主甲板空调器加热器Main Deck Central Air Condition AHU Heater	1	72	1	72.0																															
	A甲板空调器加热器A Deck Central Air Condition AHU Heater	1	57	1	57.0																															
	B甲板空调器加热器B Deck Central Air Condition AHU Heater	1	75	1	75.0																															
	驾驶室风机盘管Bridge FCU	2	0.5	0.85	0.6	2	80	0.9		2	80	0.9		2	80	0.9		2	80	0.9		2	80	0.9		2	80	0.9								
	艏部MCC室风机盘管 FWD MCC room FCU	1	0.5	0.85	0.6	1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5								
	艏侧推室风机盘管 Bow thtuster room FCU	1	0.1	0.85	0.1	1	80	0.1		1	80	0.1		1	80	0.1		1	80	0.1		1	80	0.1		1	80	0.1								
	配电板间柜机 Swithboard room package AC	2	9	0.85	10.6	1	80	8.5		1	80	8.5		1	80	8.5		1	80	8.5		1	80	8.5		1	80	8.5								
	厨房柜机 Galley package AC	2	23.2	0.85	27.3	1	80	21.8		1	80	21.8		1	80	21.8		1	80	21.8		1	80	21.8		1	80	21.8								
	机修间风机盘管 Workshop FCU	1	0.1	0.85	0.1	1	80	0.1		1	80	0.1		1	80	0.1		1	80	0.1		1	80	0.1		1	80	0.1								

JH316G-601-01JS	电力负荷计算（夏季）ELECTRICAL LOAD BALANCE CALCULATION(SUMMER)																																					
No.	CONSUMERS	PARAMETER				FIELD TRANSIT				ELEVATING (WATER FREE)				LOWERING				DP				IN/OUT PORT				OPERATION/HARBOUR				BLACKOUT RECOVERY				FIRE			
		Installed unit	Rated power (kW)	Efficiency (%)	Need power (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)
	驾驶室风机盘管电加热器Bridge FCU ele. Heater	2	10	1	10.0																																
	艏部MCC室风机盘管电加热器 FWD MCC room FCU ele. Heater	1	10	1	10.0																																
	艏侧推室风机盘管电加热器 Bow thtuster room FCU ele. Heater	1	7.5	1	7.5																																
	配电板间柜机加热器 Swithboard room package AC ele. Heater	2	11.5	1	11.5																																
	厨房柜机 Galley package AC ele. Heater	2	20.2	1	20.2																																
	1#舵桨舱送风机Supply Fan for Rudder Propeller Room(P)	1	1.1	0.82	1.3	1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1									
	2#舵桨舱送风机Supply Fan for Rudder Propeller Room(S)	1	1.1	0.82	1.3	1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1									
	油漆间抽风机 Exhaust fan for paint room	1	0.75	0.82	0.9	1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7									
	焊接间抽风机 Exhaust fan for Welding room	1	0.12	0.82	0.1	1	80	0.1		1	80	0.1		1	80	0.1		1	80	0.1		1	80	0.1		1	80	0.1									
	1#泵舱抽风机Supply Fan for pump room(P)	1	1.1	0.83	1.3	1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1									
	2#泵舱抽风机Supply Fan for pump room(S)	1	1.1	0.83	1.3	1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1									
	首侧推舱抽风机Exhaust fan for bow thruster room	1	1.1	0.83	1.3	1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1									
	冷水机室送风机Supply Fan for chiller room	1	1.1	0.82	1.3	1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1									
	首部升降控制室送风机Supply Fan for FWD MCC room	1	0.75	0.82	0.9	1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7									
	洗衣房和被褥间抽风机Exhaust fan for laundry and linen store	1	0.75	0.82	0.9	1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7									
	干货库和屠宰间抽风机Exhaust fan for dry store and batchery room	1	0.25	0.8	0.3	1	80	0.3		1	80	0.3		1	80	0.3		1	80	0.3		1	80	0.3		1	80	0.3									
	更衣室抽风机Exhaust fan for change room	1	0.75	0.82	0.9	1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7									
	厨房送风机Supply fan for galley	1	1.1	0.83	1.3	1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1									
	厨房抽风机Exhaust fan for galley	1	3	0.85	3.5	1	80	2.8		1	80	2.8		1	80	2.8		1	80	2.8		1	80	2.8		1	80	2.8									
	1#餐厅抽风机Exhaust fan for No.1 mess room	1	1.1	0.83	1.3	1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1									
	主甲板AHU室抽风机Exhaust fan for main deck AHU room	1	0.75	0.8	0.9	1	80	0.8		1	80	0.8		1	80	0.8		1	80	0.8		1	80	0.8		1	80	0.8									
	A甲板AHU室抽风机Exhaust fan A deck AHU room	1	0.55	0.82	0.7	1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5									
	B甲板AHU室抽风机Exhaust fan B deck AHU room	1	0.55	0.82	0.7	1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5									
	应急消防泵舱抽风机Exhaust fan em'cy fire fighting pump room(ESB)	1	1.1	0.83	1.3	1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1									
	应急发电机室送风机Supply fan for E/G room(ESB)	1	0.25	0.82	0.3	1	80	0.2		1	80	0.2		1	80	0.2		1	80	0.2		1	80	0.2		1	80	0.2		1	80	0.2		1	100	0.3	
	冷藏机组Refrigerating Plant	1	15	0.91	16.5	1	50	8.2		1	50	8.2		1	50	8.2		1	50	8.2		1	50	8.2		1	50	8.2									
	1#冷藏海水冷却泵No.1 refrigerating S.W.pump	2	5.5	0.88	6.3	1	80	5.0		1	80	5.0		1	80	5.0		1	80	5.0		1	80	5.0		1	80	5.0									
	配电板间送风机Supply fan for switchboard room	1	0.75	0.82	0.9	1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7									
E	DECK EQUIPMENT																																				
	救生艇吊Life Boat Davit	2	15	0.9	17																																
	救助艇吊Rescue Vehicle Davit	1	12	0.9	13																																
	救生筏吊Liferaft Winch	2	5.5	0.88	6																																

JH316G-601-01JS	电力负荷计算（夏季）ELECTRICAL LOAD BALANCE CALCULATION(SUMMER)																																			
No.	CONSUMERS	PARAMETER				FIELD TRANSIT				ELEVATING (WATER FREE)				LOWERING				DP				IN/OUT PORT				OPERATION/HARBOUR				BLACKOUT RECOVERY				FIRE			
		Installed unit	Rated power (kW)	Efficiency (%)	Need power (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)
	回收缆绞车Retrieving Winch	1	12.5	0.9	14																															
	定位绞车主电机Position Winch Main Motor	4	45	0.92	48.9																	4	50		97.8											
	定位绞车伺服电机Position Winch Servo Motor	2	5.5	0.92	6.0																	2	80	9.6												
	甲板辅吊Aux. deck crane	1	132	0.92	143.5																					1	50		71.7							
	主甲板对外供电插座Power outlet for maindeck 380V	6	16	0.8	20.0																															
	垃圾打包机 Garbage compactors	2	3	0.85	3.5																															
F	GALLEY AND LAUNDRY EQUIPMENT																																			
	厨房设备电力分电箱Power DB for galley equipment	1	112	1	112.0	1	65	72.8		1	65	72.8		1	65	72.8		1	65	72.8		1	65	72.8		1	65	72.8								
	六头电灶Ele.range with 6 hotplates	1	24	1	24.0																															
	电扒炉 Ele. Grill	1	12	1	12.0																															
	电炸炉 Ele. Deep-fryer	1	7.2	1	7.2																															
	电烤箱 Ele. Baking oven	1	8.1	1	8.1																															
	电饭锅 Ele. Cooker	1	9	1	9.0																															
	沸水器 Ele water boiler	1	3	1	3.0																															
	温水炉 Warm water furnance	1	10	1	10.0																															
	洗碗机Dish wash machine	1	12.75	1	12.8																															
	保温桌Heat preservation table	1	3	1	3.0																															
	污物粉碎机food waste disposer	1	1.5	1	1.5																															
	可倾式汤锅Tilting soup boiler	1	9	1	9.0																															
	和面机 DOUGH MIXER MACHINE	1	2.7	1	2.7																															
	电蒸箱ELE. STEAM COOKER	1	9	1	9.0																															
	1#洗衣间电力分电箱No.1 power DB for laundry	1	78	0.85	91.8	1	60	55.1		1	60	55.1		1	60	55.1		1	60	55.1		1	60	55.1		1	60	55.1								
	工业洗衣机 Industry wash machine	2	24	0.92	26.1																															
	烘干机 Dryer	1	30	1	30.0																															
	2#洗衣间电力分电箱No.2 power DB for laundry	1	78	1	78.0	1	60	46.8		1	60	46.8		1	60	46.8		1	60	46.8		1	60	46.8		1	60	46.8								
	工业洗衣机 Industry wash machine	2	24	0.92	26.1																															
	烘干机 Dryer	1	30	1	30.0																															
	3#洗衣间电力分电箱No.3 power DB for laundry	1	54	0.9	60.0	1	60	36.0		1	60	36.0		1	60	36.0		1	60	36.0		1	60	36.0		1	60	36.0								
	工业洗衣机 Industry wash machine	1	24	0.85	28.2																															
	烘干机 Dryer	1	30	1	30.0																															
G	通用充放电板 General service charging panel(ESB)	1	2.5	1	2.5	1	80		2.0	1	80		2.0	1	80		2.0	1	80		2.0	1	80		2.0	1	80		2.0	1	80	2.0		1	100	2.5	
H	WORKSHOP EQUIPMENT																																			
1	砂轮机Grinder	1	0.48	0.85	0.6																															
2	多功能车床multi lathe	1	0.75	0.85	0.9																															
3	焊机Welding machine	1	5	0.85	5.9																															
4	电工试验板 Ele. Test panel	1	0.1	0.9	0.1																															

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No.	CONSUMERS	PARAMETER				FIELD TRANSIT				ELEVATING (WATER FREE)				LOWERING				DP				IN/OUT PORT				OPERATION/HARBOUR				BLACKOUT RECOVERY				FIRE			
		Installed unit	Rated power (kW)	Efficiency (%)	Need power (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)
	220V POWER SYSTEM																																					
A	主照明变压器供电系统MAIN LIGHTING TRANSFORMER SUPPLY SYSTEM																																					
	1#正常照明分电箱1L No.1 normal lighting DB 1L	1	19	1	19.0	1	80	15.2		1	80	15.2		1	80	15.2		1	80	15.2		1	80	15.2		1	80	15.2									
	2#正常照明分电箱2L No.2 normal lighting DB 2L	1	23	1	23.0	1	80	18.4		1	80	18.4		1	80	18.4		1	80	18.4		1	80	18.4		1	80	18.4									
	3#正常照明分电箱3L No.3 normal lighting DB 3L	1	19.5	1	19.5	1	80	15.6		1	80	15.6		1	80	15.6		1	80	15.6		1	80	15.6		1	80	15.6									
	4#正常照明分电箱4L No.4 normal lighting DB 4L	1	14	1	14.0	1	80	11.2		1	80	11.2		1	80	11.2		1	80	11.2		1	80	11.2		1	80	11.2									
	5#正常照明分电箱5L No.5 normal lighting DB 5L	1	12.3	1	12.3	1	80	9.8		1	80	9.8		1	80	9.8		1	80	9.8		1	80	9.8		1	80	9.8									
	6#正常照明分电箱6L No.6 normal lighting DB 6L	1	13.2	1	13.2	1	80	10.6		1	80	10.6		1	80	10.6		1	80	10.6		1	80	10.6		1	80	10.6									
	住舱风机220V分电箱4FGSB Power DB for Accommodation 220V fans	1	3	0.75	4.0	1	80	3.2		1	80	3.2		1	80	3.2		1	80	3.2		1	80	3.2		1	80	3.2									
	艏部厨房220V电力分电箱1DB/FWD 220V power DB for forward(galley)	1	12	1	12.0	1	80	9.6		1	80	9.6		1	80	9.6		1	80	9.6		1	80	9.6		1	80	9.6									
	220V电力分电箱2DB/FWD 220V power DB for forward	1	6	1	6.0	1	70	4.2		1	50	3.0		1	50	3.0		1	50	3.0		1	70	4.2		1	70	4.2									
	机舱220V电力分电箱ERDB 221V power DB for engine room	1	4	1	4.0	1	80	3.2		1	80	3.2		1	80	3.2		1	80	3.2		1	80	3.2		1	80	3.2									
	发电机缸套水加热装置Jacket water heater of generator	4	3	1	3.0	3	80	7.2		2	80	4.8		2	80	4.8		1	80	2.4		2	80	4.8		1	80	2.4									
	甲板辅吊照明电源Aux. deck crane lighting power	1	12	1	12.0																					1	80	9.6									
	主甲板对外供电插座Power outlet for maindeck 220V	6	3	1	3.0																																
	玻璃加热(冬季) Glass heater(used in winter)	5	2.4	1	2.4																																
B	应急照明变压器供电系统EM'CY LIGHTING TRANSFORMER SUPPLY SYSTEM																																					
	1#应急照明分电箱1EL No.1 normal lighting DB 1EL	1	3.6	1	3.6	1	80	2.9		1	80	2.9		1	80	2.9		1	80	2.9		2	80	5.8		1	80	2.9		1	80	2.9		1	100	3.6	
	2#应急照明分电箱2EL No.2 normal lighting DB 2EL	1	4.7	1	4.7	1	80	3.8		1	80	3.8		1	80	3.8		1	80	3.8		2	80	7.5		1	80	3.8		1	80	3.8		1	100	4.7	
	3#应急照明分电箱3EL No.3 normal lighting DB 3EL	1	6.9	1	6.9	1	80	5.5		1	80	5.5		1	80	5.5		1	80	5.5		2	80	11.0		1	80	5.5		1	80	5.5		1	100	6.9	
	4#应急照明分电箱4EL No.4 normal lighting DB 4EL	1	5	1	5.0	1	80	4.0		1	80	4.0		1	80	4.0		1	80	4.0		2	80	8.0		1	80	4.0		1	80	4.0		1	100	5.0	
	广播及通用报警PA/GA	1	1.6	1	1.6	1	50		0.8	1	50		0.8	1	50		0.8	1	50		0.8	1	50		0.8	1	50		0.8	1	80	1.3		1	100	1.6	
	无线电台Radio console	1	1.5	1	1.5	1	50		0.8	1	50		0.8	1	50		0.8	1	50		0.8	1	50		0.8	1	50		0.8	1	80	1.2		1	100	1.5	
	火警及气体探测报警Fire gas detection and alarm	1	0.5	1	0.5	1	20		0.1	1	20		0.1	1	20		0.1	1	20		0.1	1	20		0.1	1	20		0.1	1	80	0.4		1	100	0.5	
	机舱UPS UPS for E/R	1	1.5	1	1.5	1	60		0.9	1	60		0.9	1	60		0.9	1	60		0.9	1	60		0.9	1	60		0.9	1	80	1.2		1	100	1.5	
	航行信号灯板Navgation and signal light panel	1	0.6	1	0.6	1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5		1	100	0.6	
	直升机助降灯光系统Heideck landing aid lighting system	1	0.8	1	0.8	1	20		0.2	1	20		0.2	1	20		0.2	1	20		0.2	1	20		0.2	1	20		0.2							
	1#助航设备220V分电箱No.1 navgation aid 220V DB	1	3	1	3.0	1	50	1.5		1	50	1.5		1	50	1.5		1	50	1.5		1	50	1.5		1	50	1.5		1	80	2.4		1	100	3.0	
	2#助航设备220V分电箱No.2 navgation aid 220V DB	1	3	1	3.0	1	50	1.5		1	50	1.5		1	50	1.5		1	50	1.5		1	50	1.5		1	50	1.5		1	80	2.4		1	100	3.0	
	集控台220V分电箱 ECC 220V DB	1	1.5	1	1.5	1	50	0.8		1	50	0.8		1	50	0.8		1	50	0.8		1	50	0.8		1	50	0.8		1	80	1.2		1	100	1.5	

JH316G-601-01JS	电力负荷计算（夏季）ELECTRICAL LOAD BALANCE CALCULATION(SUMMER)																															
No.	CONSUMERS	PARAMETER				FIELD TRANSIT				ELEVATING (WATER FREE)				LOWERING				DP				IN/OUT PORT				OPERATION/HARBOUR				BLACKOUT RECOVERY				FIRE			
		Installed unit	Rated power (kW)	Efficiency (%)	Need power (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)
1	连续负载总计 Total Continuous Load/kW							972.64				1766.84				1449.05				2639.23				1034.60				973.63				108.88				194.21	
2	间歇负载总计 Total Inter. Load/kW							29.20				68.37				63.21				68.37				778.25				172.54				6.18				0.00	
3	间歇负载总计 Total Inter. Load×0.4/kW							11.68				27.35				25.28				27.35				311.30				69.02				2.47				0.00	
4	总负载 Total Load/kW							984.32				1794.18				1474.34				2666.57				1345.90				1042.65				111.35				194.21	
5	考虑电网损失后的总负载Total load including net loss(2%)							1004.41				1830.80				1504.42				2720.99				1373.37				1063.92				113.63					
6	220V连续负载总计 220V Total Continuous Load/kW							108.20				104.60				104.60				102.20				105.80				113.00				0.00					
7	220V及以下间歇负载总计 220V Total Inter. Load/Kw							0.00				0.00				0.00				0.00				0.00				0.00				0.00					
8	220V间歇负载总计 220V Total Inter. Load×0.4/kW							0.00				0.00				0.00				0.00				0.00				0.00				0.00					
9	220V总负载 220V Total Load/kW							108.20				104.60				104.60				102.20				105.80				113.00				0.00					
10	考虑电网损失后的220V总负载 220V Total load including net loss(2%)							110.41				106.73				106.73				104.29				107.96				115.31				0.00					
11	应急220V连续负载总计 Em'cy 220V Total Continuous Load/kW							20.39				20.39				20.39				20.39				36.55				20.39				26.72				33.40	
12	应急220V及以下间歇负载总计 220V Total Inter. Load/Kw							2.71				2.71				2.55				2.71				2.71				2.71				0.00				0.00	
13	应急220V间歇负载总计 Em'cy 220V Total Inter. Load×0.4/kW							1.08				1.08				1.02				1.08				1.08				1.08				0.00				0.00	
14	应急220V总负载 Em'cy 220V Total Load/kW							21.47				21.47				21.41				21.47				37.63				21.47				26.72				33.40	
15	考虑电网损失后的应急220V总负载 Em'cy 220V Total load including net loss(2%)							21.91				21.91				21.85				21.91				38.40				21.91									
16	主照明变压器(200KVA)负荷率 Main lighting transformer Load Rate/%							69.01				66.71				66.71				65.18				67.47				72.07									
17	应急照明变压器(75KVA)负荷率 Em'cy lighting transformer Load Rate/%							36.52				36.52				36.41				36.52				64.00				36.52				44.53				55.67	
18	使用发电机台数和容量 Operation of Generator/Set×kW							2*830				3*830				3*830				4*830				2*830				2*830				1*250				1*250	
19	发电机负荷率 Generator Load Rate/%							60.51				73.53				60.42				81.96				82.73				64.09				40.49				77.69	
20	备用发电机台数和容量 Standby Generator/Set×kW							2*830				1*830				1*830								2*830				2*830									

Note: 1. the SEU equiped with four(4) sets of diesel generator each rated 830kW and one(1) set of emergency generator set rated 250kW.

2. the SEU equiped with two(2) sets of main normal lighting transformer rated 200KVA and two(2) set of emergency lighting transformer rated 75KVA.

2. In any case, two(2) sets of main normal lighting transformer be interlocked and only one(1) set on line and the other standby,two(2) sets of emergencyl lighting transformer be interlocked and only one(1) set on line and the other standby;

4. In any case, the maxium of four(4) sets of main diesel generator be capable of parallel operation to supply power for the unit.

JH316G-601-01JS	电力负荷计算（冬季）ELECTRICAL LOAD BALANCE CALCULATION(WINTER)																																			
No.	CONSUMERS	PARAMETER				FIELD TRANSIT				ELEVATING (WATER FREE)				LOWERING				DP				IN/OUT PORT				OPERATION/HARBOUR				BLACKOUT RECOVERY				FIRE			
		Installed unit	Rated power (kW)	Efficiency (%)	Need power (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)
	380V POWER SYSTEM																																			
A	PROPULSION																																			
	艏侧推主电机Bow Thruster Main Motor	2	600	0.96	625.0													2	100	1250.0		2	50		625												
	艏侧推回转伺服泵站Bow Thruster turning Servo Pump	2	5.5	0.87	6.3													2	90	11.4		2	70	8.9												
	舵桨回转冷却泵Ruder propeller steering&cooling pump	2	45	0.92	48.9	2	70	68.5										2	85	83.2		2	70	68.5												
	主机滑油预供泵 M/E Pre-lub pump	2	4	0.87	4.6																					2	80	7.4								
B	JACK-UP SYSTEM																																			
	升降装置主电源Jacking System Main Power	4	259	0.9	288					4	70	806		4	30	345		4	33	379.9																
	升降装置制动泵Jacking System Brake pump	4	5.5	0.88	6.3					4	80		20.0	4	80		20.0	4	80		20.0														
	升降装置润滑泵Jacking System Lub. Pump	4	5.5	0.87	6.3																															
	升降装置制动电阻风机Jacking System Brake Resistance Fan	2	7.5	0.89	8.4									2	80	13.5																				
C	ENGINE ROOM MECHINE																																			
	燃油输送泵Fuel Oil Transfer Pump	2	2.2	0.85	2.6	1	50		1.3	1	50		1.3	1	50		1.3	1	50		1.3	1	50		1.3	1	50		1.3							
	滑油输送泵Lub Oil Transfer Pump	1	1.5	0.8	1.9																															
	发电机海水冷却泵D/G S.W.Cooling Pump	2	15	0.9	16.7	1	60	10.0		1	80	13.3		1	80	13.3		2	80	26.7		1	80	13.3		1	80	13.3								
	主推进海水冷却泵Main propulsion S.W. cooling pump	2	7.5	0.9	8.3	1	80	6.7										1	80	6.7		1	80	6.7												
	1#潜水泵No.1 Submerged Pump (MSB)	1	75	0.94	80					1	80	63.8		1	80	63.8										1	80	63.8								
	1#潜水泵绞车No.1 Submerged Pump Winch (MSB)	1	9.2	0.86	11																															
	2#潜水泵No.2 Submerged Pump (ESB)	1	75	0.94	80																									1	80	63.8		1	100	79.8	
	2#潜水泵绞车No.2 Submerged Pump Winch (ESB)	1	9.2	0.86	11																															
	1#机舱送风机No.1 E/R Supply fan	1	18.5	0.92	20	1	80	16.1		1	80	16.1		1	80	16.1		1	80	16.1		1	80	16.1		1	80	16.1								
	2#机舱送风机No.2 E/R Supply fan(ESB)(Reversible)	1	18.5	0.92	20	1	80	16.1		1	80	16.1		1	80	16.1		1	80	16.1		1	80	16.1						1	80	16.1				
	1#机舱抽风机No.1 E/R Exhaust fan	1	15	0.91	16	1	80	13.2		1	80	13.2		1	80	13.2		1	80	13.2		1	80	13.2		1	80	13.2								
	2#机舱抽风机No.2 E/R Exhaust fan	1	15	0.91	16	1	80	13.2		1	80	13.2		1	80	13.2		1	80	13.2		1	80	13.2												
	污油泵Dirty Oil Pump	1	1.5	0.85	1.76																															
	压载总用泵Ballast G.S.pump	1	37	0.93	39.78	1	20	8.0		1	20	8.0		1	20	8.0		1	20	8.0		1	50	19.9		1	20	8.0								
	消防总用泵Frie G.S. Pump	2	45	0.93	48.39	1	20	9.7		1	20	9.7		1	20	9.7		1	20	9.7		1	50	24.2		1	20	9.7								
	日用舱底泵Daily Bilge Pump	1	2.2	0.85	2.59	1	80		2.1	1	80		2.1	1	80		2.1	1	80		2.1	1	80		2.1	1	30		0.8						
	应急消防泵Emergency Fire Fighting Pump(ESB)	1	30	0.93	32.26																													1	100	32.3	
	盐水输送泵Brine Transfer Pump	1	30	0.92	32.61																					1	80	26.1								
	盐水循环泵Brine Circulation Pump	2	3	0.85	3.53	1	80	2.8		1	80	2.8						1	80	2.8		1	80	2.8		1	80	2.8								
	冲桩泵Jetting Pump	1	132	0.95	138.9									1	95	132.0																				
	淡水输送泵F.S. Transfer Pump	1	4	0.86	4.7																															
	泡沫消防泵Helideck Foam Fire Pump	1	132	0.95	138.9																															
	水幕泵Water curtain pump	1	37	0.93	39.8																															
	水喷淋水泵Water Sprinkler Water Pump(ESB)	1	37	0.93	39.8																													1	100	39.8	
	水喷淋保压泵Water Sprinkler System Jockey Pump(ESB)	1	5.5	0.89	6.2																													1	100	6.2	

JH316G-601-01JS	电力负荷计算（冬季）ELECTRICAL LOAD BALANCE CALCULATION(WINTER)																																			
No.	CONSUMERS	PARAMETER				FIELD TRANSIT				ELEVATING (WATER FREE)				LOWERING				DP				IN/OUT PORT				OPERATION/HARBOUR				BLACKOUT RECOVERY				FIRE			
		Installed unit	Rated power (kW)	Efficiency (%)	Need power (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)
	电热水柜 Electric Hot Water Hydrophore	1	60	1	60.0	1	60	36.0		1	60	36.0		1	60	36.0		1	60	36.0		1	60	36.0		1	60	36.0									
	热水循环泵 Hot Water Circulating Pump	2	1.5	0.86	1.7	1	80	1.4		1	80	1.4		1	80	1.4		1	80	1.4		1	80	1.4		1	80	1.4									
	燃油分油机FO Purifier	1	6	0.9	6.7	1	60			1	60		4.0	1	60		4.0	1	60		4.0	1	60		4.0	1	60		4.0								
	1#主空压机No.1 Main Air Compressor	1	6.8	0.88	7.7	1	80		6.2	1	80		6.2	1	80		6.2	1	80		6.2	1	80		6.2	1	80		6.2								
	2#主空压机No.2 Main Air Compressor (ESB)	1	6.8	0.88	7.7																									1	80		6.2				
	服务空压机Air Compressor for Client	1	45	0.92	48.9	1	30		14.7	1	30		14.7	1	30		14.7	1	30		14.7	1	30		14.7	1	80		39.1								
	制淡装置带增压泵F.W. maker with booster pump	2	25	0.9	27.8																	1	80		22.2	2	80		44.4								
	生活污水处理装置Sewage Treatment Plant	2	6.3	0.88	7.2	2	70	10.0		2	70	10.0		2	70	10.0		2	70	10.0		2	70	10.0		2	70	10.0									
	油水分离器Oily Water Separator	1	3.1	0.85	3.6	1	80		2.9	1	80		2.9	1	80		2.9	1	80		2.9	1	80		2.9	1	80		2.9								
	淡水日用循环泵Fresh Water daily circulation pump	4	5	0.86	5.8	2	70	8.1		2	70	8.1		2	70	8.1		2	70	8.1		2	70	8.1		2	70	8.1									
	海水日用循环泵S.W. daily circulation pump	4	5.5	0.86	6.4	2	70	9.0		2	70	9.0		2	70	9.0		2	70	9.0		2	70	9.0		2	70	9.0									
D	HVAC																																			
	中央空调压缩机Central Air Condition Compressor	3	150	0.92	163.0																															
	空调冷媒水泵Chiller Water Cir. Pump	3	18.5	0.91	20.3																															
	空调海水泵A/C S.W. Cooling Pump	2	37	0.93	39.8																															
	二甲板空调器风机Tween Deck Central Air Condition AHU Fan	1	5.5	0.89	6.2	1	80	4.9		1	80	4.9		1	80	4.9		1	80	4.9		1	80	4.9		1	80	4.9									
	主甲板空调器风机Main Deck Central Air Condition AHU Fan	1	7.5	0.89	8.4	1	80	6.7		1	80	6.7		1	80	6.7		1	80	6.7		1	80	6.7		1	80	6.7									
	A甲板空调器风机A Deck Central Air Condition AHU Fan	1	7.5	0.89	8.4	1	80	6.7		1	80	6.7		1	80	6.7		1	80	6.7		1	80	6.7		1	80	6.7									
	B甲板空调器风机B Deck Central Air Condition AHU Fan	1	15	0.89	16.9	1	80	13.5		1	80	13.5		1	80	13.5		1	80	13.5		1	80	13.5		1	80	13.5									
	二甲板空调器加热器Tween Deck Central Air Condition AHU Heater	1	58	1	58.0	1	60	34.8		1	60	34.8		1	60	34.8		1	60	34.8		1	60	34.8		1	60	34.8									
	主甲板空调器加热器Main Deck Central Air Condition AHU Heater	1	72	1	72.0	1	60	43.2		1	60	43.2		1	60	43.2		1	60	43.2		1	60	43.2		1	60	43.2									
	A甲板空调器加热器A Deck Central Air Condition AHU Heater	1	57	1	57.0	1	60	34.2		1	60	34.2		1	60	34.2		1	60	34.2		1	60	34.2		1	60	34.2									
	B甲板空调器加热器B Deck Central Air Condition AHU Heater	1	75	1	75.0	1	60	45.0		1	60	45.0		1	60	45.0		1	60	45.0		1	60	45.0		1	60	45.0									
	驾驶室风机盘管Bridge FCU	2	0.5	0.85	0.6	2	80	0.9		2	80	0.9		2	80	0.9		2	80	0.9		2	80	0.9		2	80	0.9									
	艏部MCC室风机盘管 FWD MCC room FCU	1	0.5	0.85	0.6	1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5									
	艏侧推室风机盘管 Bow thtuster room FCU	1	0.1	0.85	0.1	1	80	0.1		1	80	0.1		1	80	0.1		1	80	0.1		1	80	0.1		1	80	0.1									
	配电板间柜机 Swithboard room package AC	2	9	0.85	10.6																															
	厨房柜机 Galley package AC	2	23.2	0.85	27.3																															
	机修间风机盘管 Workshop FCU	1	0.1	1.85	0.1																															
	驾驶室风机盘管电加热器Bridge FCU ele. Heater	2	10	1	10.0	2	60	12.0		2	60	12.0		2	60	12.0		2	60	12.0		2	60	12.0		2	60	12.0									
	艏部MCC室风机盘管电加热器 FWD MCC room FCU ele. Heater	1	10	1	10.0	1	60	6.0		1	60	6.0		1	60	6.0		1	60	6.0		1	60	6.0		1	60	6.0									
	艏侧推室风机盘管电加热器 Bow thtuster room FCU ele. Heater	1	7.5	1	7.5	1	60	4.5		1	60	4.5		1	60	4.5		1	60	4.5		1	60	4.5		1	60	4.5									
	配电板间柜机加热器 Swithboard room package AC ele. Heater	2	11.5	1	11.5	1	60	6.9		1	60	6.9		1	60	6.9		1	60	6.9		1	60	6.9		1	60	6.9									
	厨房柜机 Galley package AC ele. Heater	2	20.2	1	20.2	1	60	12.1		1	60	12.1		1	60	12.1		1	60	12.1		1	60	12.1		1	60	12.1									
	1#舵桨舱送风机Supply Fan for Rudder Propeller Room(P)	1	1.1	0.82	1.3	1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1									

JH316G-601-01JS	电力负荷计算（冬季）ELECTRICAL LOAD BALANCE CALCULATION(WINTER)																																	
No.	CONSUMERS	PARAMETER				FIELD TRANSIT				ELEVATING (WATER FREE)				LOWERING				DP				IN/OUT PORT				OPERATION/HARBOUR				BLACKOUT RECOVERY				FIRE			
		Installed unit	Rated power (kW)	Efficiency (%)	Need power (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)
	2#舵桨舱送风机Supply Fan for Rudder Propeller Room(S)	1	1.1	0.82	1.3	1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1									
	油漆间抽风机 Exhaust fan for paint room	1	0.75	0.82	0.9	1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7									
	焊接间抽风机 Exhaust fan for Welding room	1	0.12	0.82	0.1	1	80	0.1		1	80	0.1		1	80	0.1		1	80	0.1		1	80	0.1		1	80	0.1									
	1#泵舱抽风机Supply Fan for pump room(P)	1	1.1	0.83	1.3	1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1									
	2#泵舱抽风机Supply Fan for pump room(S)	1	1.1	0.83	1.3	1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1									
	首侧推舱抽风机Exhaust fan for bow thruster room	1	1.1	0.83	1.3	1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1									
	冷水机室送风机Supply Fan for chiller room	1	1.1	0.82	1.3	1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1									
	首部升降控制室送风机Supply Fan for FWD MCC room	1	0.75	0.82	0.9	1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7									
	洗衣房和被褥间抽风机Exhaust fan for laundry and linen store	1	0.75	0.82	0.9	1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7									
	干货库和屠宰间抽风机Exhaust fan for dry store and batchery room	1	0.25	0.8	0.3	1	80	0.3		1	80	0.3		1	80	0.3		1	80	0.3		1	80	0.3		1	80	0.3									
	更衣室抽风机Exhaust fan for change room	1	0.75	0.82	0.9	1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7									
	厨房送风机Supply fan for galley	1	1.1	0.83	1.3	1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1									
	厨房抽风机Exhaust fan for galley	1	3	0.85	3.5	1	80	2.8		1	80	2.8		1	80	2.8		1	80	2.8		1	80	2.8		1	80	2.8									
	1#餐厅抽风机Exhaust fan for No.1 mess room	1	1.1	0.83	1.3	1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1									
	主甲板AHU室抽风机Exhaust fan for main deck AHU room	1	0.75	0.8	0.9	1	80	0.8		1	80	0.8		1	80	0.8		1	80	0.8		1	80	0.8		1	80	0.8									
	A甲板AHU室抽风机Exhaust fan A deck AHU room	1	0.55	0.82	0.7	1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5									
	B甲板AHU室抽风机Exhaust fan B deck AHU room	1	0.55	0.82	0.7	1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5									
	应急消防泵舱抽风机Exhaust fan em'cy fire fighting pump room(ESB)	1	1.1	0.83	1.3	1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1		1	80	1.1									
	应急发电机室送风机Suppy fan for E/G room(ESB)	1	0.25	0.82	0.3	1	80	0.2		1	80	0.2		1	80	0.2		1	80	0.2		1	80	0.2		1	80	0.2		1	80	0.2		1	100	0.3	
	冷藏机组Refrigerating Plant	1	15	0.91	16.5	1	50	8.2		1	50	8.2		1	50	8.2		1	50	8.2		1	50	8.2		1	50	8.2									
	1#冷藏海水冷却泵No.1 refrigerating S.W.pump	2	5.5	0.88	6.3	1	80	5.0		1	80	5.0		1	80	5.0		1	80	5.0		1	80	5.0		1	80	5.0									
	配电板间送风机Supply fan for switchboard room	1	0.75	0.82	0.9	1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7		1	80	0.7									
E	DECK EQUIPMENT																																		
	救生艇吊Life Boat Davit	2	15	0.9	17																														
	救助艇吊Rescue Vehicle Davit	1	12	0.9	13																														
	救生筏吊Liferaft Winch	2	5.5	0.88	6																														
	回收缆绞车Retrieving Winch	1	12.5	0.9	14																														
	定位绞车主电机Position Winch Main Motor	4	45	0.92	48.9																	4	50		97.8										
	定位绞车伺服电机Position Winch Servo Motor	2	5.5	0.92	6.0																	2	80	9.6											
	甲板辅吊Aux. deck crane	1	132	0.92	143.5																					1	50		71.7						
	主甲板对外供电插座Power outlet for maindeck 380V	6	16	0.8	20.0																														
	垃圾打包机 Garbage compactors	2	3	0.85	3.5																														
F	GALLEY AND LAUNDRY EQUIPMENT																																		
	厨房设备电力分电箱Power DB for galley equipment	1	112	1	112.0	1	65	72.8		1	65	72.8		1	65	72.8		1	65	72.8		1	65	72.8		1	65	72.8									
	六头电灶Ele.range with 6 hotplates	1	24	1	24.0																														
	电扒炉 Ele. Grill	1	12	1	12.0																														
	电炸炉 Ele. Deep-fryer	1	7.2	1	7.2																														

JH316G-601-01JS	电力负荷计算（冬季）ELECTRICAL LOAD BALANCE CALCULATION(WINTER)																																			
No.	CONSUMERS	PARAMETER				FIELD TRANSIT				ELEVATING (WATER FREE)				LOWERING				DP				IN/OUT PORT				OPERATION/HARBOUR				BLACKOUT RECOVERY				FIRE			
		Installed unit	Rated power (kW)	Efficiency (%)	Need power (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)
	电烤箱 Ele. Baking oven	1	8.1	1	8.1																															
	电饭锅 Ele. Cooker	1	9	1	9.0																															
	沸水器 Ele water boiler	1	3	1	3.0																															
	温水炉 Warm water furnance	1	10	1	10.0																															
	洗碗机Dish wash machine	1	12.75	1	12.8																															
	保温桌Heat preservation table	1	3	1	3.0																															
	污物粉碎机food waste disposer	1	1.5	1	1.5																															
	可倾式汤锅Tilting soup boiler	1	9	1	9.0																															
	和面机 DOUGH MIXER MACHINE	1	2.7	1	2.7																															
	电蒸箱ELE. STEAM COOKER	1	9	1	9.0																															
	1#洗衣间电力分电箱No.1 power DB for laundry	1	78	0.85	91.8	1	60	55.1		1	60	55.1		1	60	55.1		1	60	55.1		1	60	55.1		1	60	55.1								
	工业洗衣机 Industry wash machine	2	24	0.92	26.1																															
	烘干机 Dryer	1	30	1	30.0	1	60	18.0		1	60	18.0		1	60	18.0		1	60	18.0		1	60	18.0		1	60	18.0								
	2#洗衣间电力分电箱No.2 power DB for laundry	1	78	1	78.0																															
	工业洗衣机 Industry wash machine	2	24	0.92	26.1	1	60	15.7		1	60	15.7		1	60	15.7		1	60	15.7		1	60	15.7		1	60	15.7								
	烘干机 Dryer	1	30	1	30.0																															
	3#洗衣间电力分电箱No.3 power DB for laundry	1	54	0.9	60.0																															
	工业洗衣机 Industry wash machine	1	24	0.85	28.2																															
	烘干机 Dryer	1	30	1	30.0																															
G	通用充放电板 General service charging panel(ESB)	1	2.5	1	2.5	1	80		2.0	1	80		2.0	1	80		2.0	1	80		2.0	1	80		2.0	1	80		2.0	1	80	2.0		1	100	2.5	
H	WORKSHOP EQUIPMENT																																			
1	砂轮机Grinder	1	0.48	0.85	0.6																															
2	多功能车床multi lathe	1	0.75	0.85	0.9																															
3	焊机Welding machine	1	5	0.85	5.9																															
4	电工试验板 Ele. Test panel	1	0.1	0.9	0.1																															
	220V POWER SYSTEM																																			
A	主照明变压器供电系统MAIN LIGHTING TRANSFORMER SUPPLY SYSTEM																																			
	1#正常照明分电箱1L No.1 normal lighting DB 1L	1	20	1	20.0	1	80	16.0		1	80	16.0		1	80	16.0		1	80	16.0		1	80	16.0		1	80	16.0								
	2#正常照明分电箱2L No.2 normal lighting DB 2L	1	23	1	23.0	1	80	18.4		1	80	18.4		1	80	18.4		1	80	18.4		1	80	18.4		1	80	18.4								
	3#正常照明分电箱3L No.3 normal lighting DB 3L	1	19.5	1	19.5	1	80	15.6		1	80	15.6		1	80	15.6		1	80	15.6		1	80	15.6		1	80	15.6								
	4#正常照明分电箱4L No.4 normal lighting DB 4L	1	14	1	14.0	1	80	11.2		1	80	11.2		1	80	11.2		1	80	11.2		1	80	11.2		1	80	11.2								
	5#正常照明分电箱5L No.5 normal lighting DB 5L	1	12.3	1	12.3	1	80	9.8		1	80	9.8		1	80	9.8		1	80	9.8		1	80	9.8		1	80	9.8								
	6#正常照明分电箱6L No.6 normal lighting DB 6L	1	13.2	1	13.2	1	80	10.6		1	80	10.6		1	80	10.6		1	80	10.6		1	80	10.6		1	80	10.6								
	住舱风机220V分电箱4FGSB Power DB for Accommodation 220V fans	1	3	0.75	4.0	1	80	3.2		1	80	3.2		1	80	3.2		1	80	3.2		1	80	3.2		1	80	3.2								
	艏部厨房220V电力分电箱1DB/FWD 220V power DB for forward(galley)	1	12	1	12.0	1	80	9.6		1	80	9.6		1	80	9.6		1	80	9.6		1	80	9.6		1	80	9.6								
	220V电力分电箱2DB/FWD 220V power DB for forward	1	6	1	6.0	1	70	4.2		1	50	3.0		1	50	3.0		1	50	3.0		1	70	4.2		1	70	4.2								

JH316G-601-01JS	电力负荷计算（冬季）ELECTRICAL LOAD BALANCE CALCULATION(WINTER)																																			
No.	CONSUMERS	PARAMETER				FIELD TRANSIT				ELEVATING (WATER FREE)				LOWERING				DP				IN/OUT PORT				OPERATION/HARBOUR				BLACKOUT RECOVERY				FIRE			
		Installed unit	Rated power (kW)	Efficiency (%)	Need power (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)
	机舱220V电力分电箱ERDB 221V power DB for engine room	1	4	1	4.0	1	80	3.2		1	80	3.2		1	80	3.2		1	80	3.2		1	80	3.2		1	80	3.2									
	发电机缸套水加热装置Jacket water heater of generator	4	3	1	3.0	3	80	7.2		2	80	4.8		2	80	4.8		1	80	2.4		2	80	4.8		1	80	2.4									
	甲板辅吊照明电源Aux. deck crane lighting power	1	12	1	12.0																					1	80	9.6									
	主甲板对外供电插座Power outlet for maindeck 220V	6	3	1	3.0																																
	玻璃加热(冬季) Glass heater(used in winter)	5	2.4	1	2.4	5	80	9.6		5	80	9.6		5	80	9.6		5	80	9.6		5	80	9.6		5	80	9.6									
B	应急照明变压器供电系统EM'CY LIGHTING TRANSFORMER SUPPLY SYSTEM																																			
	1#应急照明分电箱1EL No.1 normal lighting DB 1EL	1	3.6	1	3.6	1	80	2.9		1	80	2.9		1	80	2.9		1	80	2.9		2	80	5.8		1	80	2.9		1	80	2.9		1	100	3.6	
	2#应急照明分电箱2EL No.2 normal lighting DB 2EL	1	4.7	1	4.7	1	80	3.8		1	80	3.8		1	80	3.8		1	80	3.8		2	80	7.5		1	80	3.8		1	80	3.8		1	100	4.7	
	3#应急照明分电箱3EL No.3 normal lighting DB 3EL	1	6.9	1	6.9	1	80	5.5		1	80	5.5		1	80	5.5		1	80	5.5		2	80	11.0		1	80	5.5		1	80	5.5		1	100	6.9	
	4#应急照明分电箱4EL No.4 normal lighting DB 4EL	1	5	1	5.0	1	80	4.0		1	80	4.0		1	80	4.0		1	80	4.0		2	80	8.0		1	80	4.0		1	80	4.0		1	100	5.0	
	广播及通用报警PA/GA	1	1.6	1	1.6	1	50		0.8	1	50		0.8	1	50		0.8	1	50		0.8	1	50		0.8	1	50		0.8	1	80	1.3		1	100	1.6	
	无线电台Radio console	1	1.5	1	1.5	1	50		0.8	1	50		0.8	1	50		0.8	1	50		0.8	1	50		0.8	1	50		0.8	1	80	1.2		1	100	1.5	
	火警及气体探测报警Fire gas detection and alarm	1	0.5	1	0.5	1	20		0.1	1	20		0.1	1	20		0.1	1	20		0.1	1	20		0.1	1	20		0.1	1	80	0.4		1	100	0.5	
	机舱UPS UPS for E/R	1	1.5	1	1.5	1	60		0.9	1	60		0.9	1	60		0.9	1	60		0.9	1	60		0.9	1	60		0.9	1	80	1.2		1	100	1.5	
	航行信号灯板Navgation and signal light panel	1	0.6	1	0.6	1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5		1	80	0.5		1	100	0.6	
	直升机助降灯光系统Heideck landing aid lighting system	1	0.8	1	0.8	1	20		0.2	1	20		0.2	1	20			1	20		0.2	1	20		0.2	1	20		0.2								
	1#助航设备220V分电箱No.1 navgation aid 220V DB	1	3	1	3.0	1	50	1.5		1	50	1.5		1	50	1.5		1	50	1.5		1	50	1.5		1	50	1.5		1	80	2.4		1	100	3.0	
	2#助航设备220V分电箱No.2 navgation aid 220V DB	1	3	1	3.0	1	50	1.5		1	50	1.5		1	50	1.5		1	50	1.5		1	50	1.5		1	50	1.5		1	80	2.4		1	100	3.0	
	集控台220V分电箱 ECC 220V DB	1	1.5	1	1.5	1	50	0.8		1	50	0.8		1	50	0.8		1	50	0.8		1	50	0.8		1	50	0.8		1	80	1.2		1	100	1.5	
1	连续负载总计 Total Continuous Load/kW						793.04				1587.23				1269.45				2459.62				855.00				794.03				108.88				194.21	
2	间歇负载总计 Total Inter. Load/kW						31.85				55.85				55.69				55.85				780.90				175.19				6.18				0.00	
3	间歇负载总计 Total Inter. Load×0.4/kW						12.74				22.34				22.28				22.34				312.36				70.08				2.47				0.00	
4	总负载 Total Load/kW						805.78				1609.57				1291.72				2481.96				1167.36				864.10				111.35				194.21	
5	考虑电网损失后的总负载Total load including net loss(2%)						822.22				1642.42				1318.09				2532.62				1191.18				881.74				113.63					
6	220V连续负载总计 220V Total Continuous Load/kW						118.60				115.00				115.00				112.60				116.20				123.40				0.00				0.00	
7	220V及以下间歇负载总计 220V Total Inter. Load/Kw						0.00				0.00				0.00				0.00				0.00				0.00				0.00				0.00	
8	220V间歇负载总计 220V Total Inter. Load×0.4/kW						0.00				0.00				0.00				0.00				0.00				0.00				0.00				0.00	
9	220V总负载 220V Total Load/kW						118.60				115.00				115.00				112.60				116.20				123.40				0.00				0.00	
10	考虑电网损失后的220V总负载						121.02				117.35				117.35				114.90				118.57				125.92				0.00				0.00	
11	应急220V连续负载总计 Em'cy 220V Total Continuous Load/kW						20.39				20.39				20.39				20.39				36.55				20.39				26.72				33.40	
12	应急220V及以下间歇负载总计 220V Total Inter. Load/Kw						2.71				2.71				2.55				2.71				2.71				2.71				0.00				0.00	
13	应急220V间歇负载总计 Em'cy 220V Total Inter. Load×0.4/kW						1.08				1.08				1.02				1.08				1.08				1.08				0.00				0.00	
14	应急220V总负载 Em'cy 220V Total Load/kW						21.47				21.47				21.41				21.47				37.63				21.47				26.72				33.40	
15	考虑电网损失后的应急220V总负载						21.91				21.91				21.85				21.91				38.40				21.91				27.27				34.08	
16	主照明变压器(200KVA)负荷率 Main lighting transformer Load Rate/%						75.64				73.34				73.34				71.81				74.11				78.70									
17	应急照明变压器(75KVA)负荷率 Em'cy lighting transformer Load Rate/%						36.52				36.52				36.41				36.52				64.00				36.52				45.44				56.80	

JH316G-601-01JS	电力负荷计算（冬季）ELECTRICAL LOAD BALANCE CALCULATION(WINTER)																															
No.	CONSUMERS	PARAMETER				FIELD TRANSIT				ELEVATING (WATER FREE)				LOWERING				DP				IN/OUT PORT				OPERATION/HARBOUR				BLACKOUT RECOVERY				FIRE			
		Installed unit	Rated power (kW)	Efficiency (%)	Need power (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)	Operation unit	Load factor	Continuous load (kW)	Intermittent load (kW)
18	使用发电机台数和容量 Operation of Generator/Set×kW						2*830				3*830				3*830				4*830				2*830				2*830				1*250				1*250		
19	发电机负荷率 Generator Load Rate/%						49.53				65.96				52.94				76.28				71.76				53.12				41.32				77.69		
20	备用发电机台数和容量 Standby Generator/Set×kW						2*830				1*830				1*830								2*830				2*830										

Note: 1.the SEU equiped with four(4) sets of diesel generator each rated 830kW and one(1) set of emergency generator set rated 250kW.

2.the SEU equiped with two(2) sets of main normal lighting transformer rated 200KVA and two(2) set of emergency lighting transformer rated 75KVA.

2.In any case, two(2) sets of main normal lighting transformer be interlocked and only one(1) set on line and the other standby,two(2) sets of emergencyl lighting transformer be interlocked and only one(1) set on line and the other standby;

4.In any case, the maxium of four(4) sets of main diesel generator be capable of parallel operation to supply power for the unit.

REV 版本号	DATE 日 期	DESCRIPTION 描 述	DESIGNED 设 绘	CHECKED 校 对	VERIFIED 审 核	APPROVED 审 定
Z	2018.04.27	AS BUILT DRAWING	G.H.Song	P.Lu	N.Zhao	

SIGN 会 签

OWNER 船 东	QMS BANI YAS INC.	HULL NO. 工 程 号	HXLB3007
BUILDER 船 厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD 青岛海西重机有限责任公司	CLASS 船 级 社	ABS
TITLE 船 名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图 名	PRIMARY POWER SYSTEM DIAGRAM 电力一次系统图	DWG. NO. 图 号	JH316G-611-01

SCALE 比 例	WEIGHT 重 量	PAGE 页 数	DATE 日 期
1:1	-	1/68	

BESTWAY WMMP
上海佳豪船海工程研究设计有限公司
SHANGHAI BESTWAY MARINE ENGINEERING DESIGN CO.,LTD
No.10 Building, No.518 Xinzhuan Road Shanghai, CHINA P.C : 201612 Web : www.bestwaysh.com
Tel : 86-21-6085 9800 Fax : 86-21-6085 9842

A4:0.0625m²

NOTE
注 释

1. THE MANUFATURING OF AC400V&AC230V MAIN SWITCHBOARD NEED TO MEET THE IEC AND ABS RULES.
AC400V&AC230V主配电板的制造应符合IEC标准和ABS船级社规范的要求.

2. AC400V&AC230V MAIN SWITCHBOARD SHALL BE DESIGNED OF STEEL, SELF-SUPPORTING, FLOOR TYPE, PROTECTION CLASS IP22, BOTTOM WIRING, FORESIDE & AFTSIDE OF BOARD MAINTENANCE, INSULATED HAND RAILS OF RIGID CONSTRUCTION ARE TO BE PROVIDED AT THE FRONT AND REAR OF MSB. LINGHTING ARE TO BE PROVIDED AT THE FRONT OF MSB.
AC400V&AC230V主配电板应为钢质, 落地式设计. 配电板防护等级为IP22, 底部进线, 板前板后维修. 配电板前后设置刚性结构的绝缘扶手, 配电板前面设置照明.

3. AC400V MAIN SWITCHBOARD IS CONSISIT OF FOURTWEEN PANELS: FOUR MAIN GENERATOR PANELS, FOUR GROUP START PANELS, FIVE AC400V FEEDER PANELS, ONE AC400V SYNCHRONOUS & FEEDER PANEL.
AC400V主配电板的组成如下(14屏): 主发电机屏四屏; 组合起动屏四屏; AC400V负载屏五屏; AC400V同步及负载屏一屏.

4. AC230V MAIN SWITCHBOARD IS CONSISIT OF TWO PANELS: TWO AC230V FEEDER PANELS,
AC230V主配电板的组成如下(2屏): AC230V负载屏二屏.

5. NAMEPLATES: PHENOLIC MATERIAL AND ENGRAVED LETTER WITH WHITE GROUND.
铭牌: 树脂材料,白底,文字雕刻.

6. THE WIRING TERMINAL OF MAIN SWITCHBOARD SHOULD BE PERMANENTLY MARKED, CONVENIENT FOR SERVICE. THE CABLE ENTRY FROM THE BOTTOM.
配电板接线端应设有永久性标志.要求接线方便,便于维修. 配电板底部进线.

7. THE INSULATION OF INNER WIRE SHOULDE BE OF FIRE RETARDED TYPE. EACH END BE MARKED, THE SWITCHBOARD TO BE USE SOFT TIN PLATED COPPER BRAIDED WIRE TO GROUDED WITH THE UNIT.
配电板内部线缆的绝缘应采用滞燃材料,端头应标识. 配电板壳体应采用镀锡编织软铜线同平台接地.

8. MONITOR EQUIPMENT:
(1) INSTRUMENT: MONITOR INSTRUMENTS SHALL BE Q96 TYPE MARINE METERS, WITH A RED MARK AT THE RATED LOCATION OF GENERATOR'S VOLTAGE,CURRENT,POWER. POWER METERS OF GENERATORS SHALL HAVE A RED MARK AT THE LOCATION OF 15% REVERSE POWER.
仪表: 监测仪表选用Q96型船用电表. 电表的表面应在发电机的电压, 电流, 功率的额定值处划出红色标记. 发电机功率表还应在-15%的逆功率处划出红色标记.
(2) INSULATION MONITOR: INSULATION MONITOR EQUIPMENT SHALL BE INSTALLED IN AC400V&AC230V MSB. IT CAN INDICATE AC400V&AC230V DRIVE INSULATING RESISTANCE CONTINUALLY.
WHEN THE INSULATING RESISTANCE IS LOW, A VISUAL AND AUDIAL ALARM WILL BE GENERATED.
绝缘监测: 在AC400V&AC230V主配电板上设绝缘监测装置. 能连续监测AC400V&AC230V电网绝缘电阻, 在绝缘电阻低时能发出声光报警.

9. PARALLEL RUNNING: ANY OF THREE MAIN GENERATORS CAN PARALLEL IN LONG PERIOD.
THE PARALLEL STYLES OF MAIN GENERATOR SHALL BE DESIGNED MANUALLY SYNCHRONIZATION AND ATUO. SYNCHRONIZATION. ALWAYS ENSURE ONE MAIN GENERATOR ASIDE.
并车运行: 本船任意三台主发电机可长期并联运行, 采用手动同步及自动同步并车方式.始终保证一台主发电机备用.

10. GENERATOR PROTECT:
(1) THE MAIN SWTTCHS HAVE THREE PARS OVER CURRENT PROTECT: OVER LOADING PRE-ALARM, OVER LOADING LONG TIME DELAY TRIP, SHORT CIRCUIT DELAY TRIP AND INSTANTANEOUS TRIP.
主开关具有三段过电流保护(过载预报警,过载长延时,短延时和瞬时)特性.
(2) THE REVERSE POWER PROTECTING EQUIPMENT SHOULD BE INSTALLED.
THE REVERSE RATE: MAIN GENERATOR:-15%X830kW=-124.5kW
设有逆功率保护装置,逆功率整定值: 主发:-15%X830kW=-124.5kW.

11. EACH GENERATOR MAIN SWITCH SHALL BE INTERLOCKED WITH EMERGENCY GENERATOR SWITCH AND SHORE POWER SWITCH.
各主发电机主开关与应急发电机开关和岸电开关联锁.

12. PARAMETER OF MAIN GENERATORS MAIN AIR CIRCUIT BREAKER(1DGP,2DGP,3DGP,4DGP):
主发电机主开关(1DGP,2DGP,3DGP,4DGP)参数:

TYPE 型　　号				
INSTALLATION 安 装 方 式				DRAW OUT 抽屉式
RATED CURRENT 发电机额定电流				Ie= 1498A
ELECTRON TRIP 电子脱扣器	PRE-ALARM 预 报 警	SET CURRENT 整 定 电 流	(Ir) (A)	Ir=1.05xIe=1.05x1498=1572.9A
		SET TIME 整 定 时 间	(Tr) (S)	30S
	LONG-TIME 长 延 时	SET CURRENT 整 定 电 流	(Ir) (A)	Ir=1.15xIe=1.15x1498=1722.7A
		SET TIME 整 定 时 间	(Tr) (S)	12S
	SHORT-TIME 短 延 时	SET CURRENT 整 定 电 流	(Im) (A)	Im =2.5xIe=2.5x1498=3745A
		SET TIME 整 定 时 间	(Tm) (S)	0.4S
	INSTANTANEOUS 瞬　时	SET CURRENT 整 定 电 流	(I) (A)	I=12xIe=12x1498=17976A
ELECTRIC ACCUMULATOR (V) 电 动 储 能				AC220V
SET VALUE OF UNDER-VOLTAGE TRIP 失 压 脱 扣 器 整 定 值				0.7x400V

NOTE

注 释

1. THE MANUFATURE OF EMERGENCY SWITCHBOARD NEED TO SATISFY THE IEC AND ABS RULES.
   应急配电板的制造应符合IEC标准和ABS船级社规范的要求.
2. EMERGENCY SWITCHBOARD SHALL BE DESIGNED OF STEEL, SELF-SUPPORTING, FLOOR TYPE, PROTECTION CLASS IP22, BOTTOM WIRING, FORESIDE & AFTSIDE OF BOARD MAINTENANCE, INSULATED HAND RAILS OF RIGID CONSTRUCTION ARE TO BE PROVIDED AT THE FRONT AND REAR OF MSB. LINGHTING ARE TO BE PROVIDED AT THE FRONT OF MSB.
   应急配电板应为钢质, 落地式设计. 配电板防护等级为IP22, 底部进线, 板前板后维修.
   配电板前后设置刚性结构的绝缘扶手, 配电板前面设置照明.
3. EMERGENCY SWITCHBOARD IS CONSISIT OF FOUR PANELS: ONE EMERGENCY GENERATOR PANEL, ONE AC400V FEEDER PANEL, TWO AC230V FEEDER PANELS.
   应急配电板的组成如下(4屏): 应急发电机屏一屏; AC400V负载屏一屏; AC230V负载屏两屏.
4. NAMEPLATES: PHENOLIC MATERIAL AND ENGRAVED LETTER WITH WHITE GROUND.
   铭牌: 树脂材料,白底,文字雕刻.
5. THE ENTER AND EXIT OF THE EM'CY SWITCHBOARD SHOULD BE PERMANENCY MARKED, EASY TO CONNECT CABLE, CONVENIENT FOR SERVICE, THE CABLE ENTRY FROM THE BOTTOM.
   应急配电板输入,输出接线端应设有永久性标志.要求接线方便,便于维修,配电板底部进线.
6. THE INSULATION OF INNER WIRE SHOULDE BE OF FIRE RETARDED TYPE. EACH END BE MARKED, THE SWITCHBOARD TO BE USE SOFT TIN PLATED COPPER BRAIDED WIRE TO GROUDED WITH THE UNIT.
   配电板内部线缆的绝缘应采用滞燃材料,端头应标识. 配电板壳体应采用镀锡编织软铜线同平台接地.
7. MONITOR EQUIPMENT:
   (1) INSTRUMENT: MONITOR INSTRUMENTS SHALL BE Q96 TYPE MARINE METERS OR EQUAL, WITH A RED MARK AT THE RATED LOCATION OF GENERATOR'S VOLTAGE,CURRENT,POWER. POWER METERS OF GENERATORS SHALL HAVE A RED MARK AT THE LOCATION OF 15% REVERSE POWER.
   仪表: 监测仪表选用Q96型船用电表或相当. 电表的表面应在发电机的电压, 电流, 功率的额定值处划出红色标记.
   发电机功率表还应在-15%的逆功率处划出红色标记.
   (2) INSULATION MONITOR: INSULATION MONITOR EQUIPMENT SHALL BE INSTALLED IN ESB. IT CAN INDICATE AC400V&AC230V DRIVE INSULATING RESISTANCE CONTINUALLY. WHEN THE INSULATING RESISTANCE IS LOW, A VISUAL AND AUDIAL ALARM WILL BE GENERATED.
   绝缘监测: 在应急配电板上设绝缘监测装置. 能连续监测AC400V&AC230V电网绝缘电阻, 在绝缘电阻低时能发出声光报警.
8. GENERATOR PROTECT:
   THE MAIN SWITCHS OF ESB HAVE TWO PARS OVER CURRENT PROTECT: OVER LOADING LONG TIME DELAY TRIP AND SHORT CIRCUIT DELAY TRIP.
   应急配电板主开关具有二段过电流保护(过载长延时和短延时和)特性.
9. EMERGENCY GENERATOR SWITCH SHALL BE INTERLOCKED WITH EACH GENERATOR MAIN SWITCH.
   应急发电机开关和各主发电机主开关联锁.
10. MAIN SWITCH OF EMERGENCY GENERATOR INTERLOCKED WITH INCOME SWITCHED FED FROM 400V SWITCHBOARD; ESB NOT SUPPLY POWER TO 400V SWITCHBOARD.
    应急发电机主开关和400V配电板的一只进线开关联锁,应急配电板不能向400V配电板供电.
11. EMERGENCY TRANSFORMER 1ET AND 2ET INTERLOCK EACHOTHER.
    应急变压器1ET和2ET之间互为联锁.
12. THE CIRCUIT BREAKER OF THE SHORE POWER SUPPLY NEED BE INTERLOCKED WITH THE SECONDRY BREAKER OF DISTRIBUTION TRANSFORMER AND EMERGENCY GENERATOR.
    岸电开关应与变压器副边断路器和应急发电机联锁.

13. PARAMETER OF EMERGENCY GENERATORS MAIN AIR CIRCUIT BREAKER(EGQF):
应急发电机主开关(EGQF)参数:

TYPE 型 号			
INSTALLATION 安装方式			DRAW OUT 抽屉式
RATED CURRENT 发电机额定电流			Ie= 451A
ELECTRON TRIP 电子脱扣器	LONG-TIME 长延时	SET CURRENT 整定电流 (Ir) (A)	Ir=1.15xIe=1.15x451=518.6A
		SET TIME 整定时间 (Tr) (S)	65S
	SHORT-TIME 短延时	SET CURRENT 整定电流 (Im) (A)	Im =2.094xIe=2.094x451=944.4A
		SET TIME 整定时间 (Tm) (S)	0.5S
	INSTANTANEOUS 瞬 时	SET CURRENT 整定电流 (I) (A)	NO
ELECTRIC ACCUMULATOR 电动储能 (V)			AC230V
SET VALUE OF UNDER-VOLTAGE TRIP 失压脱扣器整定值			0.7X400V

NOTE:
备注:

1. ALL POWER & CONTROL CABLES NOT MARKED SHALL BE OF CJ86/SC TYPE .
   未注明型号的电力和控制电缆为CJ86/SC.

2. THE CABLES MARKED WITH " * " TO BE SUPPLIED BY MAKER.
   带"*"电缆均由制造厂商提供.

3. EMERGENCY STOP
   应急切断

   ES1−1: EMERGENCY SHUTDOWN GROUP NO.1 FOR ENGINE ROOM FANS & OIL PUMPS
   机舱风机&油泵应急切断第一组

   ES1−2: EMERGENCY SHUTDOWN GROUP NO.2 FOR ENGINE ROOM FANS & OIL PUMPS
   机舱风机&油泵应急切断第二组

   ES2 : EMERGENCY SHUTDOWN FOR ACC. ROOM FANS & AIR CONDITIONING
   舱室风机&空调应急切断

   ES3−1: EMERGENCY SHUTDOWN GROUP NO.1 FOR MACHINERY SPACE FANS & OIL PUMPS
   机器处所风机&油泵应急切断第一组

   ES3−2: EMERGENCY SHUTDOWN GROUP NO.2 FOR MACHINERY SPACE FANS & OIL PUMPS
   机器处所风机&油泵应急切断第二组

   ES4 : EMERGENCY SHUTDOWN FOR GALLEY & LAUNDRY
   厨房及洗衣间应急切断

   ES5 : EMERGENCY SHUTDOWN FOR MAIN DECK POWER OUTLET DB
   主甲板对外供电分电箱应急切断

4. SEQUENTIALLY START
   顺序起动

   THE ESSENTIAL LOAD (WITH UNDER VOLTAGE RELEASE FUNCTION) SHALL BE AUTOMATICALLY STARTED IN CASE OF POWER SUPPLY RECOVERY:
   下列重要负载(带UVR功能)当电源恢复供电后自动起动:

   0s:
   0秒:

   NO.1～NO.2 RUDDER PROPELLER STEERING PUMP
   #1～#2舵桨回转泵

   NO.1～NO.2 M.G. S.W. COOLING PUMP
   #1～#2主发海水冷却泵

   NO.1～NO.2 PROPULSION S.W. COOLING PUMP
   #1～#2主推进海水冷却泵

   NO.1～NO.2 SUBMERSIBLE PUMP
   #1～#2潜水泵

   NO.1～NO.2 M/E PRE−LUBRICATION PUMP
   #1～#2主机滑油预供泵

   NO.1～NO.2 CLUTCH PUMP STATION MOTOR STARTER
   #1～#2离合器泵站电机启动器

5s:
5秒:

NO.1～NO.2 E/R SUPPLY FAN
#1～#2机舱送风机

NO.1～NO.2 E/R EXHAUST FAN
#1～#2机舱抽风机

SWITCHBOARD ROOM SUPPLY FAN
配电间送风机

10s:
10秒:

BALLAST GENERAL SERVICE PUMP
压载总用泵

NO.1～NO.2 FIRE & GENERAL SERVICE PUMP
#1～#2消防总用泵

NO.1 ～NO.2 REFRI. PLANT S.W. COOLING PUMP
#1～#2冷藏装置海水冷却泵

NO.1～NO.2 A.C. S.W. COOLING PUMP
#1～#2空调海水冷却泵

EMERGENCY FIRE FIGHTING PUMP
应急消防泵

FOAM FIRE PUMP
泡沫消防泵

5. AUTO CHANGE OVER(ACO)
自动切换

NO.1～NO.2 PROPULSION S.W. COOLING PUMP
#1～#2主推进海水冷却泵

NO.1～NO.2 REFRI. PLANT S.W. COOLING PUMP
#1～#2冷藏装置海水冷却泵

NO. 序号	MARK 代 号	NAME 名 称	QTY. 数量	TYPE AND SPECIFICATION 型 号 与 规 格	REMARK 备 注
26					
25					
24					
23	4FGSB	ACCOMMODATION FAN DISTRIBUTION BOX 舱室风机分电箱	1	AC220V 50Hz	
22	1FGSB ~ 3FGSB	NO.1~NO.3 FAN GROUP START BOX #1~#3风机组合起动箱	3	AC380V 50Hz	
21	SCB	SHORE CONNECTION BOX 岸电箱	1	AC380V 400A IP56	
20					
19	UPS / ER	ENGINE ROOM UPS 机舱UPS	1	AC220V/DC24V	
18	UPS / DP	DP SYSTEM UPS DP控制系统UPS	1	AC220V	
17					
16	1ET ~ 2ET	NO.1~NO.2 EMERGENCY LIGHTIGN TRANSFORMER #1~#2应急照明变压器	2	AC400/230V 50Hz 75kVA	
15	1LT ~ 2LT	NO.1~NO.2 LIGHTING TRANSFORMER #1~#2照明变压器	2	AC400/230V 50Hz 200kVA	
14					
13	EGCP	EMERGENCY GENERATOR CONTROL PANEL 应急发电机机旁控制箱	1		
12	EG	EMERGENCY GENERATOR 应急发电机	1	AC400V 50Hz 250kW	
11	1GH ~ 4GH	NO.1~NO.4 DIESEL GENERATOR JACKET WATER HEATER #1~#4主发电机缸套水加热器	4	AC230V 50Hz 3kW	
10	1GCP ~ 4GCP	NO.1~NO.4 DIESEL GENERATOR CONTROL PANEL #1~#4主发电机组机旁控制箱	4		
9	1DG ~ 4DG	NO.1~NO.4 DIESEL GENERATOR #1~#4主发电机组	4	AC400V 50Hz 830kW	
8					
7	SLP	SIGNAL LIGHTING CONTROL PANEL 信号灯控制板	1		
6	NLP	NAVIGATION LIGHTING CONTROL PANEL 航行灯控制板	1		
5	CHP	GENERAL CHARGE & DISCHARGE PANEL 通用充放电板	1	AC400V 50Hz 3ø	
4	5GSP	NO.5 GROUP START PANEL #5号组合起动柜	1	AC400V 50Hz	
3	1GSP ~ 4GSP	NO.1~NO.4 GROUP START PANEL #1~#4组合起动屏	4	AC400V 50Hz	
2	ESB	EMERGENCY SWITCHBOARD 应急配电板	1		
1	MSB	AC400V MAIN SWITCHBOARD AC400V主配电板	1		

NO. 序号	MARK 代 号	NAME 名 称	QTY. 数量	TYPE AND SPECIFICATION 型 号 与 规 格	REMARK 备 注
52					
51	SR / PC	AUX. DECK CRANE SLIP RING 甲板辅吊集电环	1	AC380V 50Hz S6 200kW	
50					
49	DB / AJU	JACKING UP AC380V DB (AFT) 升降系统AC380V分电箱(艉部)	1	AC380V 50Hz	IP44
48	DB / FJU	JACKING UP AC380V DB (FORWARD) 升降系统AC380V分电箱(艏部)	1	AC380V 50Hz	IP44
47	1PT / JU ~ 4PT / JU	JACKING UP PHASING TRANSFORMER(F&A) #1~#4升降系统移相变压器	4	AC380V 50Hz 360kVA	
46					
45	ST / 323M	STERN POSITION WINCH CONTROL PUMP STARTER 艉定位绞车控制泵起动器	1	AC380V 50Hz 5.5kW	
44	ST / 322M	STERN POSITION WINCH NO.2 MAIN PUMP STARTER 艉定位绞车#2主泵起动器	1	AC380V 50Hz 45kW	
43	ST / 321M	STERN POSITION WINCH NO.1 MAIN PUMP STARTER 艉定位绞车#1主泵起动器	1	AC380V 50Hz 45kW	
42	ST / 313M	BOW POSITION WINCH CONTROL PUMP STARTER 艏定位绞车控制泵起动器	1	AC380V 50Hz 5.5kW	
41	ST / 312M	BOW POSITION WINCH NO.2 MAIN PUMP STARTER 艏定位绞车#2主泵起动器	1	AC380V 50Hz 45kW	
40	ST / 311M	BOW POSITION WINCH NO.1 MAIN PUMP STARTER 艏定位绞车#1主泵起动器	1	AC380V 50Hz 45kW	
39					
38	CB / AHU1	NO.1 AHU ELEC. CONTROL BOX #1空调器控制柜	1	AC380V 50Hz 63.5kW	
37	CB / AHU2	NO.2 AHU ELEC. CONTROL BOX #2空调器控制柜	1	AC380V 50Hz 79.5kW	
36	CB / AHU3	NO.3 AHU ELEC. CONTROL BOX #3空调器控制柜	1	AC380V 50Hz 64.5kW	
35	CB / AHU4	NO.4 AHU ELEC. CONTROL BOX #4空调器控制柜	1	AC380V 50Hz 90kW	
34	CWC / ACC	A.C. CHILLED MEDIA WATER PUMP CONTROL PANEL 空调冷媒水泵控制柜	1	AC380V 50Hz 3x18.5kW	
33	ST1 / ACC ~ ST3 / ACC	CENTRAL A.C. CHILLER START PANEL 中央空调压缩机起动柜	3	AC380V 50Hz 135.4kW	
32					
31	FMFC	FORWARD MCC ROOM FAN COIL UNIT 艏部MCC舱风机盘管	1	AC380V 50Hz 10.5kW	
30	BFC	BOW THRUSTER ROOM FAN COIL UNIT 艏侧推舱风机盘管	1	AC380V 50Hz 7.59kW	
29	AC / 1SR ~ AC / 2SR	NO.1~NO.2 SWITCHBOARD ROOM PACKAGE AIR CONDITION #1~#2配电间柜式空调	2	AC380V 50Hz 10kW	
28	AC / 1GAL ~ AC / 2GAL	NO.1~NO.2 GALLEY PACKAGE AIR CONDITION #1~#2厨房柜式空调	2	AC380V 50Hz 18kW	
27	1WFC ~ 2WFC	NO.1~NO.2 WHC FAN COIL #1~#2驾驶室风机盘管	2	AC380V 50Hz 10.5kW	

NO. 序号	MARK 代号	NAME 名称	QTY. 数量	TYPE AND SPECIFICATION 型号与规格	REMARK 备注
78					
77					
76	CB LRC1 ~ CB LRC2	NO.1~NO.2 LIFERAFT WINCH STARTER #1~#2救生筏吊控制箱	2	AC380V 50Hz 5.5kW	
75	ST JP	JETTING PUMP STARTER 冲桩泵起动器	1	AC380V 50Hz	
74	CB WSS	WATER SPRINKLER MOTOR CONTROL BOX 水喷淋马达控制箱	1	AC380V 50Hz	
73	1DB ER	ENGINE ROOM AC380V DB 机舱AC380V分电箱	1	AC380V 50Hz	
72	CB RPP	REFRIGERATOR PLANT CB 冷藏机组控制箱	1	AC380V 50Hz	
71	ST RBD	RESCUE BOAT DAVIT STARTER 救助艇吊艇架起动器	1	AC380V 50Hz	
70	CB RW	RECOVERING WINCH CB 收揽绞车控制箱	1	AC380V 50Hz	
69	ST OWS	BILGE WATER SEPARATOR STARTER 舱底水油水分离器起动器	1	AC380V 50Hz	
68	CB FOP	FUEL OIL PURIFIER CONTROL BOX 燃油分油机控制箱	1	AC380V 50Hz	
67	CB EHC	ELE. HEATING WATER PRESSURE HYDROPHORE CONTROL BOX 电热水柜控制箱	1	AC380V 50Hz	
66	1DB MEP	MAIN DECK AC380V EXTERNAL POWER SUPPLY DB 主甲板AC380V外供分电箱	1	AC380V 50Hz	
65	DB GAL	GALLEY 380V POWER DB 厨房380V分电箱	1	AC380V 50Hz	
64	DB1 LAU ~ DB3 LAU	NO.1~NO.3 LAUNDRY DB #1~#3洗衣设备分电箱	3	AC380V 50Hz	
63	CB 1SP ~ CB 2SP	NO.1~NO.2 SUBMERSIBLE PUMP/WINCH CONTROL BOX #1~#2潜水泵/潜水泵绞车控制箱	2	AC380V 50Hz	
62	ST 1LBD ~ ST 2LBD	NO.1~NO.2 LIFE BOAT DAVIT STARTER #1~#2救生艇吊起动器	2	AC380V 50Hz	
61	CB 1SPC ~ CB 2SPC	NO.1~NO.2 SEWAGE WATER PROCESSER CB #1~#2污水处理装置控制箱	2	AC380V 50Hz	
60	CB 1FWM ~ CB 2FWM	NO.1~NO.2 F.W. MAKER CB #1~#2制淡装置控制箱	2	AC380V 50Hz	
59	CB 3AC	CLIENT USE AIR COMPRESSOR CB 服务空压机控制箱	1	AC380V 50Hz	
58	CB 1AC ~ CB 2AC	NO.1~NO.2 AIR COMPRESSOR CONTROL BOX #1~#2空压机控制箱	2	AC380V 50Hz	
57	CB1 SWHT ~ CB2 SWHT	NO.1~NO.2 S.W. HYDROPORE TANK SKID CB #1~#2海水压力柜橇块控制箱	2	AC380V 50Hz	
56	CB1 FWHT ~ CB2 FWHT	NO.1~NO.2 F.W. HYDROPORE TANK SKID CB #1~#2淡水压力柜橇块控制箱	2	AC380V 50Hz	
55					
54	ST 011M ~ ST 021M	NO.1~NO.2 M/E PRE-LUB PUMP STARTER #1~#2主机滑油预供泵起动器	2		SUPPLY BY M/E MAKER
53	ST 1RPSP ~ ST 2RPSP	NO.1~NO.2 RUDDER PROPELLER STEERING PUMP MOTOR START PANEL #1~#2舵桨回转泵电机起动柜	2	AC380V 50Hz 45kW	SUPPLY BY RUDDER PROPELLER MAKER

NO. 序号	MARK 代 号	NAME 名 称	QTY. 数量	TYPE AND SPECIFICATION 型 号 与 规 格	REMARK 备 注
104	PU / ME	MAIN ENGINE REMOTE CONTROL POWER UNIT 主机遥控系统电源装置	1	AC220V 50Hz	
103	CU / IJS	IJS CONTROL UNIT 联合操作手柄控制单元	1	AC220V 50Hz	
102	CB / WSA	WATER SPRINKLER ALARM CONTROL BOX 水喷淋报警控制箱	1	AC220V 50Hz	
101	AMS	ENGINE ROOM MONITOR AND ALARM SYSTEM 机舱监控报警系统	1	AC220V 50Hz	
100	ESD	EMERGENCY SHUTDOWN SYSTEM CONTROL BOX 应急关断系统控制箱	1	AC220V 50Hz	
99	MCU / PW	POSITIONING WINCH WHEELHOUSE CONTROL UNIT 定位绞车驾驶室控制单元	1	AC220V 50Hz	
98	2DB / MEP	MAIN DECK AC220V EXTERNAL POWER SUPPLY DB 主甲板AC220V外供分电箱	1	AC220V 50Hz	
97	2DB / ER	ENGINE ROOM AC220V DB 机舱AC220V分电箱	1	AC220V 50Hz	
96	2DB / FWD	NO.2 FORWARD AC220V POWER DB #2艏部AC220V分电箱	1	AC220V 50Hz	
95	1DB / FWD	NO.1 FORWARD AC220V POWER DB(DOMESTIC) #1艏部AC220V分电箱(日用设备)	1	AC220V 50Hz	
94	UPS / DP	DP SYSTEM UPS DP系统UPS	1	AC220V 50Hz	
93	UPS / ER	ENGINE ROOM UPS 机舱UPS	1	AC220V 50Hz	
92	CB / PA/GA	PA/GA CONREOL PANEL 广播/通用报警控制柜	1	AC220V 50Hz	
91	HLCB	HELICOPTER DECK LIGHT CONTROL BOX 直升机甲板照明控制箱	1	AC220V 50Hz	
90	IB / FD	FIRE DAMPER LOCAL INDICATION BOX 防火风闸就地指示盒	1	AC220V 50Hz	
89	GMC / GDS	GAS DETECTION CENTRAL UNIT 气体探测控制单元	1	AC220V 50Hz	
88	RB / CO2	CO2 RELEASE SYSTEM ALARM BOX 二氧化碳释放报警箱	1	AC220V 50Hz	
87	FMC / FA	FA MAIN CENTER UNIT 火灾报警控制单元	1	AC220V 50Hz	
86					
85	ST / 2ESF	NO.2 ENGINE ROOM SUPPLY FAN(REVERSIBLE) STARTER #2机舱送风机(可逆)起动器	1	AC380V 50Hz 18.5kW	
84	ST / EFF	EMGR. FIRE FIGHTING PUMP ROOM FAN STARTER 应急消防泵舱风机起动器	1	AC380V 50Hz 1.1kW	
83	ST / EGF	EMER. GEN. RM. FAN STARTER 应急发电机室送风机起动器	1	AC380V 50Hz 0.75kW	
82					
81					
80					
79	ST / 1BTH ~ ST / 2BTH	NO.1~NO.2 BOW THRUSTER STARTER #1~#2艏侧推起动器	2	AC380V 50Hz 600kW	

NO. 序号	MARK 代 号	NAME 名 称	QTY. 数量	TYPE AND SPECIFICATION 型 号 与 规 格	REMARK 备 注
130					
129					
128	***PS	PRESSURE SWITCH 压力开关	2		
127	***TCB	ANTI-DRY GRINDING TEMP. CONTROL BOX 防干磨温控箱	2		
126	***SSD	SELF-PRIMING DEVICE 自吸装置	7		
125	***PB4	REMOTE CONTROL BOX 遥控按钮盒	5		IP44
124	***PB2	REMOTE CONTROL PANEL 遥控按钮板	2		WHC-F
123	***PB1	LOCAL START/STOP BOX 就地按钮盒	19		IP44
122					
121	RC	RADIO CONSOLE 无线电台	1	AC220V 50Hz	
120	CAB	INTER COMMUNICATION EQUIPMET DB 内部通信设备分电箱	1	AC220V 50Hz	PD5-12/2P
119	3NAB	NO.3 NAVIGATION EQUIPMENT DB #3助航设备交流分电箱	1	AC220V 50Hz	WHC-A
118	1NAB ~ 2NAB	NO.1~NO.2 NAVIGATION EQUIPMENT DB #1~#2助航设备交流分电箱	1	AC220V 50Hz	WHC-F
117	EAB	ECC AC DB 集控台交流分电箱	1	AC220V 50Hz	ECC
116					
115	4EL	NO.4 EMERGENCY LIGHTING DISTRIBUTION BOX #4号应急照明分电箱	1	16AX12 IP22	
114	3EL	NO.3 EMERGENCY LIGHTING DISTRIBUTION BOX #3号应急照明分电箱	1	16AX16 IP22	
113	2EL	NO.2 EMERGENCY LIGHTING DISTRIBUTION BOX #2号应急照明分电箱	1	16AX16 IP22	
112	1EL	NO.1 EMERGENCY LIGHTING DISTRIBUTION BOX #1号应急照明分电箱	1	16AX16 IP22	
111					
110	6L	NO.6 NORMAL LIGHTING DISTRIBUTION BOX #6号正常照明分电箱	1	16AX18 IP22	
109	5L	NO.5 NORMAL LIGHTING DISTRIBUTION BOX #5号正常照明分电箱	1	16AX18 IP22	
108	4L	NO.4 NORMAL LIGHTING DISTRIBUTION BOX #4号正常照明分电箱	1	16AX16 IP22	
107	3L	NO.3 NORMAL LIGHTING DISTRIBUTION BOX #3号正常照明分电箱	1	16AX20 IP22	
106	2L	NO.2 NORMAL LIGHTING DISTRIBUTION BOX #2号正常照明分电箱	1	16AX20 IP22	
105	1L	NO.1 NORMAL LIGHTING DISTRIBUTION BOX #1号正常照明分电箱	1	16AX20 IP22	

NO. 序号	MARK 代 号	NAME 名 称	QTY. 数量	TYPE AND SPECIFICATION 型 号 与 规 格	REMARK 备 注
156					
155	213M 7.5	GALLEY A.C. S.W. COOLING PUMP 厨房空调海水冷却泵	1	AC380V 50Hz 7.5kW	
154	172M 45	WATER CURTAIN PUMP 水幕泵	1	AC380V 50Hz 45kW	
153	186M 2	NO.2 HOT WATER CIRCULAR PUMP #2热水循环泵	1	AC380V 50Hz 2kW	
152	185M 2	NO.1 HOT WATER CIRCULAR PUMP #1热水循环泵	1	AC380V 50Hz 2kW	
151	113M 2.2	DAILY BILGE PUMP 日用舱底泵	1	AC380V 50Hz 2.2kW	
150	121M 1.5	DIRTY OIL DISCHARGE PUMP 污油排放泵	1	AC380V 50Hz 1.5kW	
149	161M 5.5	F.W. TRANSFER PUMP 淡水输送泵	1	AC380V 50Hz 5.5kW	
148	051M 1.5	LUB OIL TRANSFER PUMP 滑油输送泵	1	AC380V 50Hz 1.5kW	
147	131M 37	BALLAST GENERAL SERVICE PUMP 压载总用泵	1	AC380V 50Hz 37kW	
146	232M 5.5	NO.2 REFRI. PLANT S.W. COOLING PUMP #2冷藏装置海水冷却泵	1	AC380V 50Hz 5.5kW	
145	231M 5.5	NO.1 REFRI. PLANT S.W. COOLING PUMP #1冷藏装置海水冷却泵	1	AC380V 50Hz 5.5kW	
144	072M 7.5	NO.2 PROPULSION S.W. COOLING PUMP #2主推进海水冷却泵	1	AC380V 50Hz 7.5kW	
143	071M 7.5	NO.1 PROPULSION S.W. COOLING PUMP #1主推进海水冷却泵	1	AC380V 50Hz 7.5kW	
142	212M 37	NO.2 A.C. S.W. COOLING PUMP #2空调海水冷却泵	1	AC380V 50Hz 37kW	
141	211M 37	NO.1 A.C. S.W. COOLING PUMP(BALLAST PUMP) #1空调海水冷却泵(兼压载泵)	1	AC380V 50Hz 37kW	
140	062M 15	NO.2 D/G S.W. COOLING PUMP #2主发海水冷却泵	1	AC380V 50Hz 15kW	
139	061M 15	NO.1 D/G S.W. COOLING PUMP #1主发海水冷却泵	1	AC380V 50Hz 15kW	
138	112M 45	NO.2 FIRE & GENERAL SERVICE PUMP #2消防总用泵	1	AC380V 50Hz 45kW	
137	111M 45	NO.1 FIRE & GENERAL SERVICE PUMP #1消防总用泵	1	AC380V 50Hz 45kW	
136	042M 2.2	NO.2 FUEL OIL TRANSFER PUMP #2燃油输送泵	1	AC380V 50Hz 2.2kW	
135	041M 2.2	NO.1 FUEL OIL TRANSFER PUMP #1燃油输送泵	1	AC380V 50Hz 2.2kW	
134	105M 1.1	SWITCHBOARD ROOM SUPPLY FAN 配电间送风机	1	AC380V 50Hz 1.1kW	
133	104M 15	NO.2 ENGINE ROOM EXHAUST FAN #2机舱抽风机	1	AC380V 50Hz 15kW	
132	103M 15	NO.1 ENGINE ROOM EXHAUST FAN #1机舱抽风机	1	AC380V 50Hz 15kW	
131	101M 18.5	NO.1 ENGINE ROOM SUPPLY FAN #1机舱送风机	1	AC380V 50Hz 18.5kW	

NO. 序号	MARK 代号	NAME 名称	QTY. 数量	TYPE AND SPECIFICATION 型号与规格	REMARK 备注
182					
181					
180					
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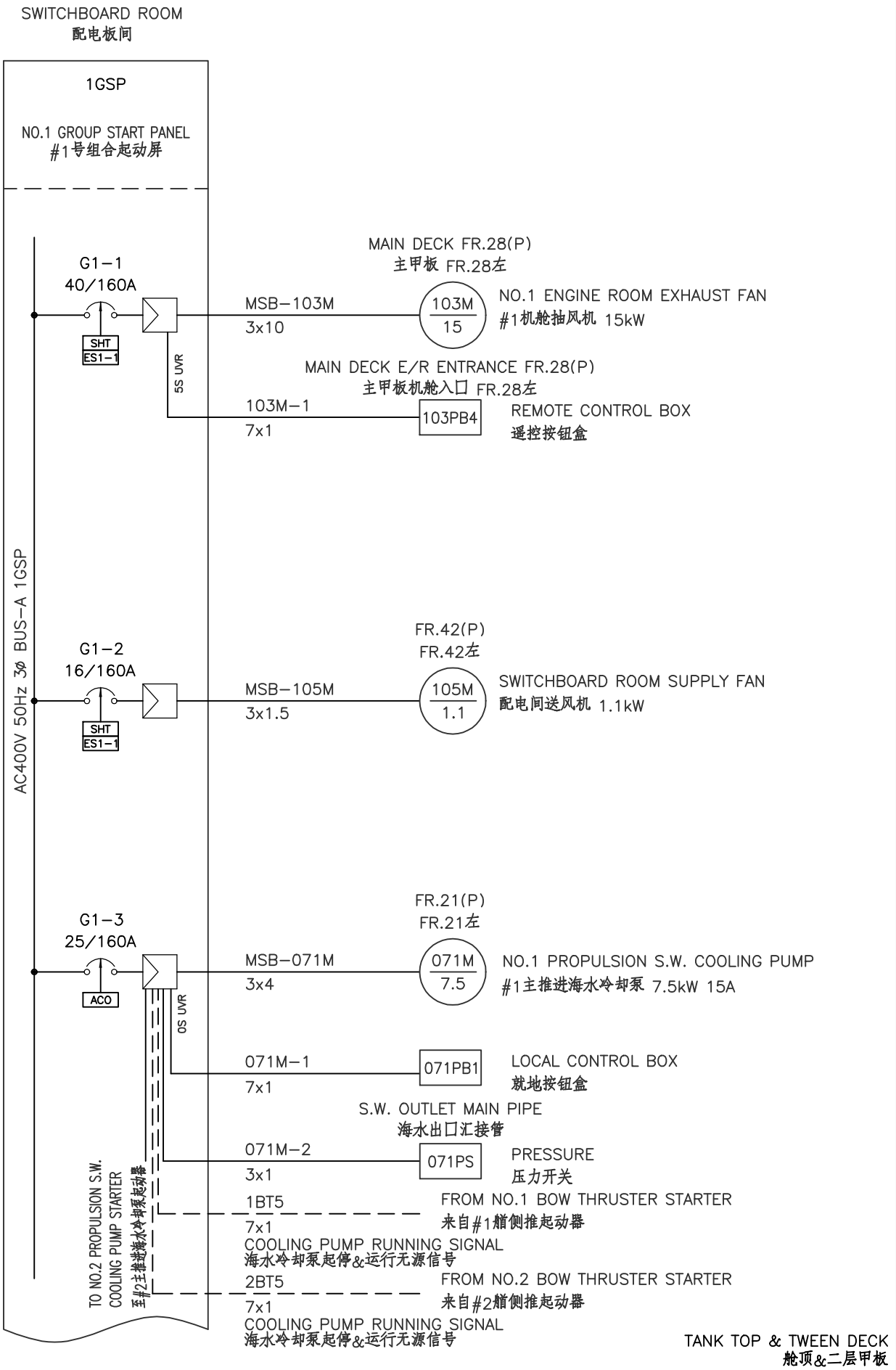
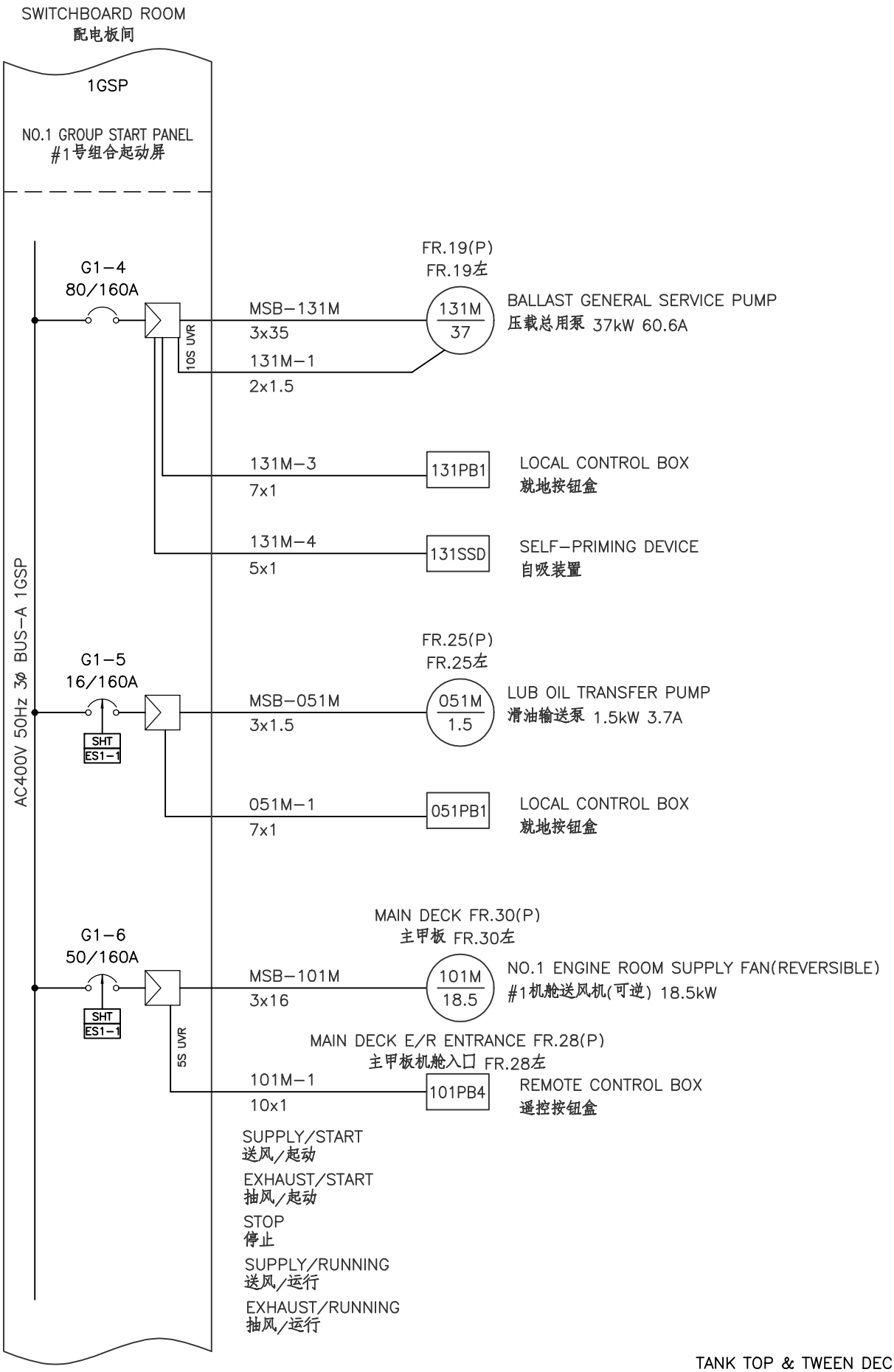
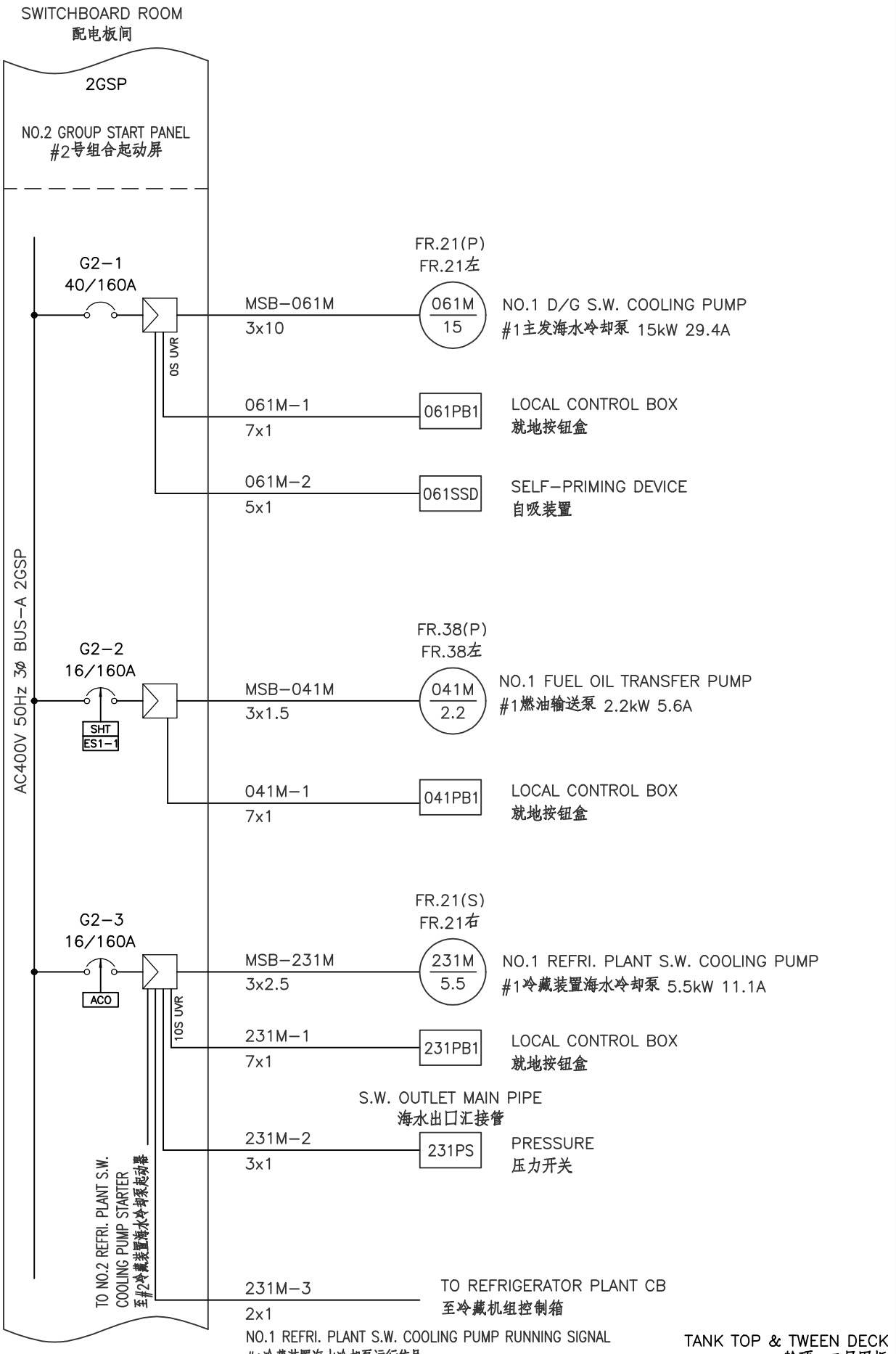
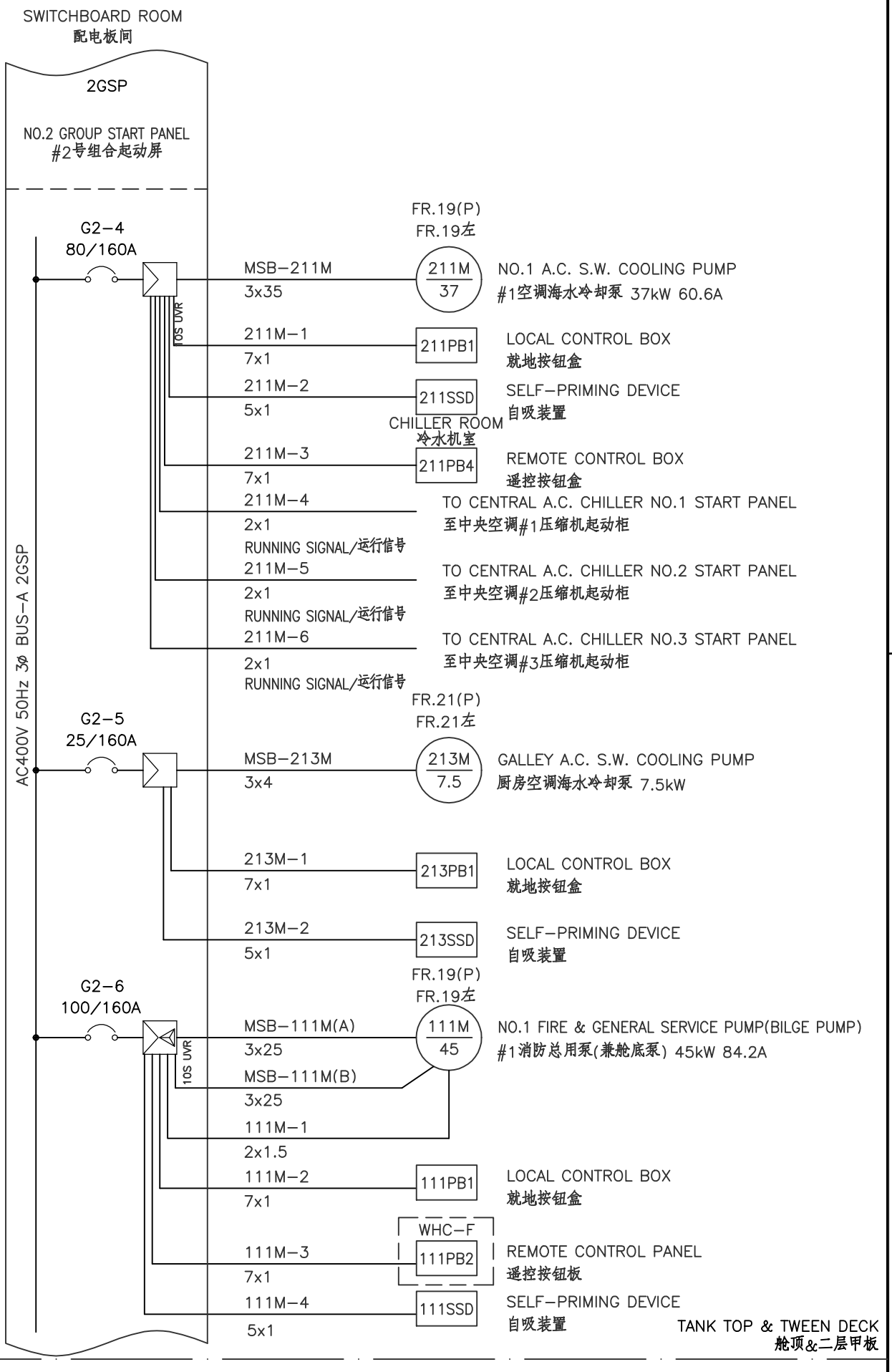
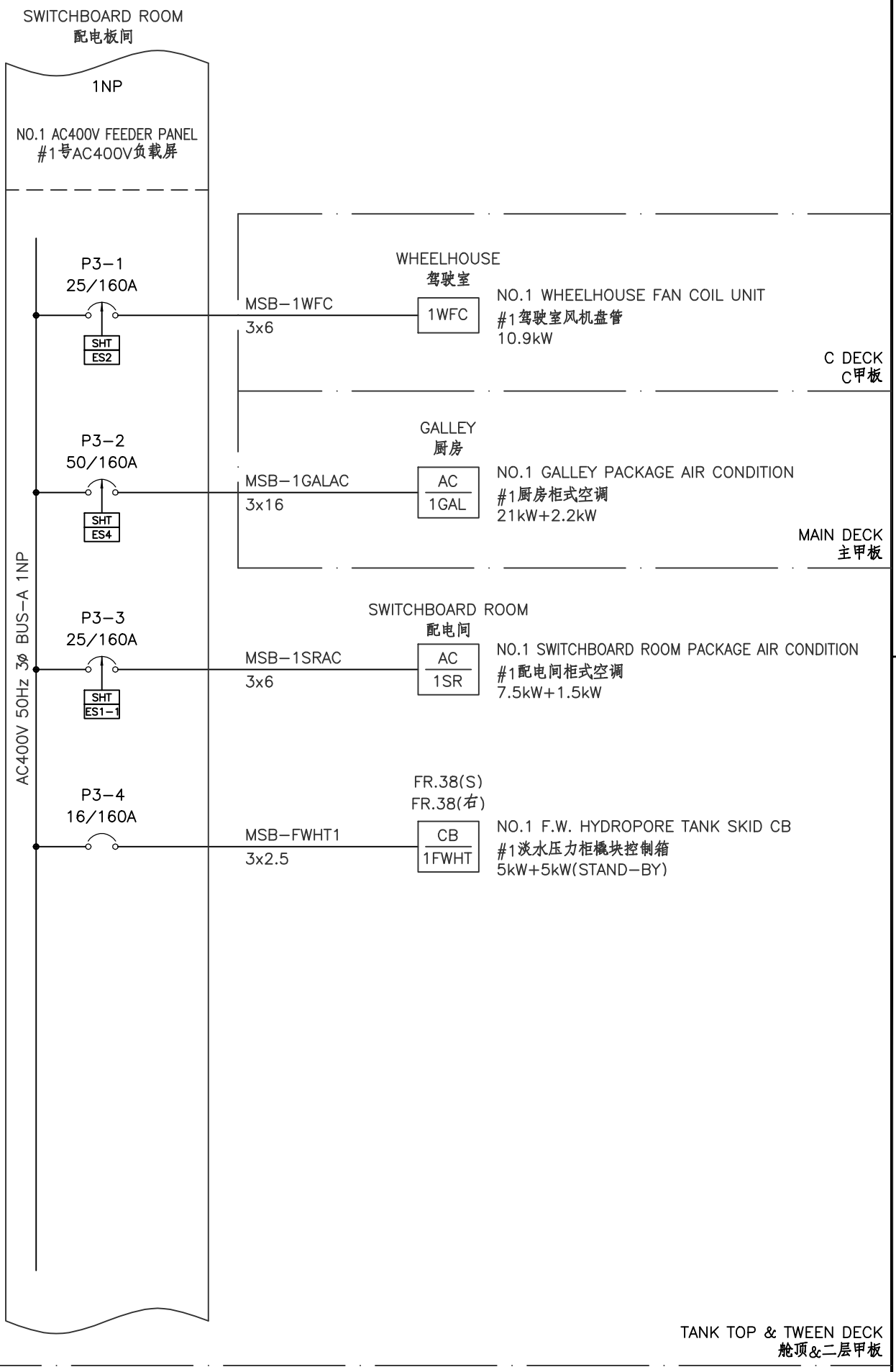
158					
157	ST 1CPS / ST 2CPS	NO.1~NO.2 CLUTCH PUMP STATION MOTOR STARTER #1~#2离合器泵站电机启动器	2	AC380V 50Hz	

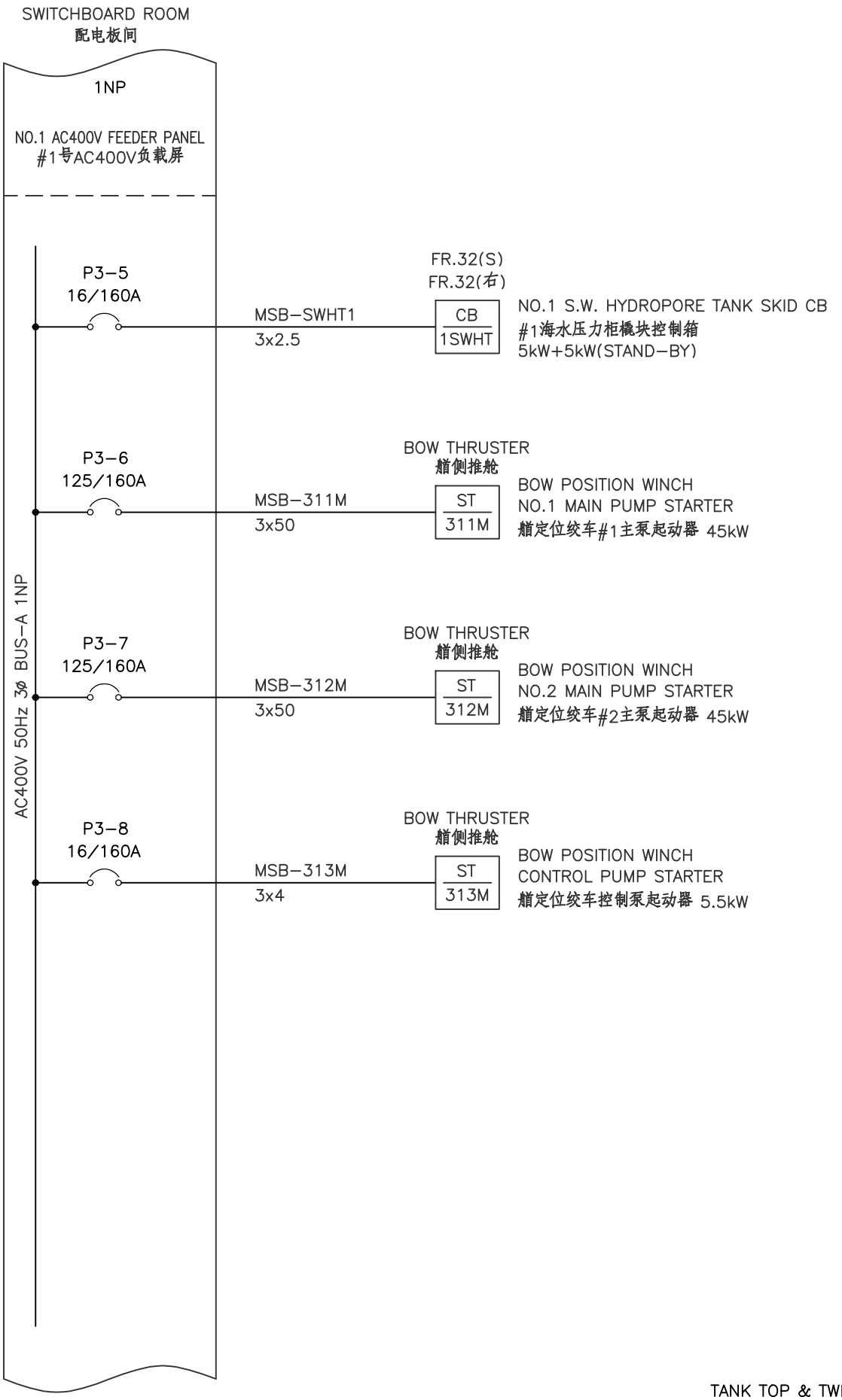


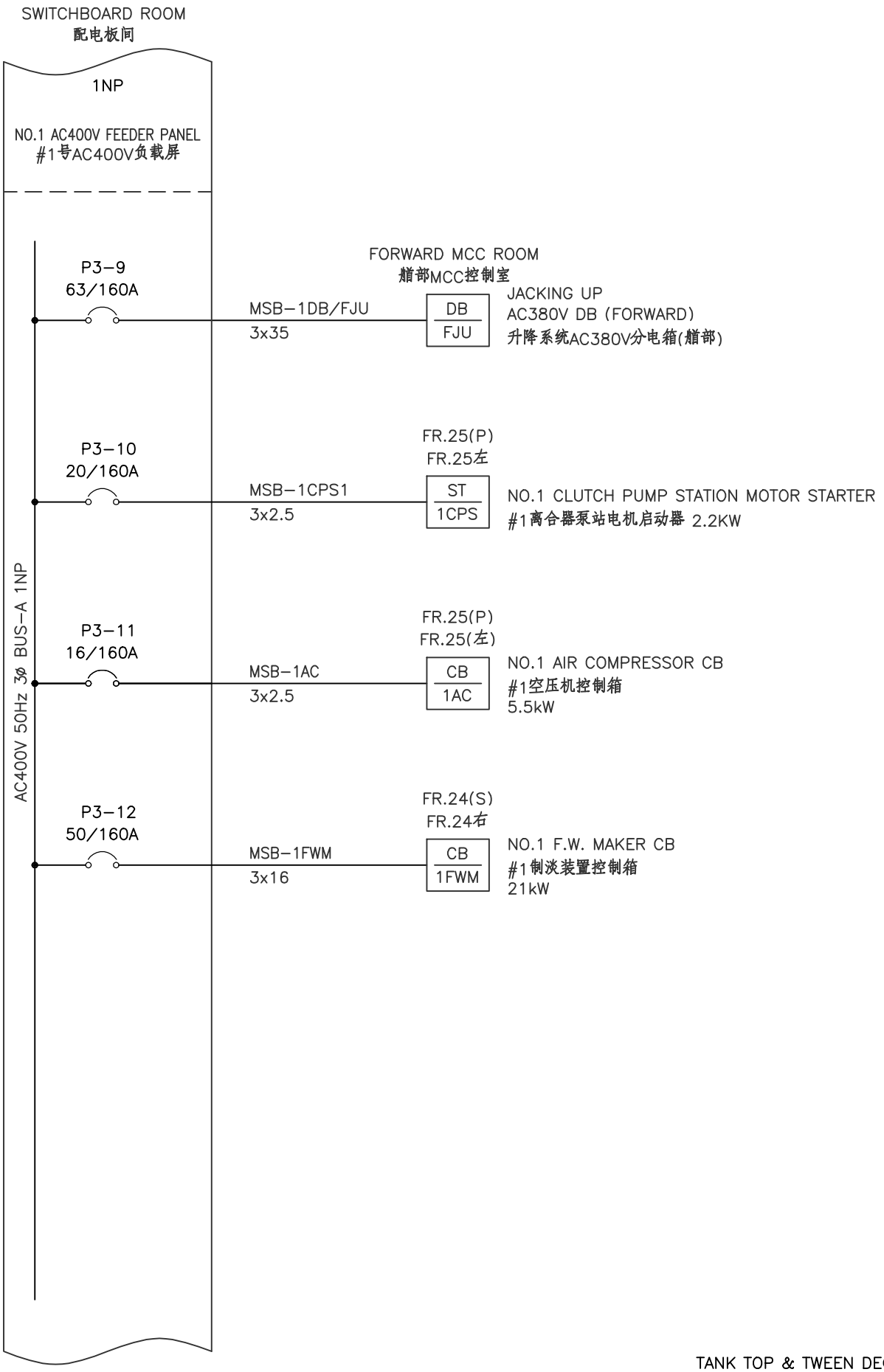


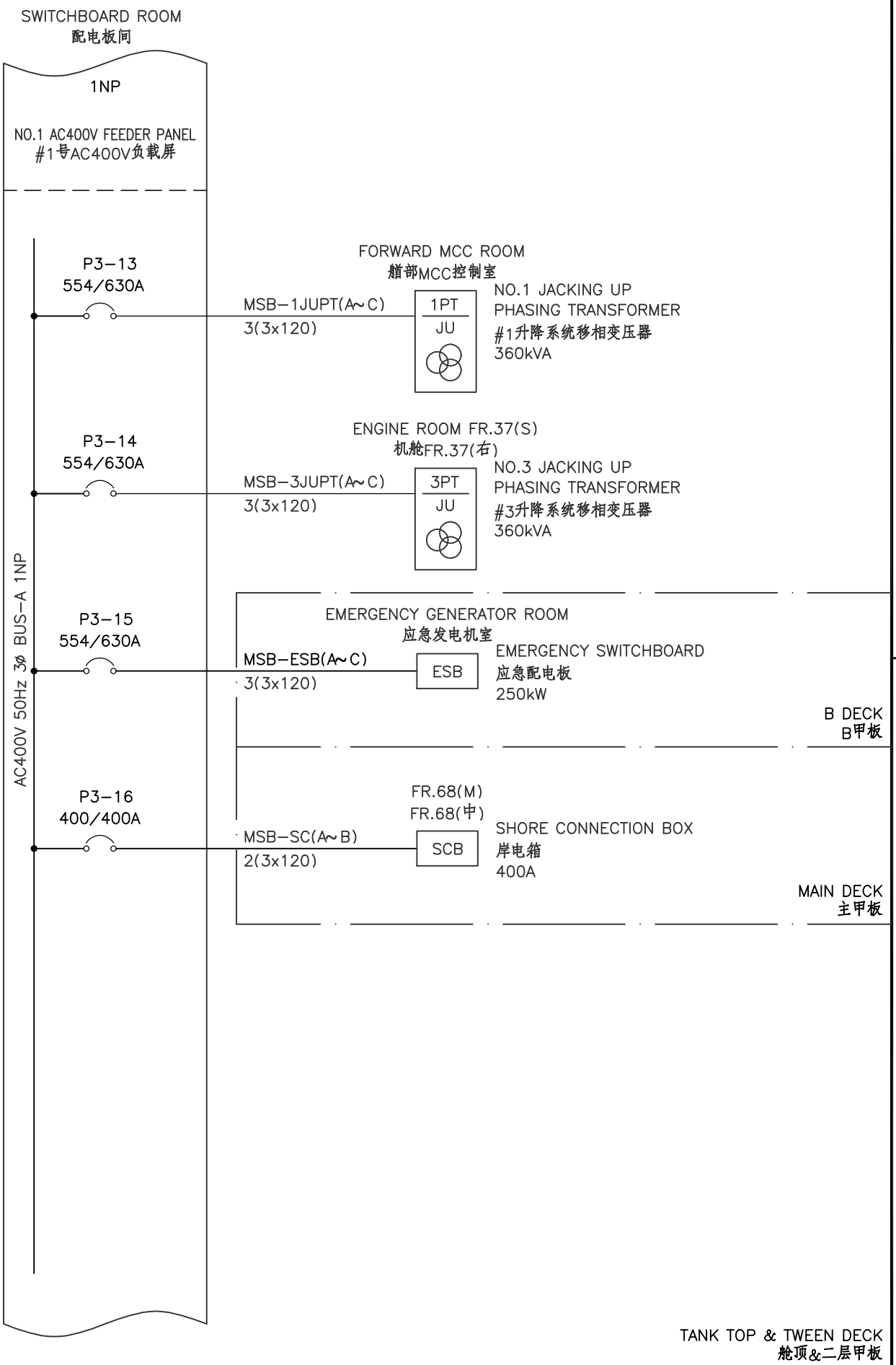


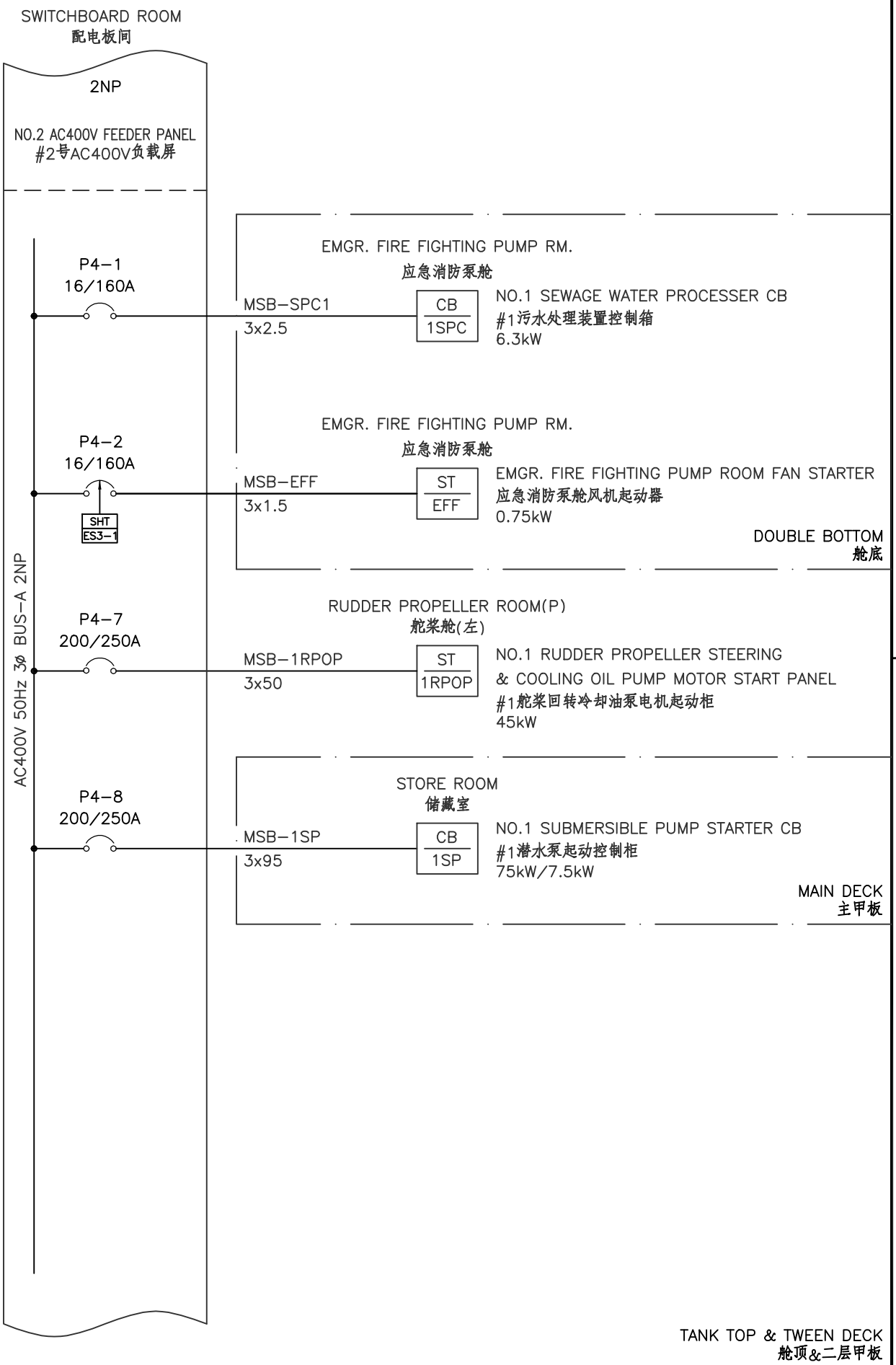


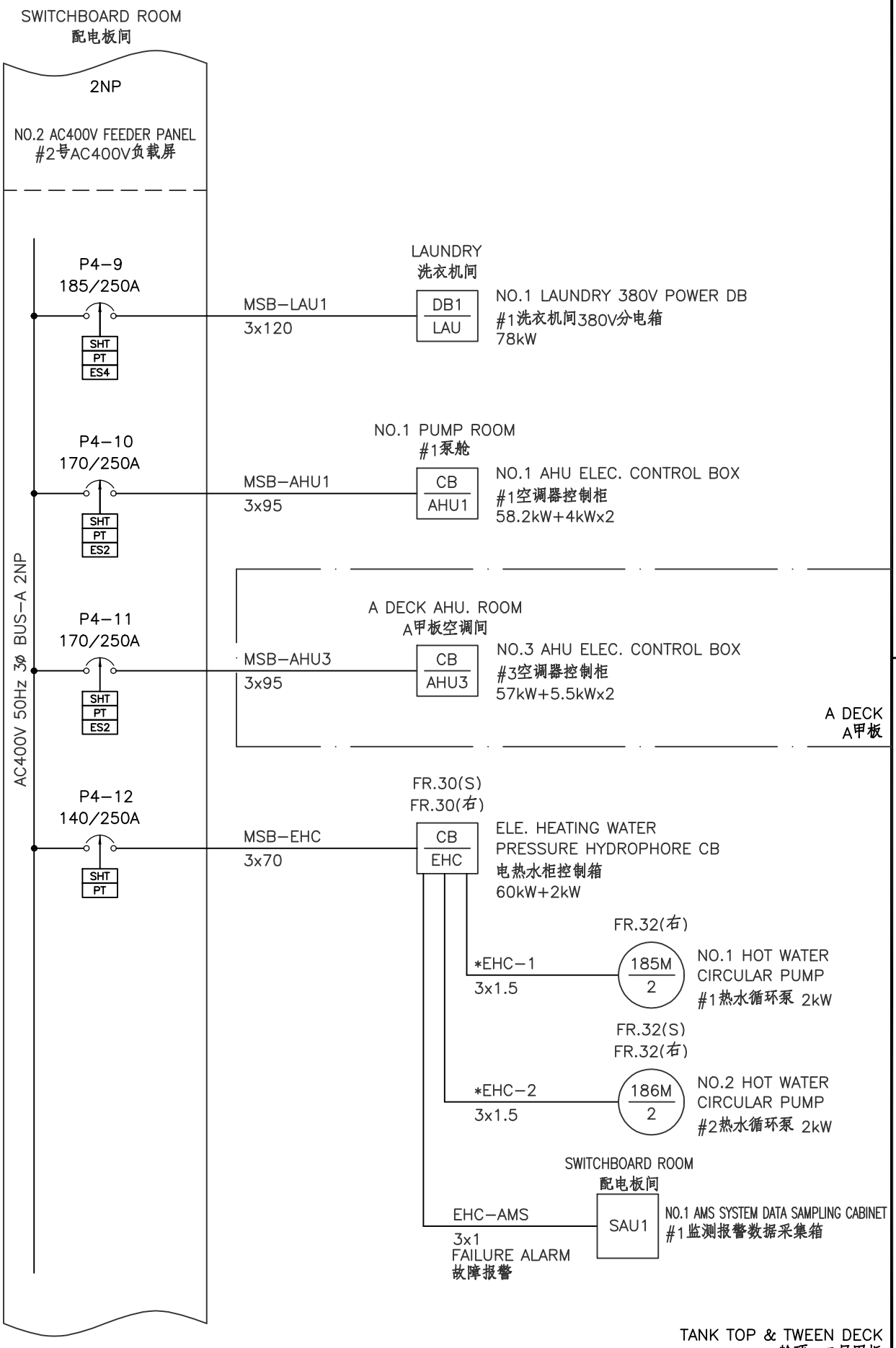


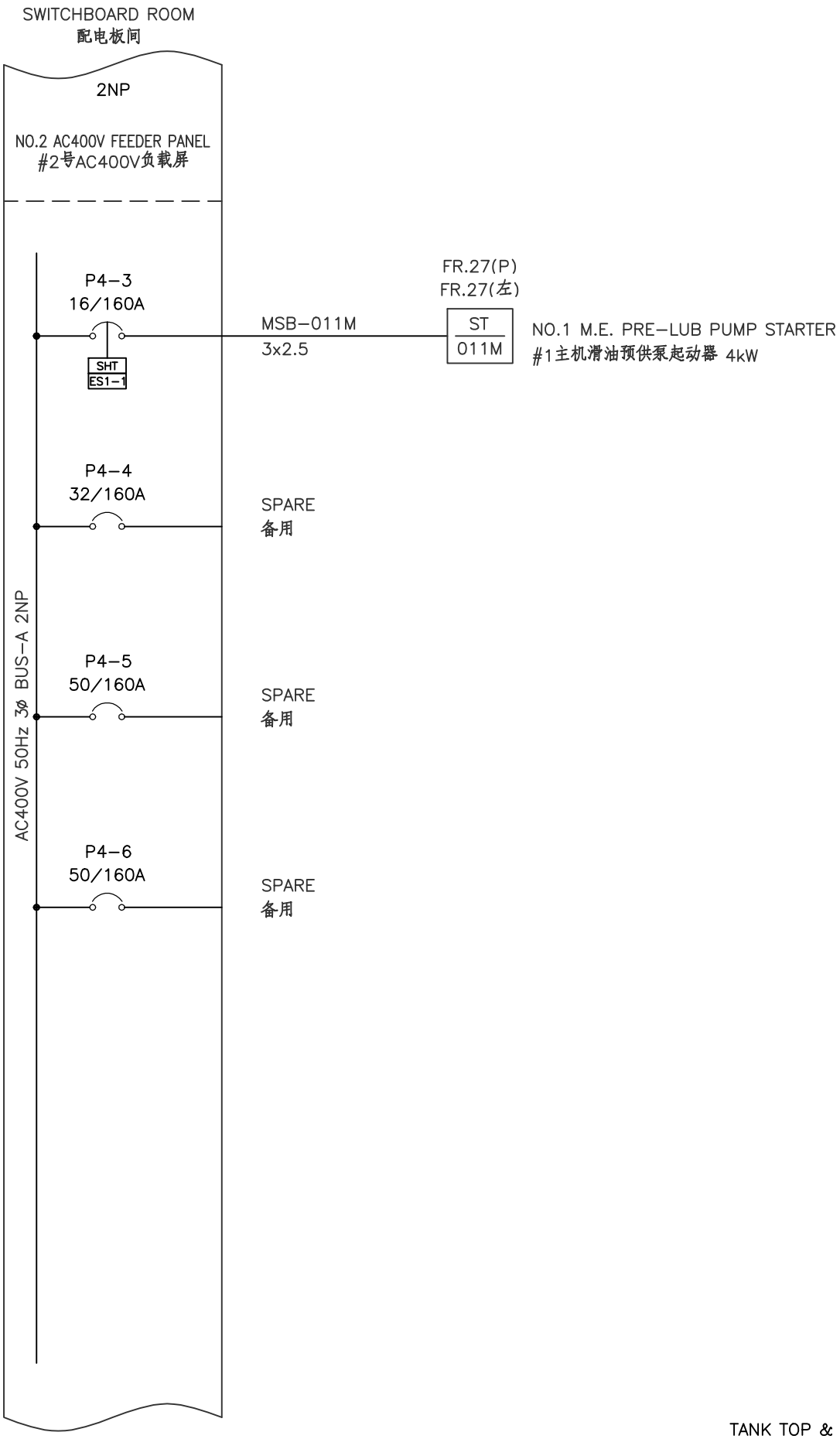


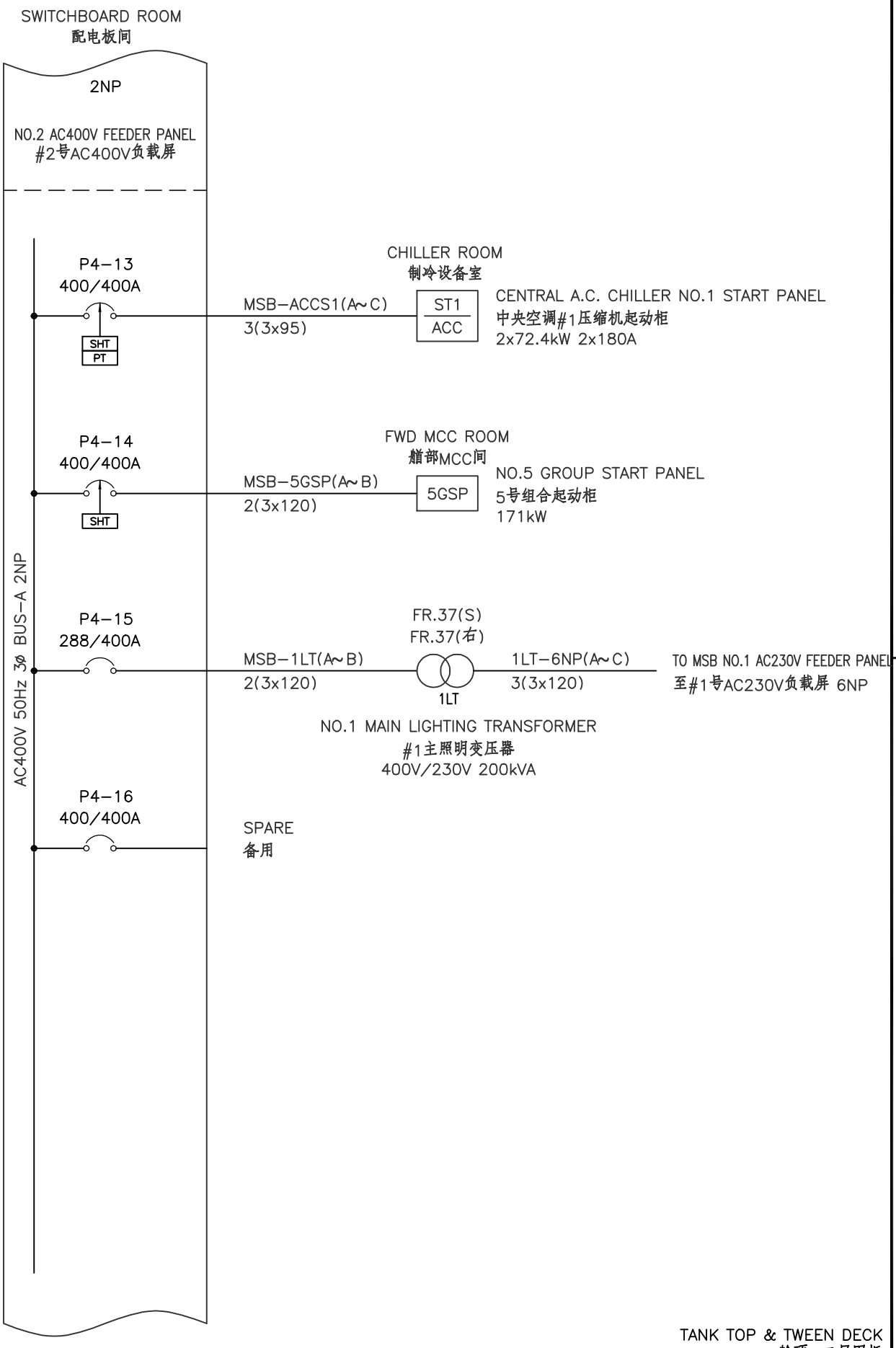


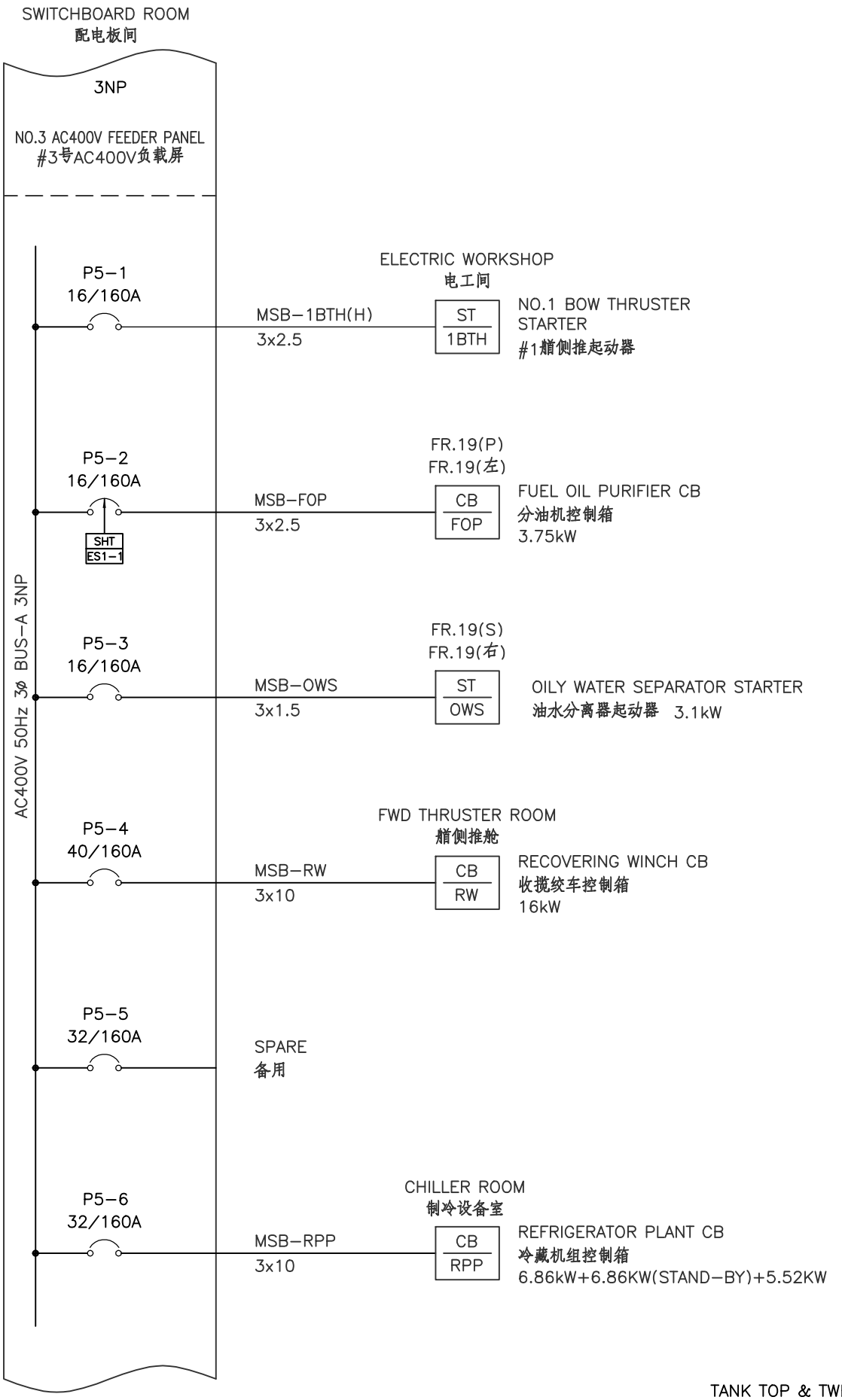


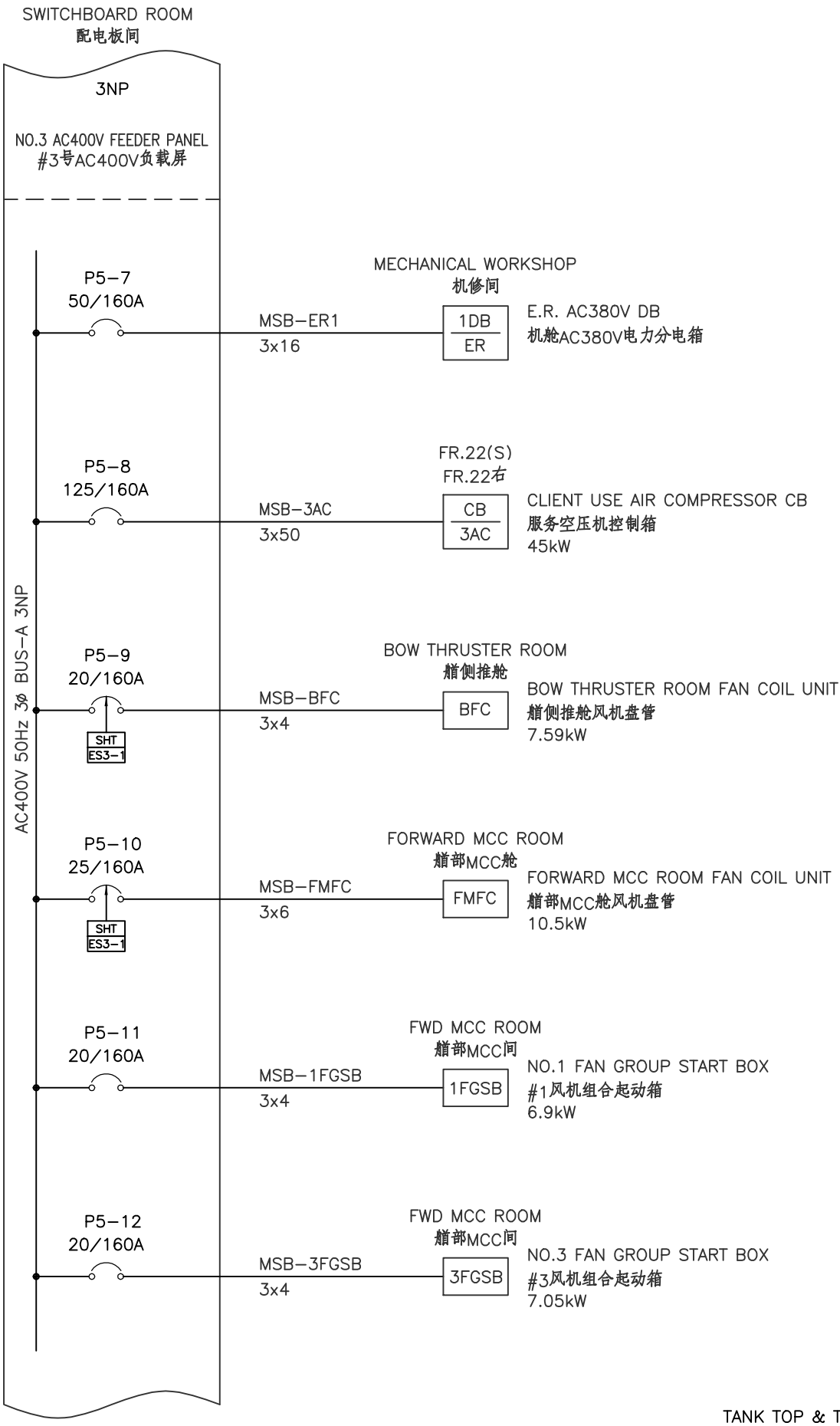


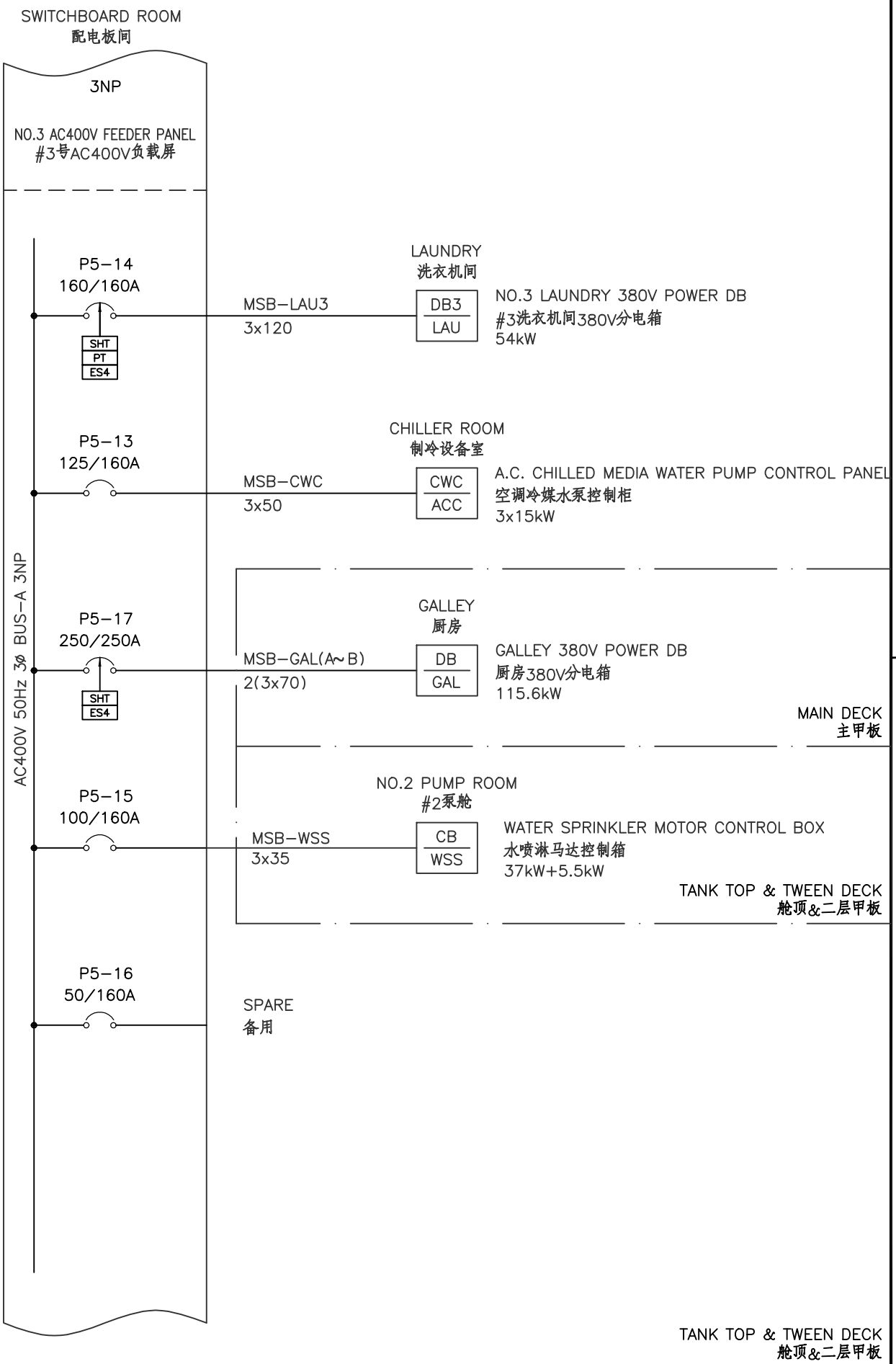


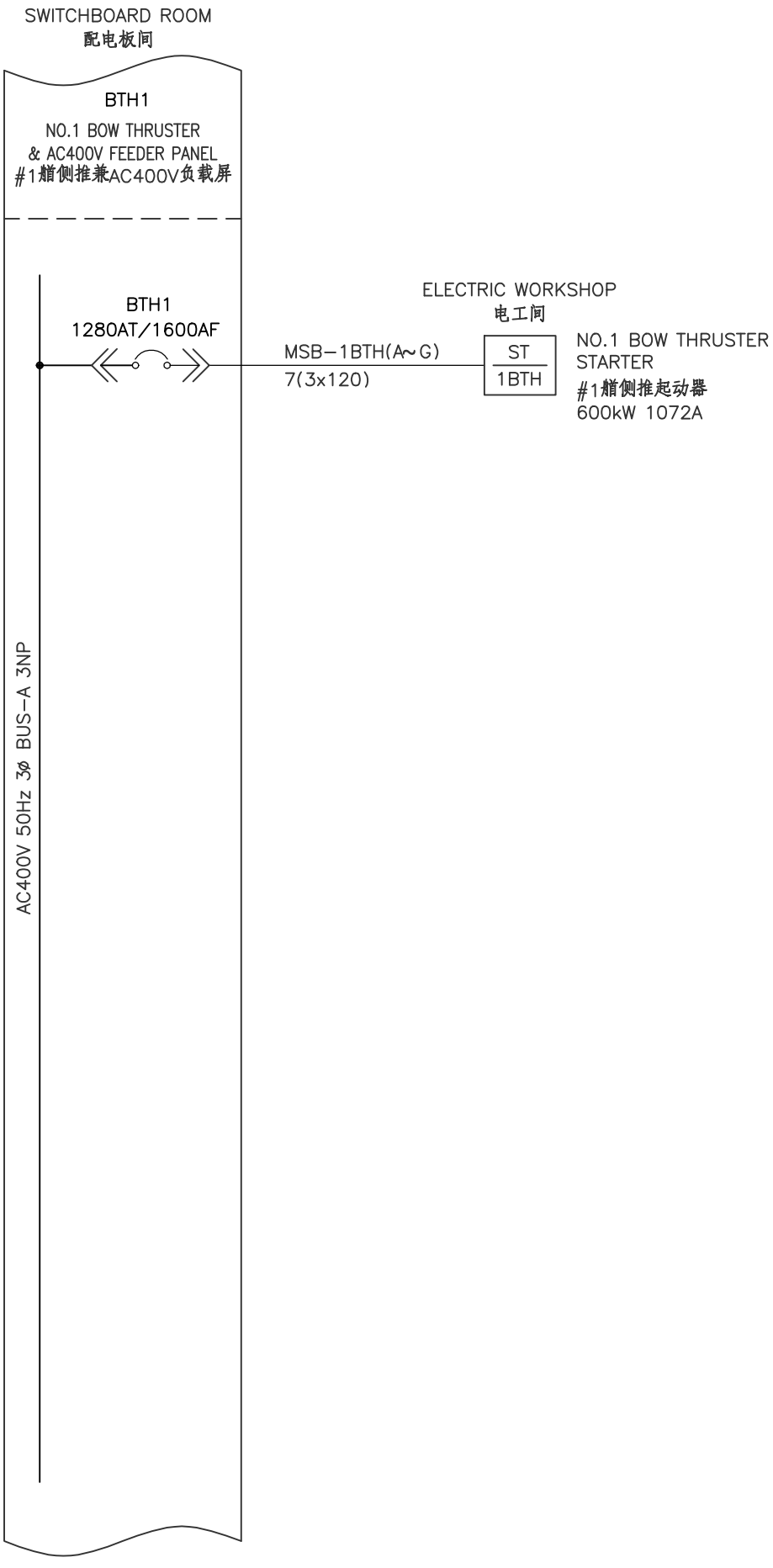


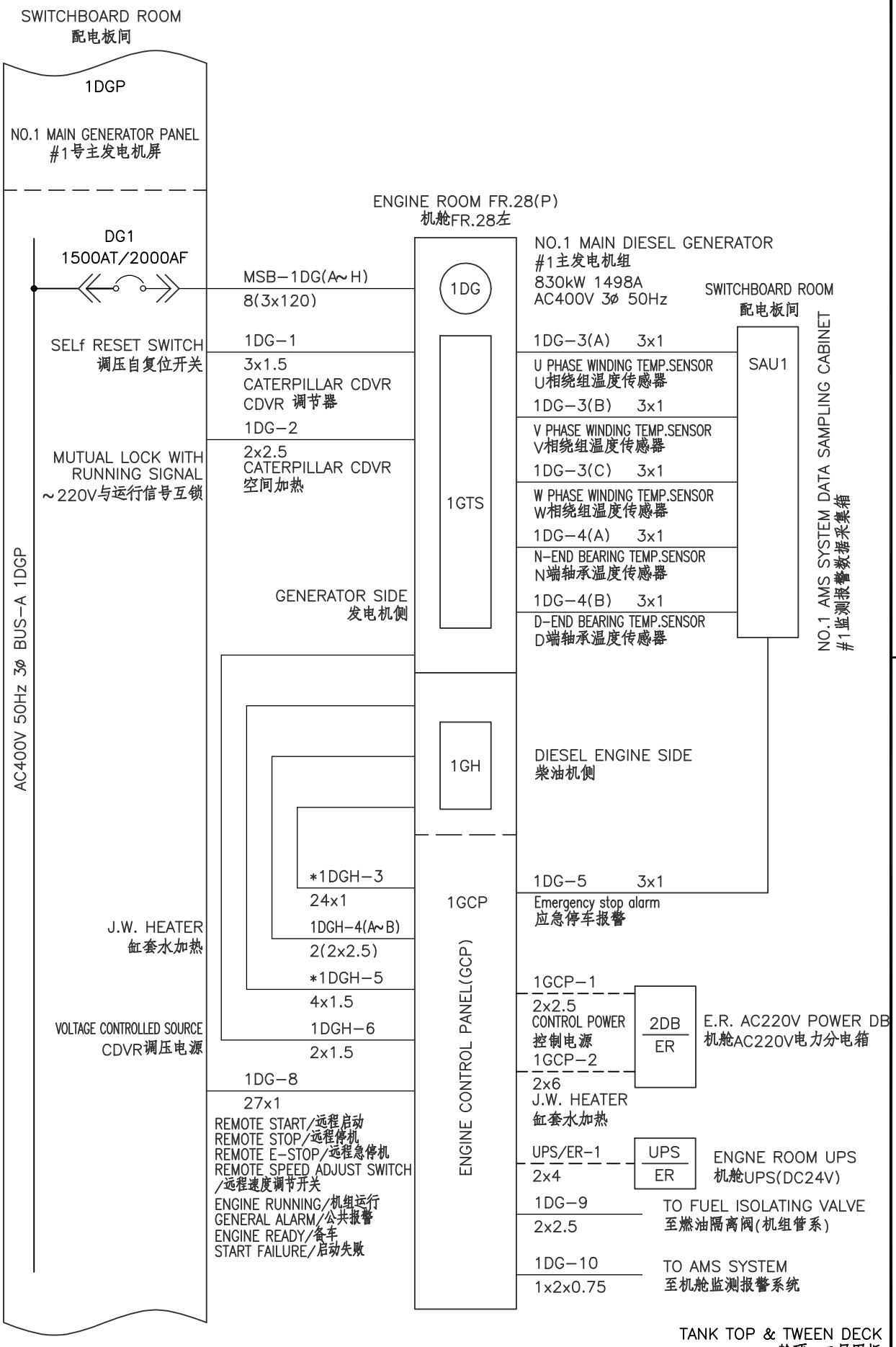


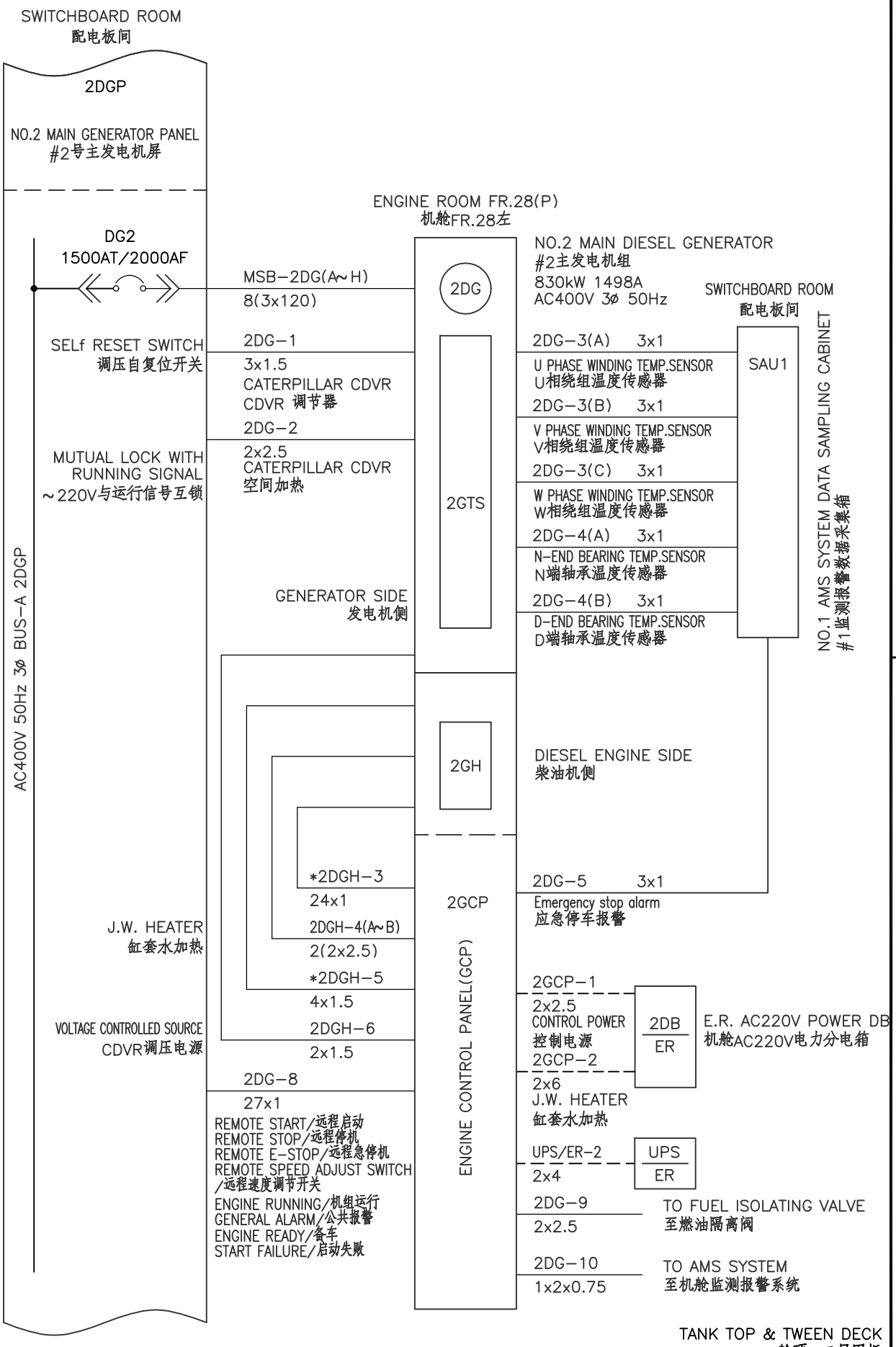












SWITCHBOARD ROOM
配电板间

SFP

SYNCHRONOUS & FEEDER PANEL
同步及负载屏

AC400V 50Hz 3φ BUS-A SFP

UPS/ER-7
2x4
FROM ENGINE ROOM UPS
来自机舱UPS系统

MSB-1JU
7x1
TO JACKING SYSTEM NO.1 LEG CONTROL UNIT
(HEAVY REQEST/RUNNING/MOTOR STAR ENABLE)
至升降系统#1桩腿控制单元(重载问询/运行/电机允许启动)

MSB-2JU
7x1
TO JACKING SYSTEM NO.2 LEG CONTROL UNIT
(HEAVY REQEST/RUNNING/MOTOR STAR ENABLE)
至升降系统#2桩腿控制单元(重载问询/运行/电机允许启动)

MSB-3JU
7x1
TO JACKING SYSTEM NO.3 LEG CONTROL UNIT
(HEAVY REQEST/RUNNING/MOTOR STAR ENABLE)
至升降系统#3桩腿控制单元(重载问询/运行/电机允许启动)

MSB-4JU
7x1
TO JACKING SYSTEM NO.4 LEG CONTROL UNIT
(HEAVY REQEST/RUNNING/MOTOR STAR ENABLE)
至升降系统#4桩腿控制单元(重载问询/运行/电机允许启动)

MSB-02-05
7x1
TO HYDRAULIC PUMP STATIONT
(HEAVY CONSUMER STAR REQUST)
至吊机液压泵站(重载问询)

MSB-1BTH(I)
7x1
TO NO.1 BOW THRUSTER STARTER
(HEAVY CONSUMER STAR REQUST)
至#1艏侧推起动器(重载问询)

MSB-2BTH(I)
7x1
TO NO.2 BOW THRUSTER STARTER
(HEAVY CONSUMER STAR REQUST)
至#2艏侧推起动器(重载问询)

MSB-DP-01
2x2x0.75
NO.1 M/G CONNECTED SIGNAL
#1发电机连接信号
NO.1 M/G POWER SIGNAL
#1发电机功率信号

MSB-DP-02
2x2x0.75
NO.2 M/G CONNECTED SIGNAL
#2发电机连接信号
NO.2 M/G POWER SIGNAL
#2发电机功率信号

MSB-DP-03
2x2x0.75
NO.3 M/G CONNECTED SIGNAL
#3发电机连接信号
NO.3 M/G POWER SIGNAL
#3发电机功率信号

MSB-DP-04
2x2x0.75
NO.4 M/G CONNECTED SIGNAL
#4发电机连接信号
NO.4 M/G POWER SIGNAL
#4发电机功率信号

MSB-DP-05
2x2x0.75
BOW THRUSTER CONNECTED SIGNAL
#1艏侧推连接信号

MSB-DP-06
2x2x0.75
BUS-TIE CONNECTED SIGNAL
母排开关连接信号

MSB-DP-07
2x2x0.75
BOW THRUSTER CONNECTED SIGNAL
#2艏侧推连接信号

TO DP CONTROL UNIT
至DP 控制单元

TANK TOP & TWEEN DECK
舱顶&二层甲板

SWITCHBOARD ROOM
配电板间

SFP

SYNCHRONOUS & FEEDER PANEL
同步及负载屏

AC400V 50Hz 3φ BUS-A SFP

MSB-AMS1
1x2x0.75 RS485

TO ALARM & MONITORING SYSTEM
至机舱监控报警箱系统

MSB PREFEERENT TRIP
主配电板优先脱扣

MAIN BUSBAR VOLTAGE HIGH
母排电压高

MAIN BUSBAR VOLTAGE LOW
母排电压低

MAIN BUSBAR FREQUENCY HIGH
母排频率高

MAIN BUSBAR FREQUENCY LOW
母排频率低

NO.1 DG ACB ABNORMAL TRIP
#1发电机异常脱扣

NO.2 DG ACB ABNORMAL TRIP
#2发电机异常脱扣

NO.3 DG ACB ABNORMAL TRIP
#3发电机异常脱扣

NO.4 DG ACB ABNORMAL TRIP
#4发电机异常脱扣

AUTO SYNCHRO FAIL
自动同步失败

PROPULSION S.W. COOLING PUMP AUTO CHANGE-OVER
主推进海水冷却泵自动切换

REFRI. PLANT S.W. COOLING PUMP CHANGE-OVER
冷藏装置海水冷却泵自动切换

PMS IN MANUAL MODE
PMS手动模式

PMS IN SEMI-AUTO MODE
PMS半自动模式

PMS IN AUTO MODE
PMS自动模式

AC380V LOW INSULATION
AC380V绝缘低

AC220V LOW INSULATION
AC220V绝缘低

NO.1 DG OVER LOAD
#1发电机过载

NO.2 DG OVER LOAD
#2发电机过载

NO.3 DG OVER LOAD
#3发电机过载

NO.4 DG OVER LOAD
#4发电机过载

NO.1 DG REVERSE POWER
#1发电机逆功率

NO.2 DG REVERSE POWER
#2发电机逆功率

NO.3 DG REVERSE POWER
#3发电机逆功率

NO.4 DG REVERSE POWER
#4发电机逆功率

NO.1 DG ACB CLOSE
#1发电机断路器闭合

NO.1 DG ACB OPEN
#1发电机断路器断开

NO.2 DG ACB CLOSE
#2发电机断路器闭合

NO.2 DG ACB OPEN
#2发电机断路器断开

NO.3 DG ACB CLOSE
#3发电机断路器闭合

NO.3 DG ACB OPEN
#3发电机断路器断开

NO.4 DG ACB CLOSE
#4发电机断路器闭合

NO.4 DG ACB OPEN
#4发电机断路器断开

BUS-TIE CB(BT) CLOSE
母联开关闭合

BUS-TIE CB(BT) OPEN
母联开关断开

SHORE POWER CB CLOSE
岸电开关闭合

SHORE POWER CB OPEN
岸电开关断开

MSB TO ESB BUS-TIE CB CLOSE(CB IN MSB)
主配电板至应急配电板连锁开关闭合

MSB TO ESB BUS-TIE CB OPEN(CB IN MSB)
主配电板至应急配电板连锁开关断开

NO.1 DG ACB CLOSE FAIL
#1发电机断路器闭合失败

NO.1 DG ACB OPEN FAIL
#1发电机断路器断开失败

NO.2 DG ACB CLOSE FAIL
#2发电机断路器闭合失败

NO.2 DG ACB OPEN FAIL
#2发电机断路器断开失败

NO.3 DG ACB CLOSE FAIL
#3发电机断路器闭合失败

NO.3 DG ACB OPEN FAIL
#3发电机断路器断开失败

NO.4 DG ACB CLOSE FAIL
#4发电机断路器闭合失败

NO.4 DG ACB OPEN FAIL
#4发电机断路器断开失败

NO.1 DG START FAIL
#1发电机起动失败

NO.2 DG START FAIL
#2发电机起动失败

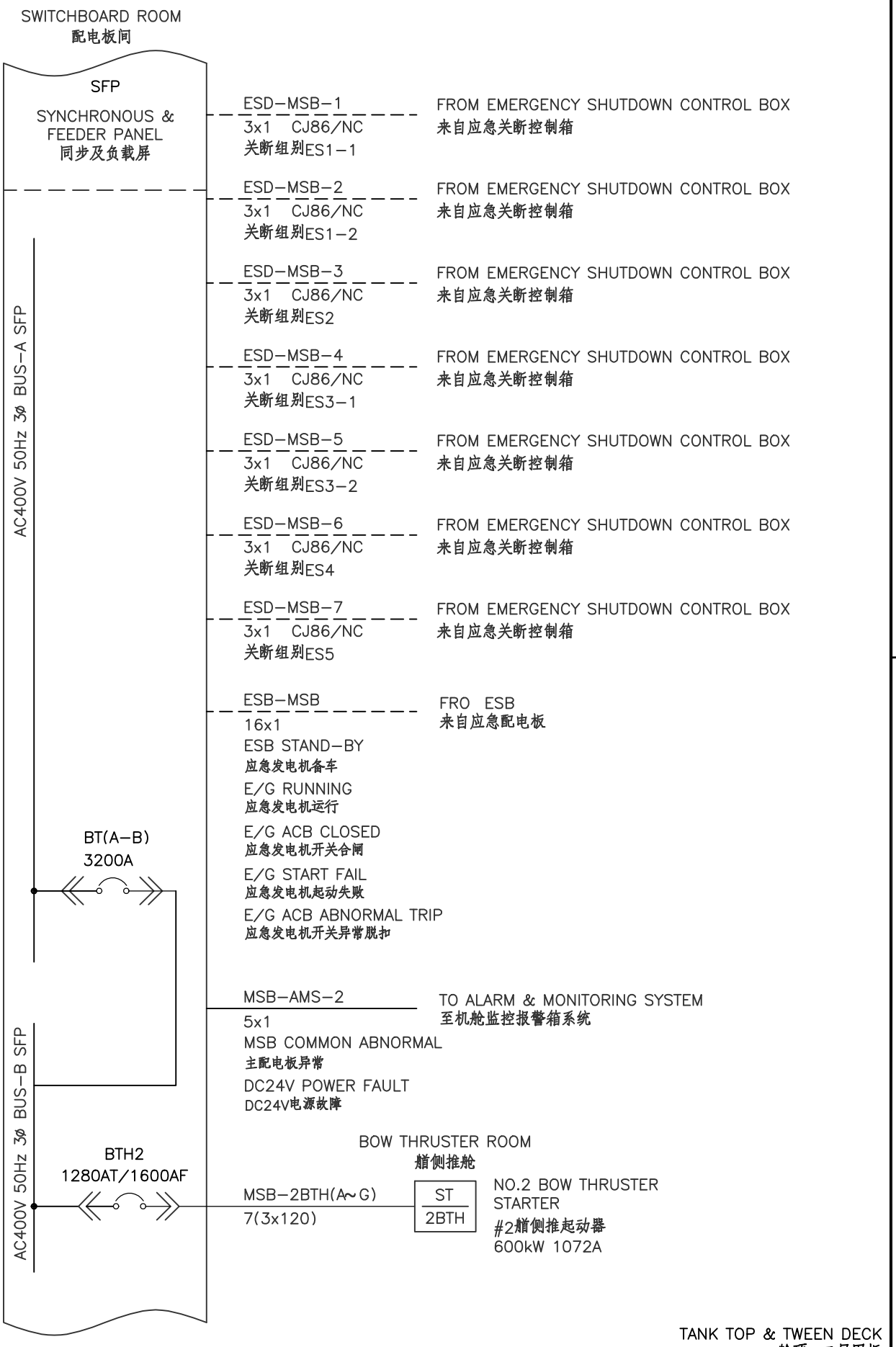
NO.3 DG START FAIL
#3发电机起动失败

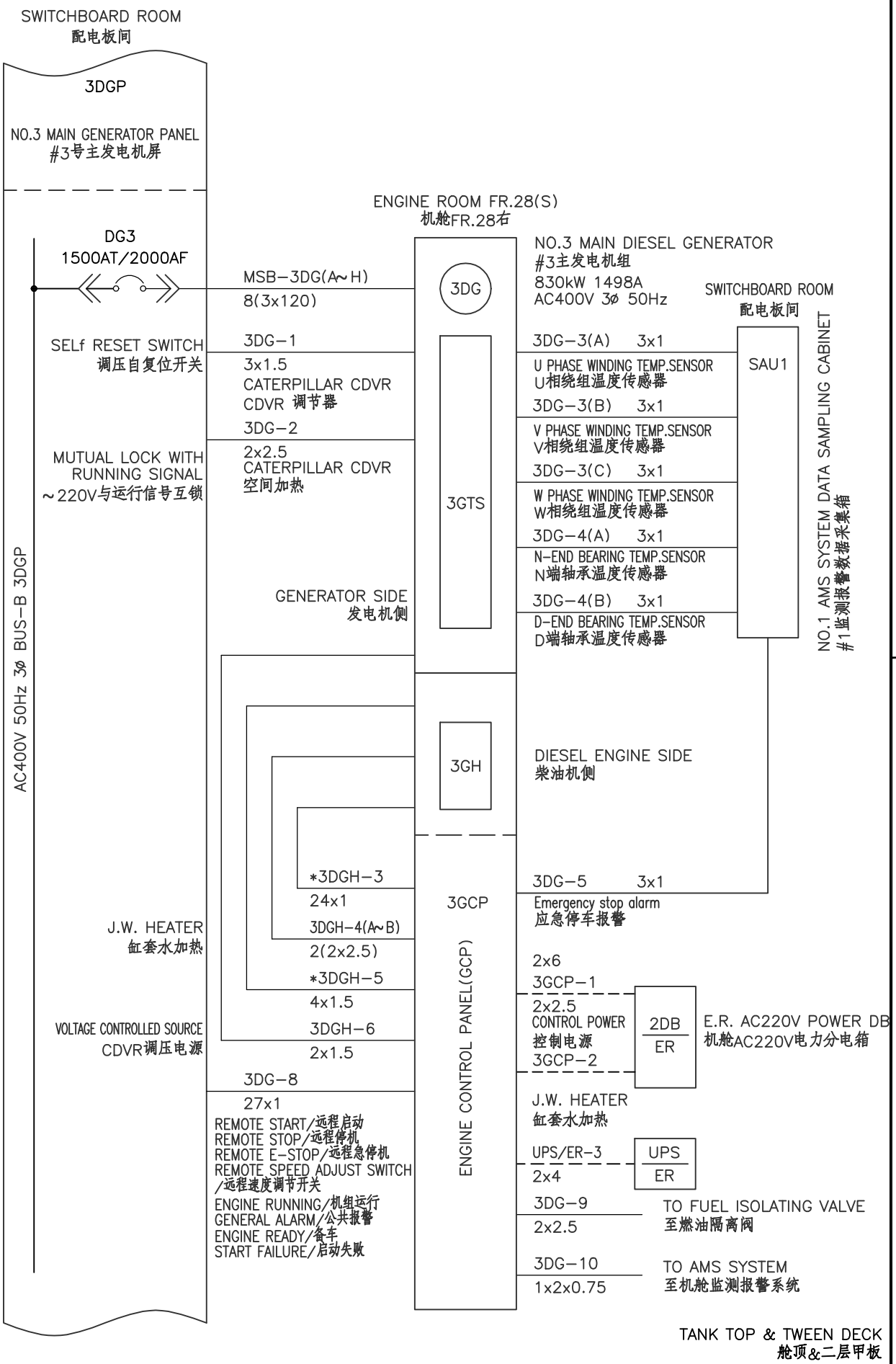
NO.4 DG START FAIL
#4发电机起动失败

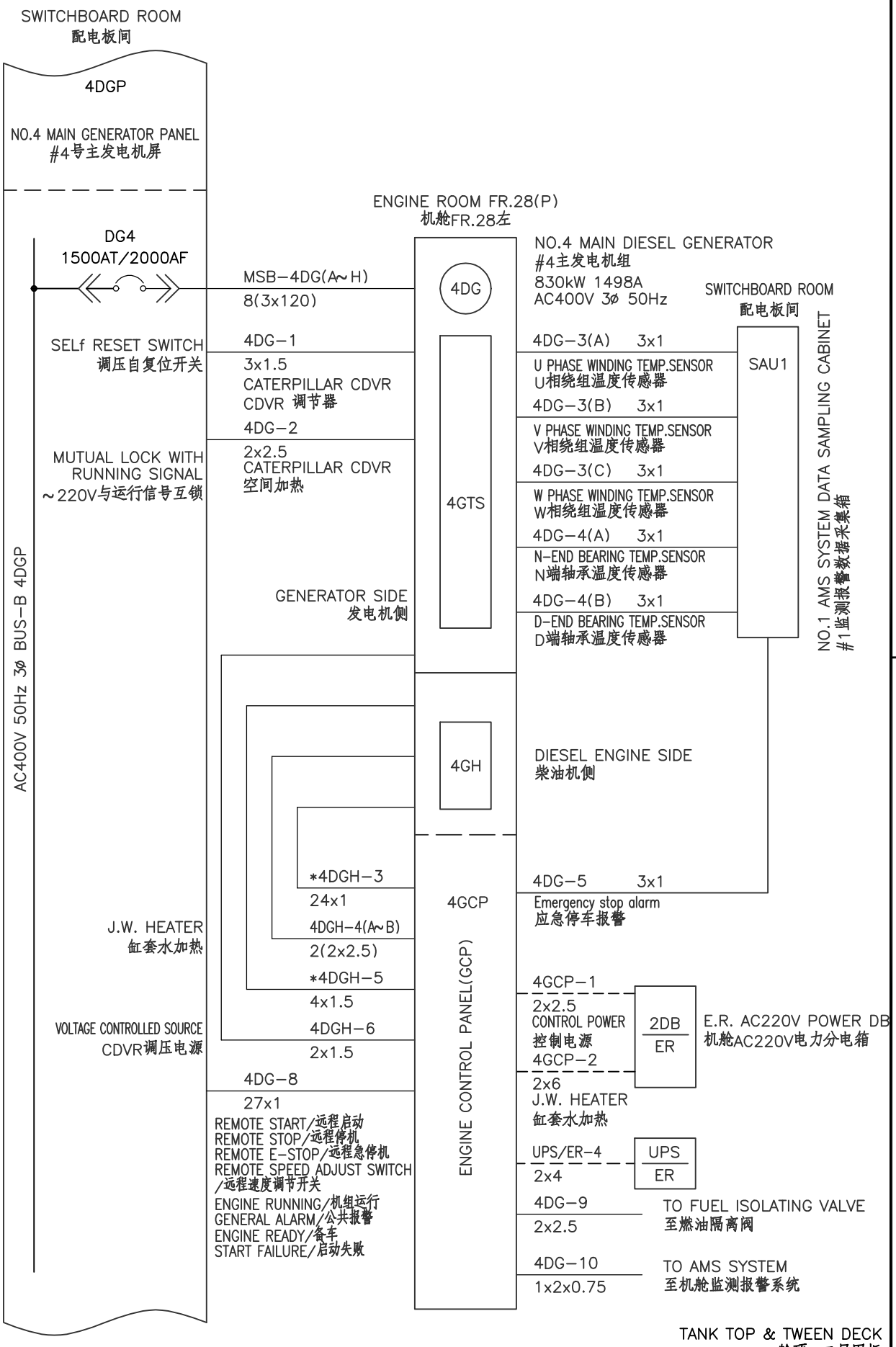
EM'CY STOP & PT SOURCE FAULT
应急切断&优先脱扣电源故障

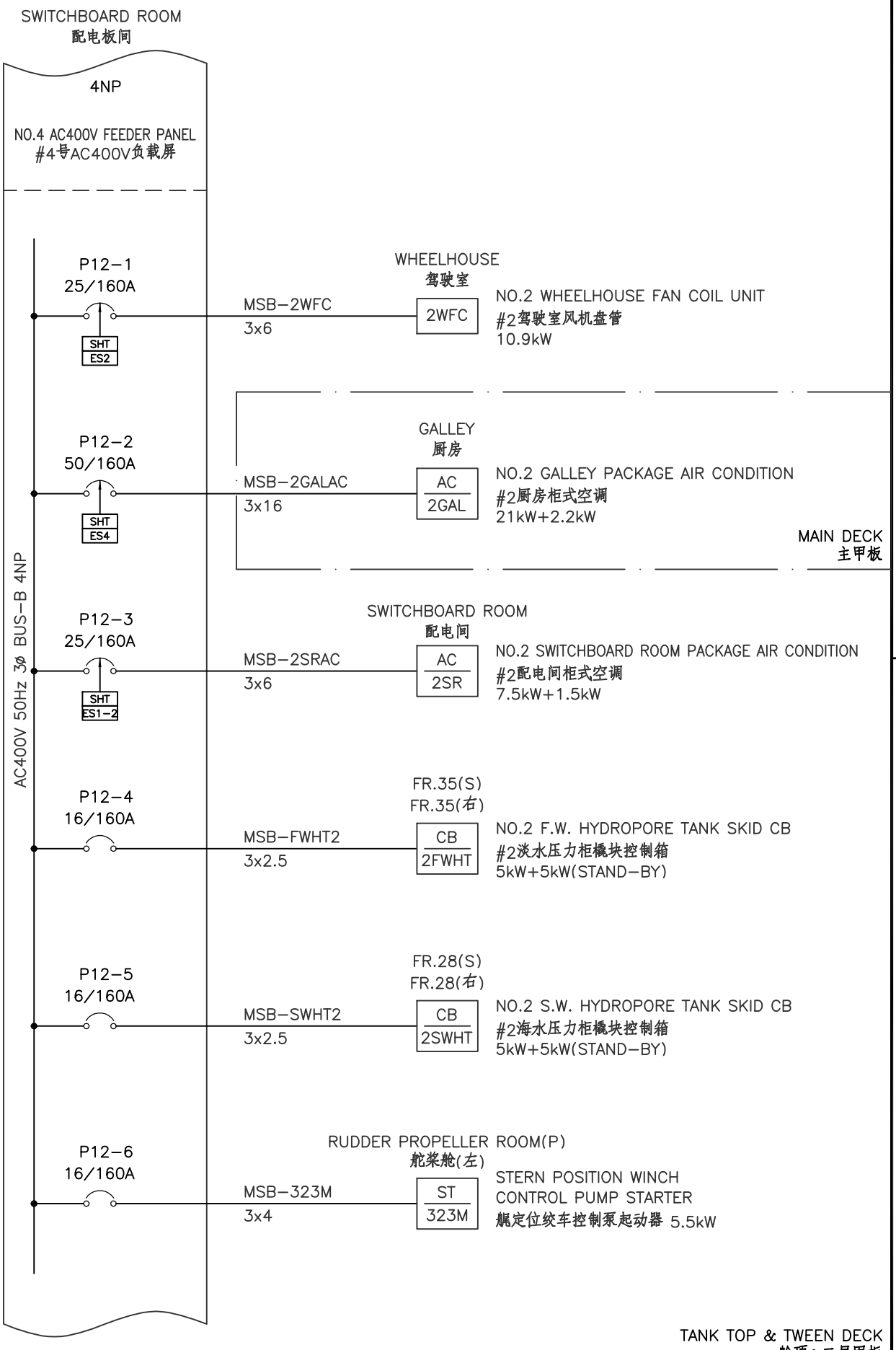
EM'CY STOP WIRE BROKEN
应急切断接线断开

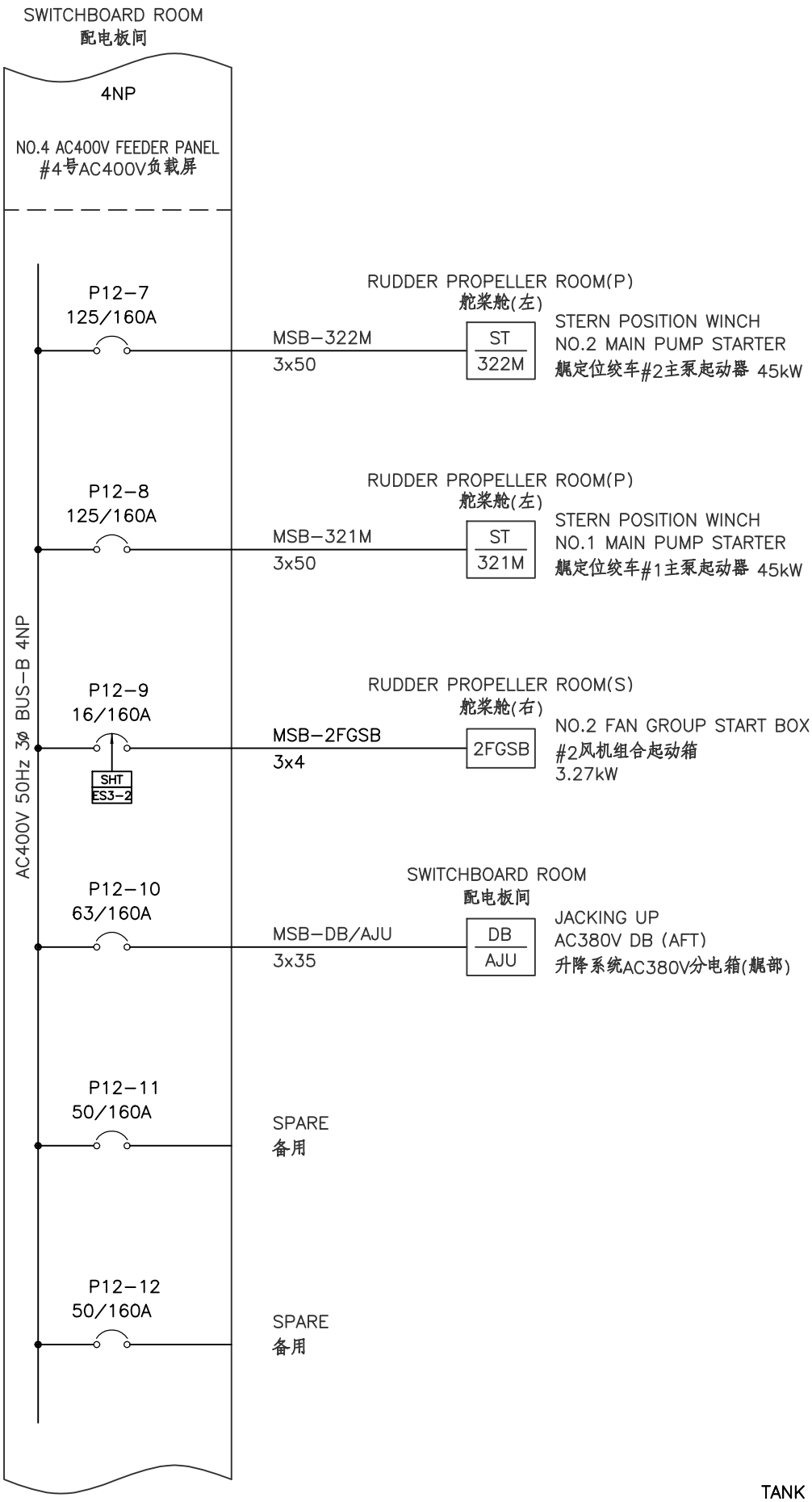
TANK TOP & TWEEN DECK
舱顶&二层甲板



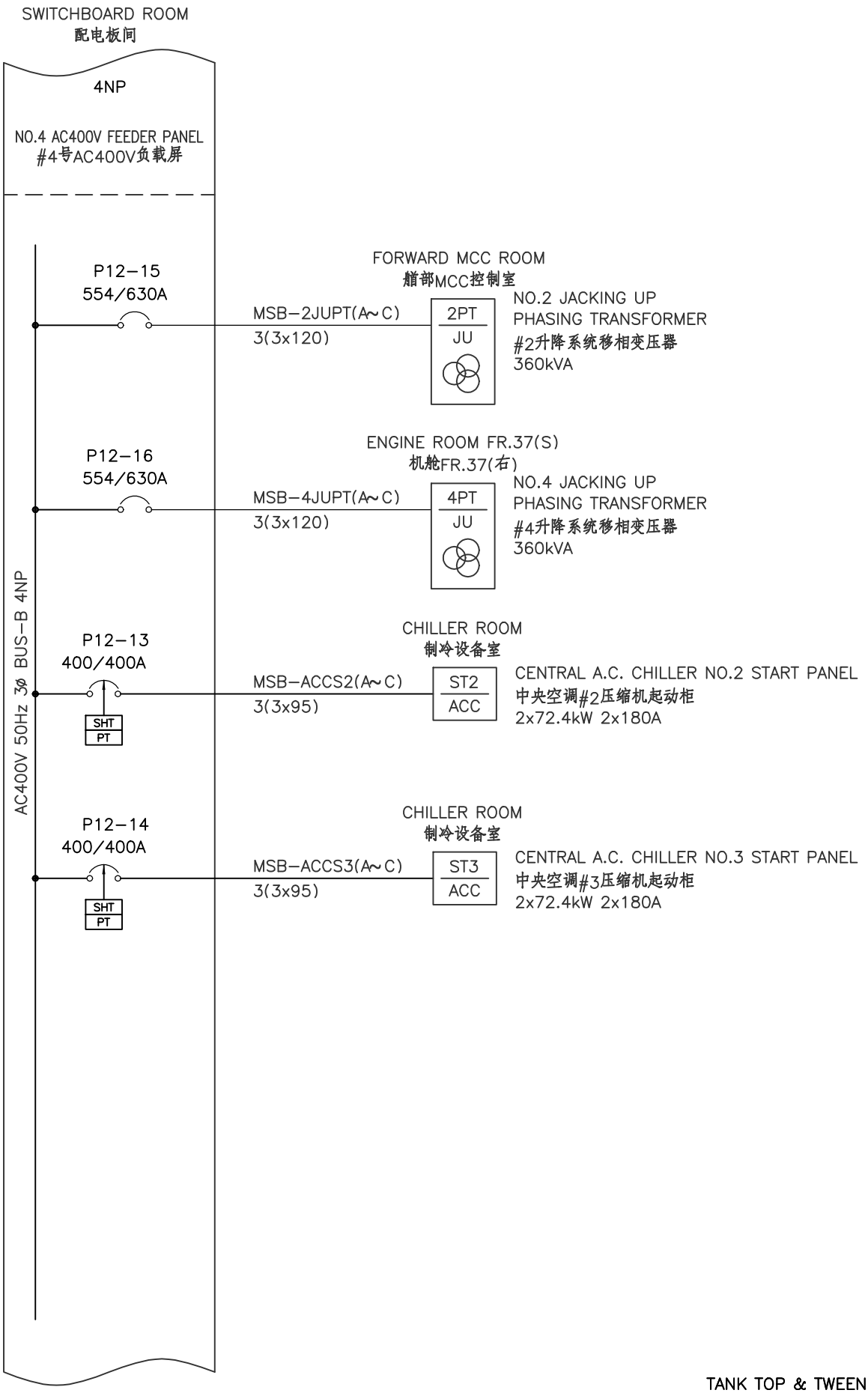


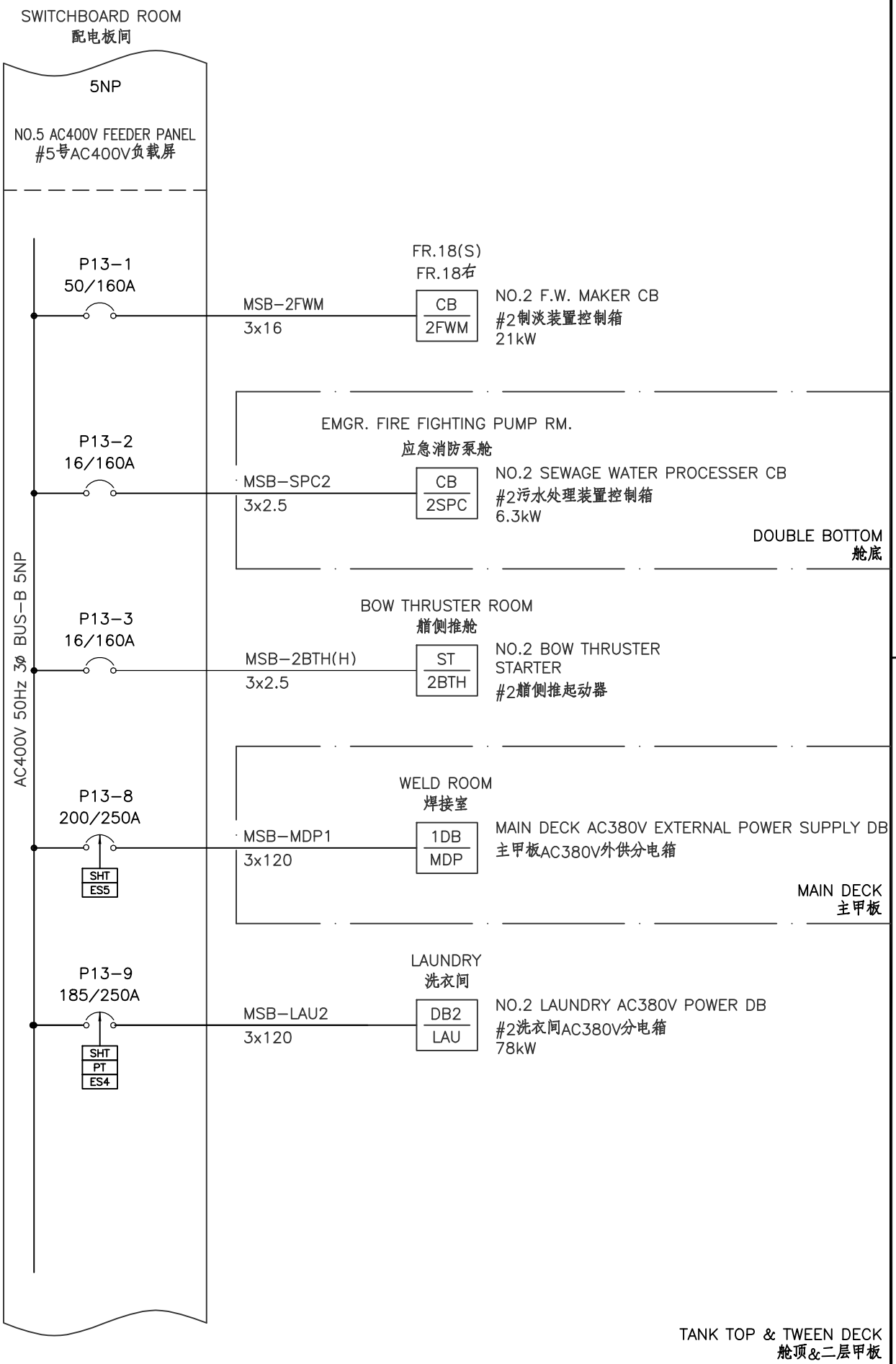


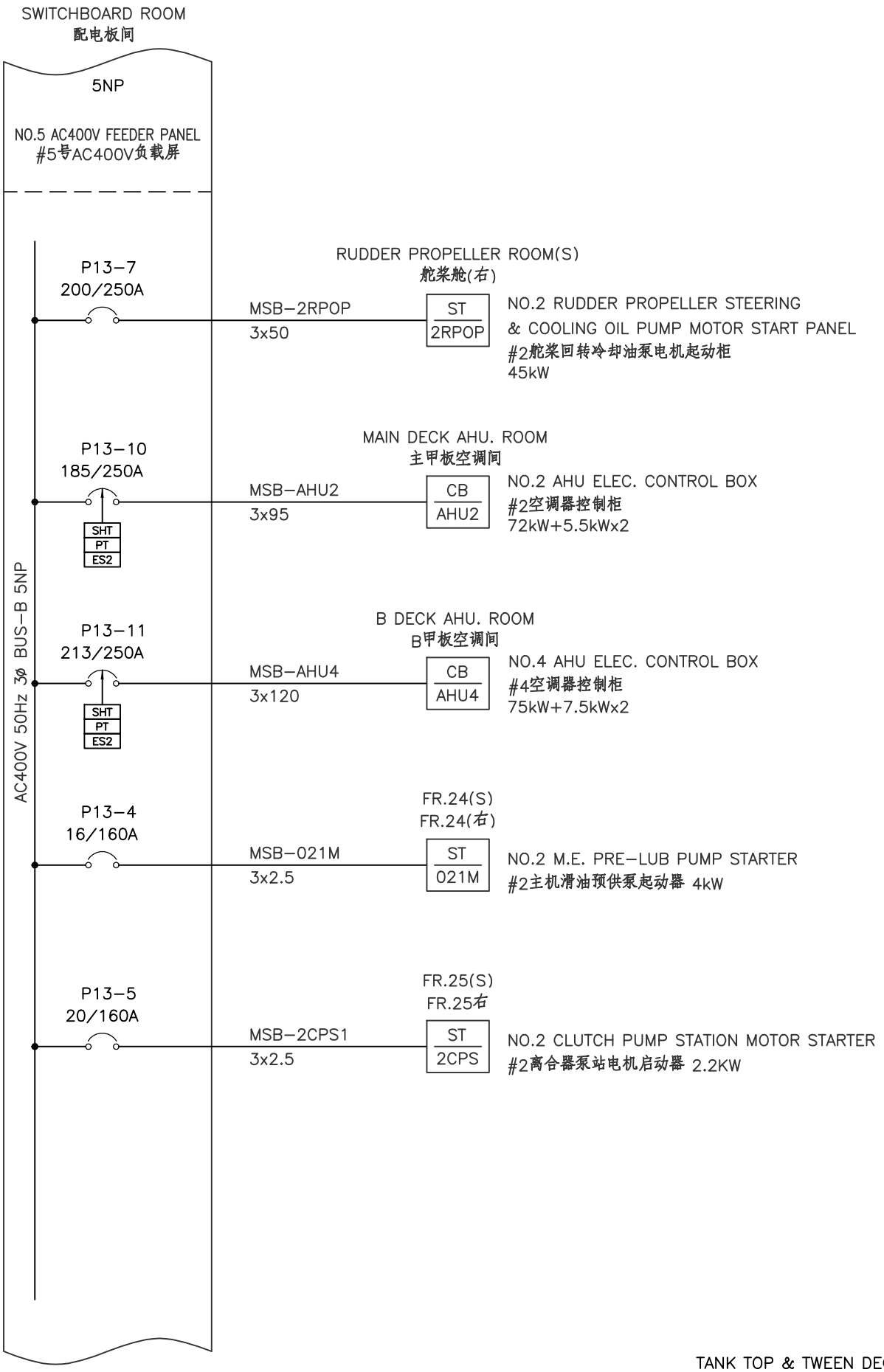


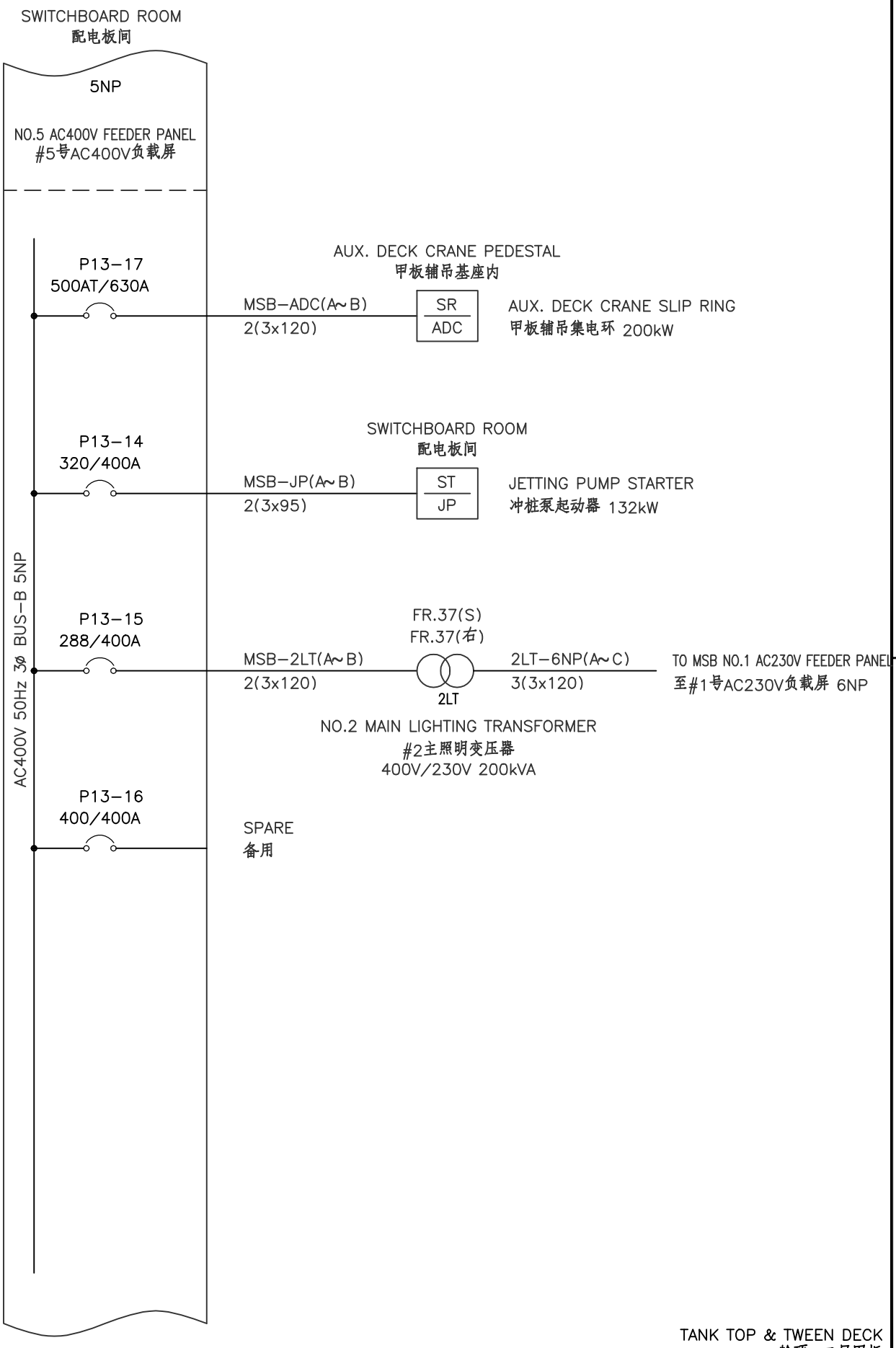


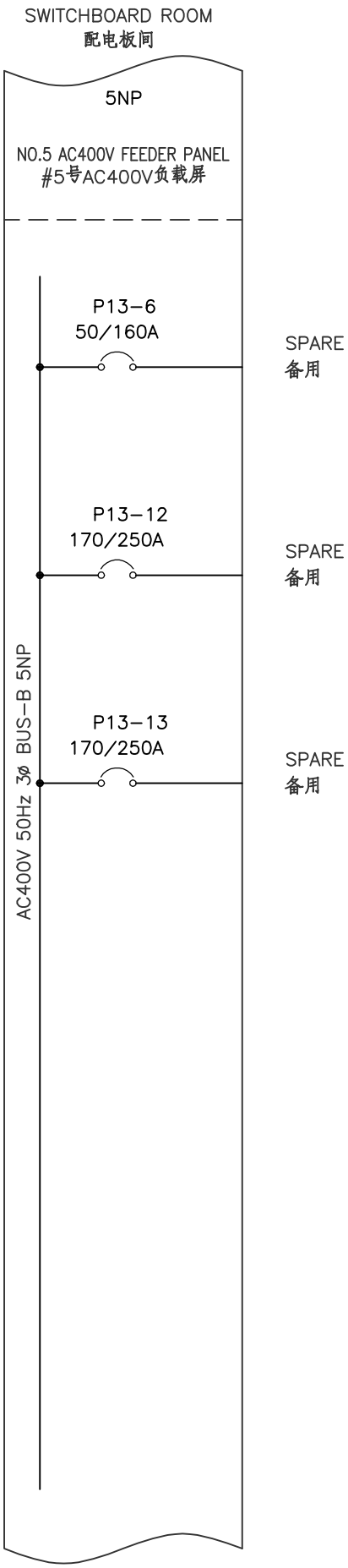
TANK TOP & TWEEN DECK
舱顶&二层甲板

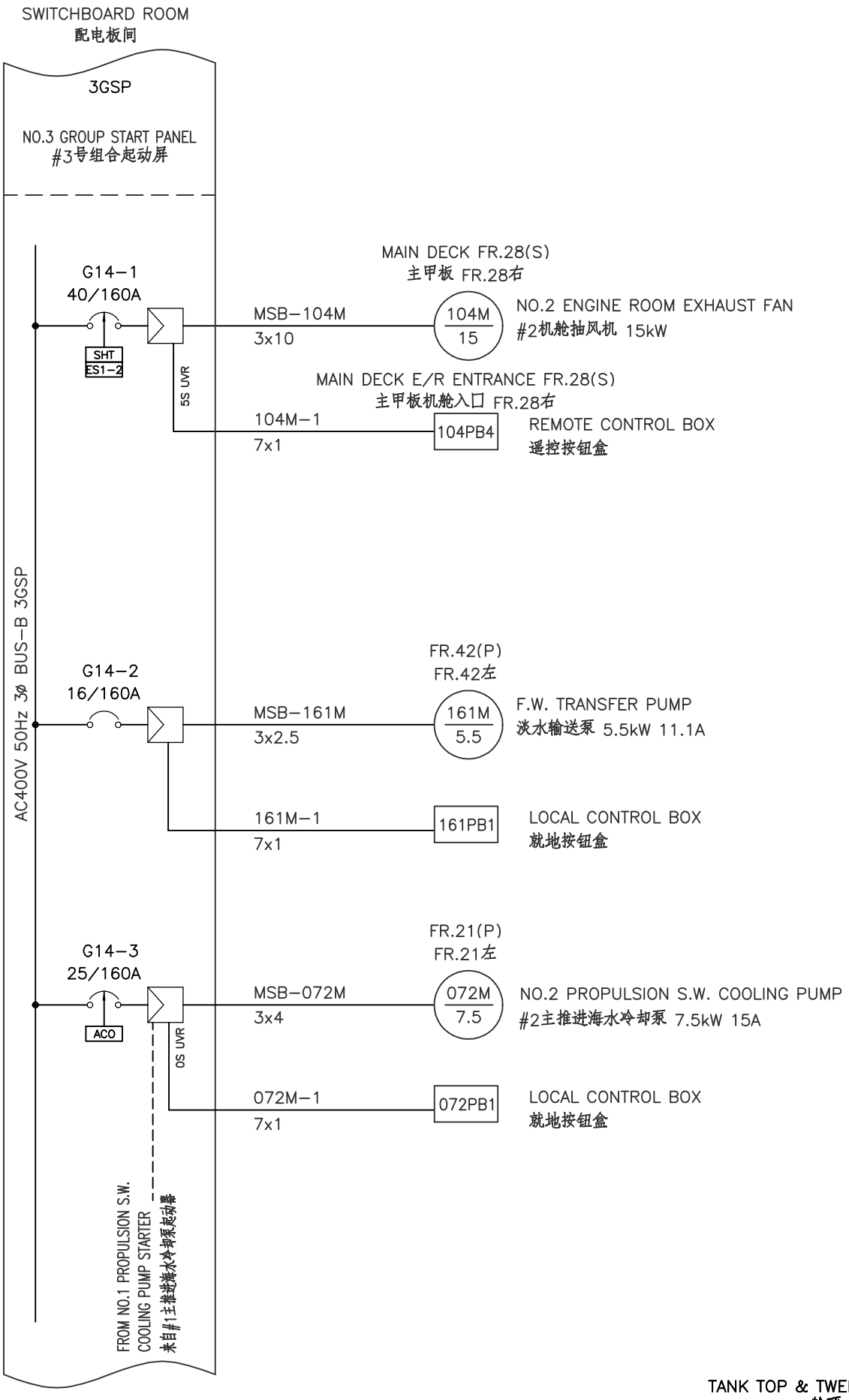


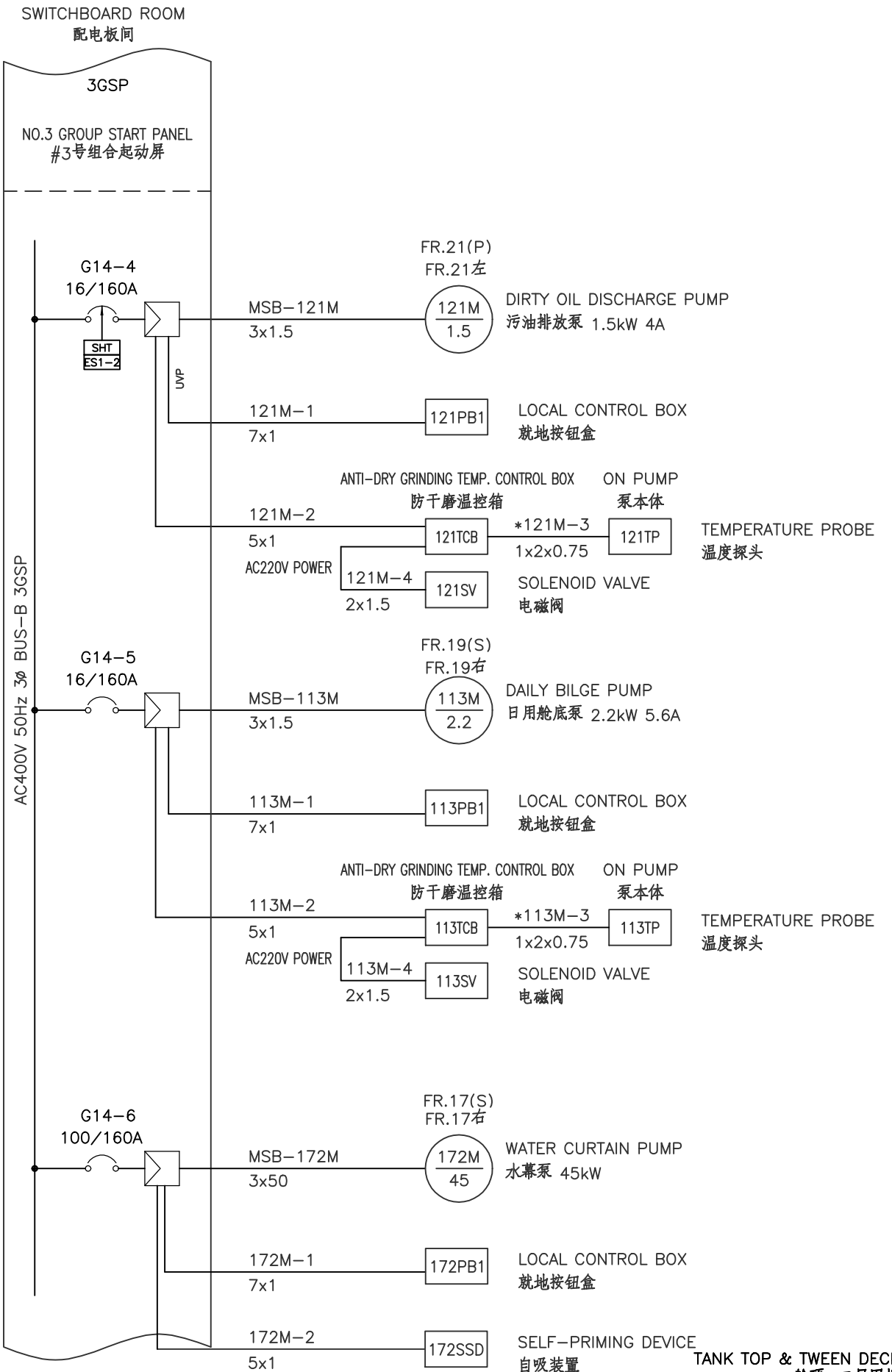


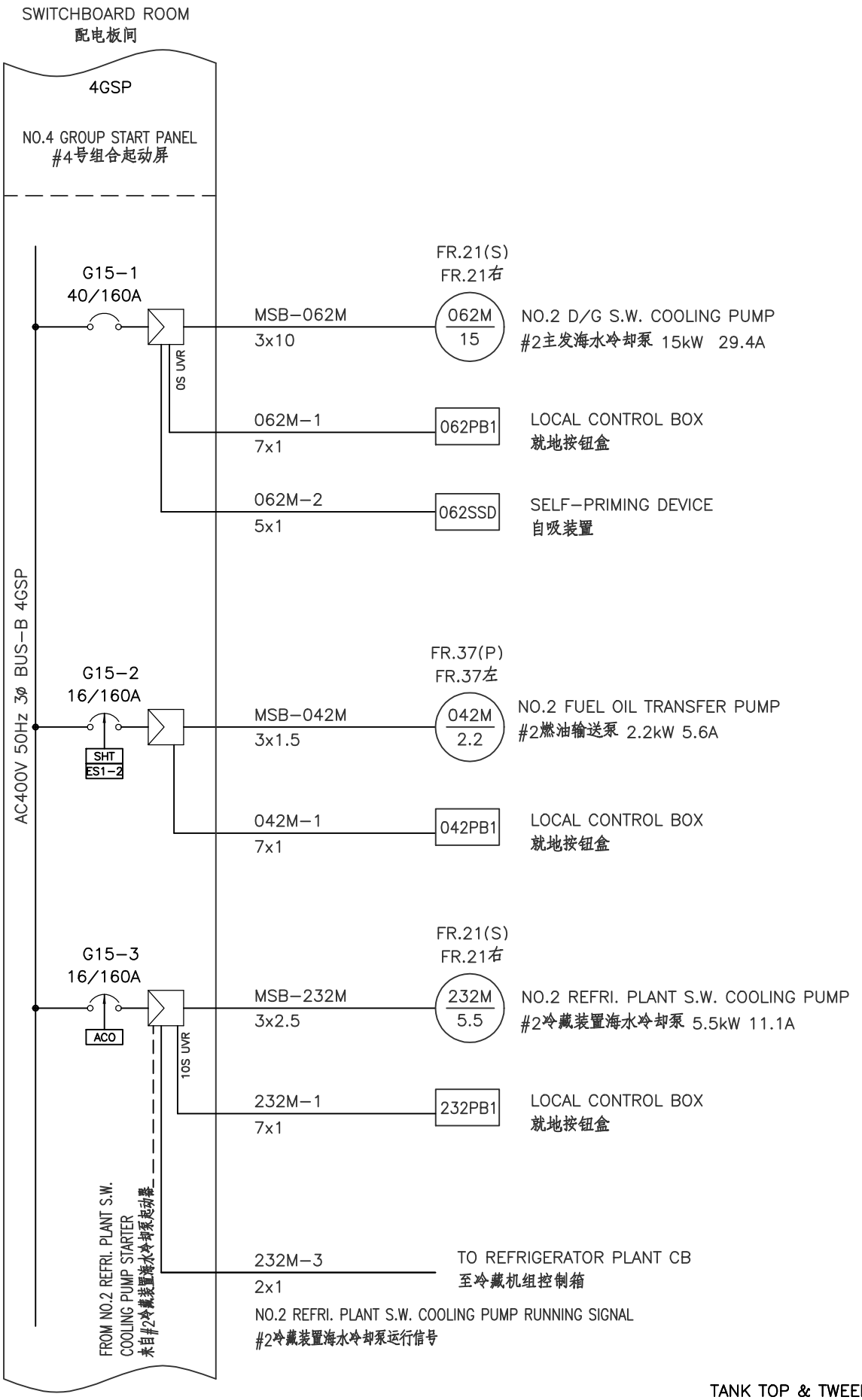


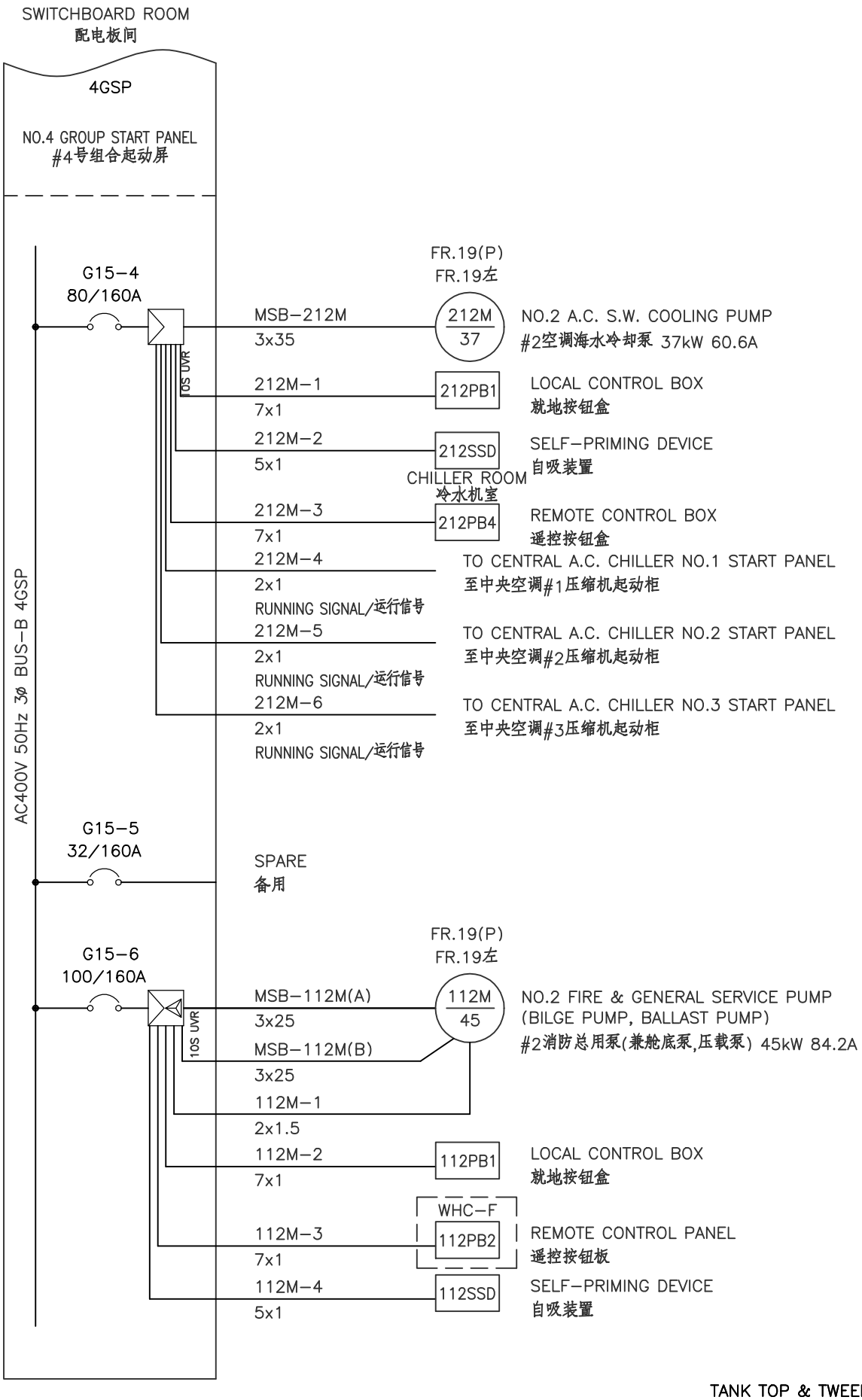


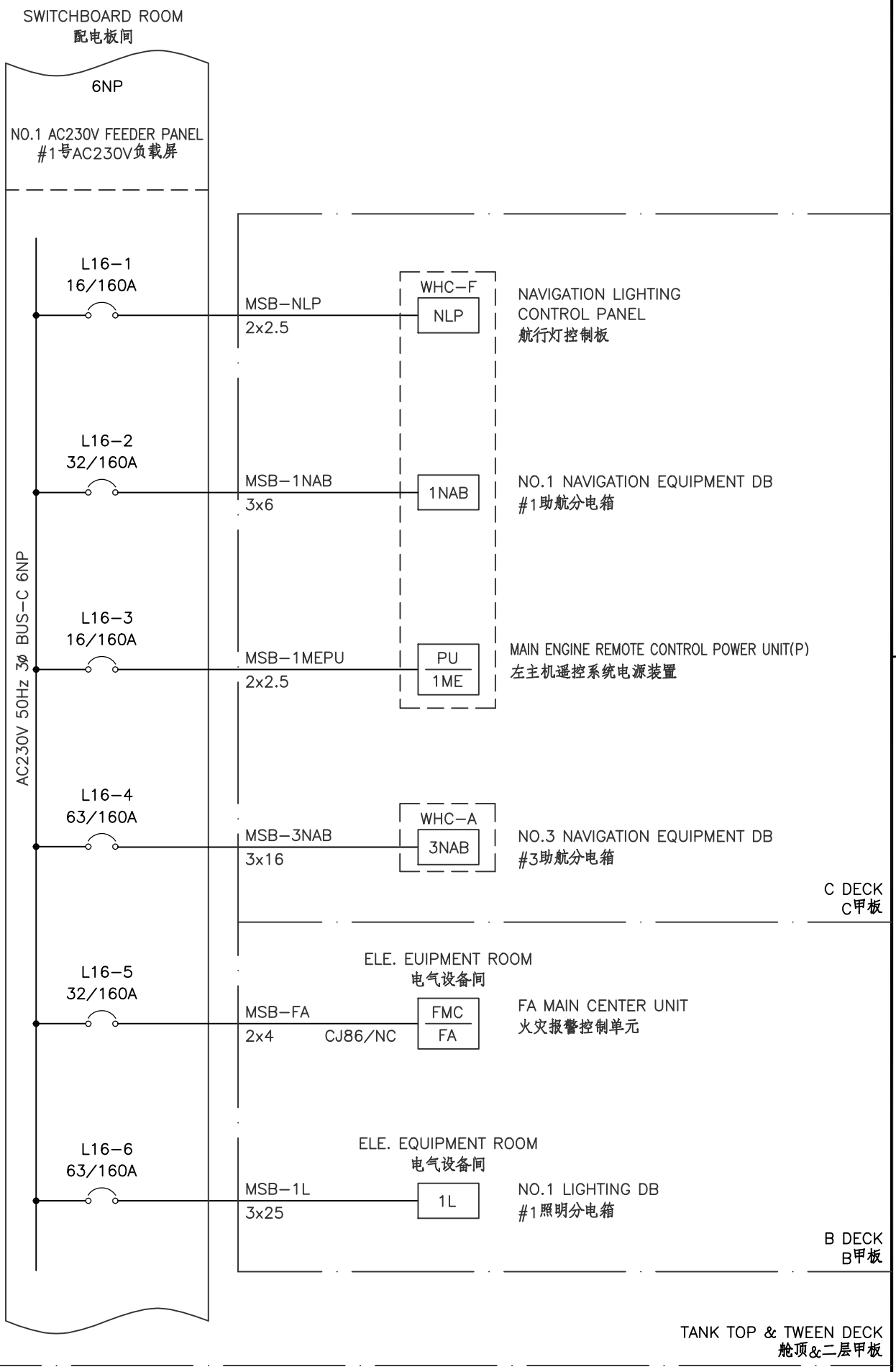


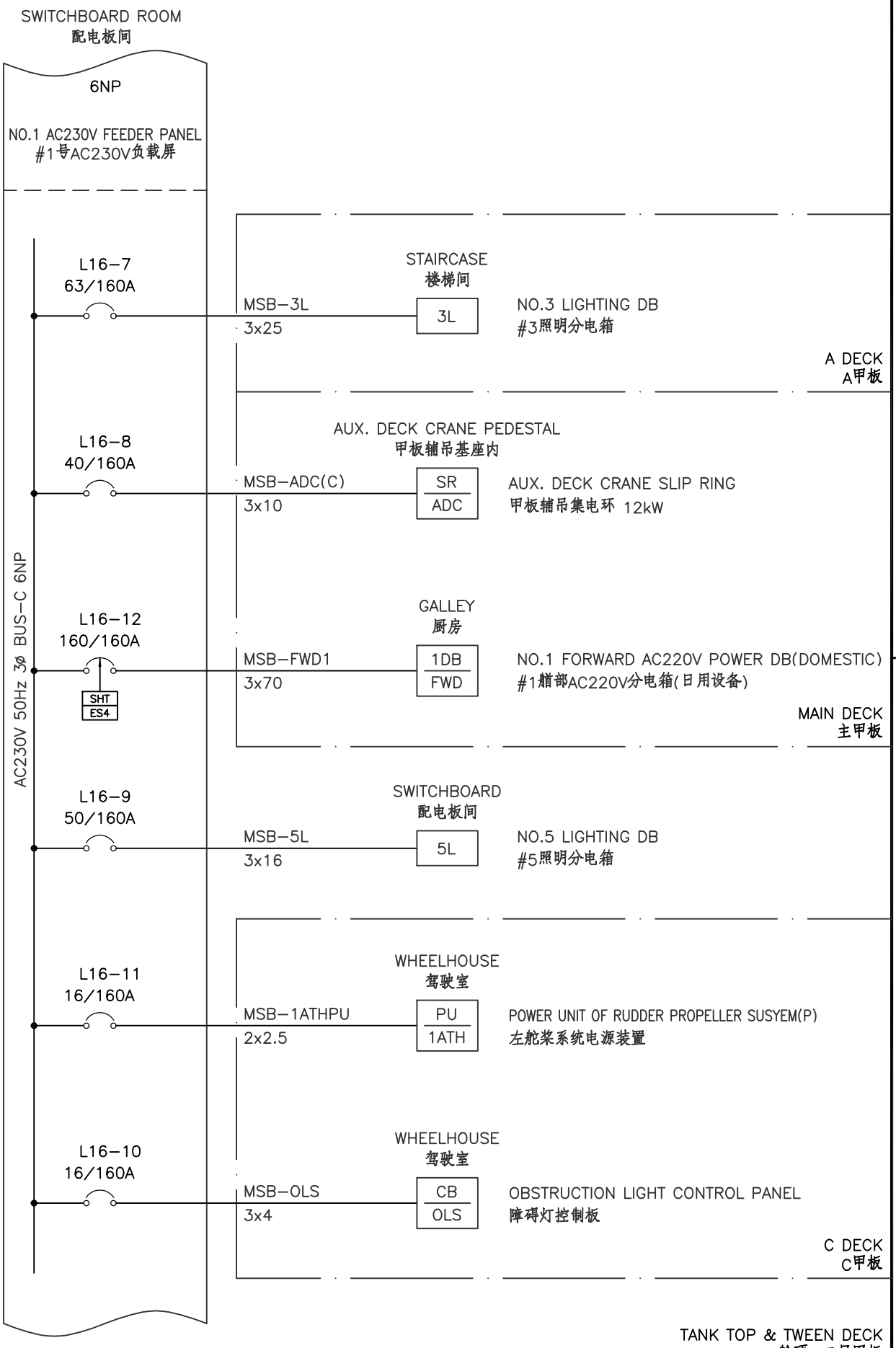


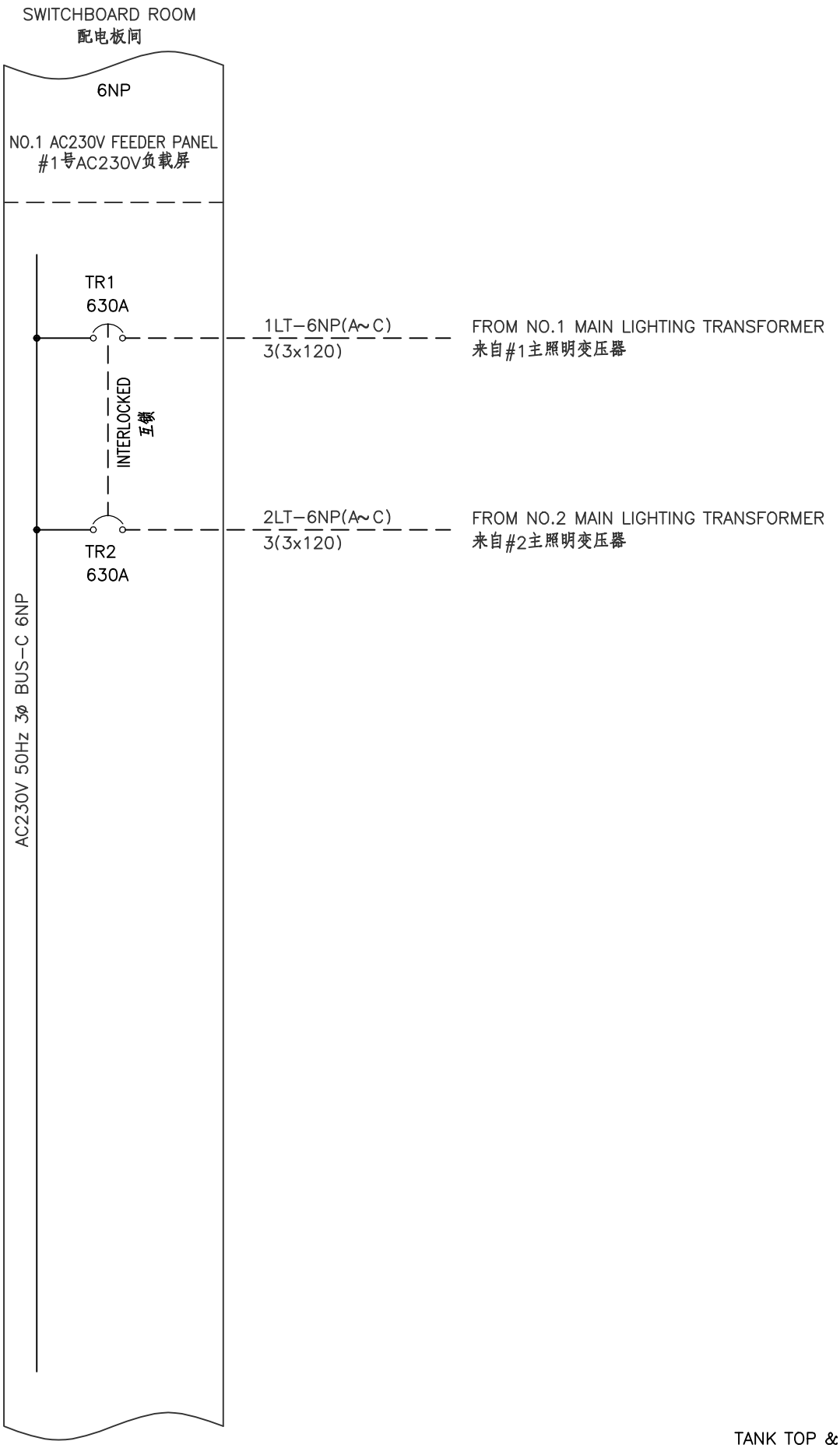


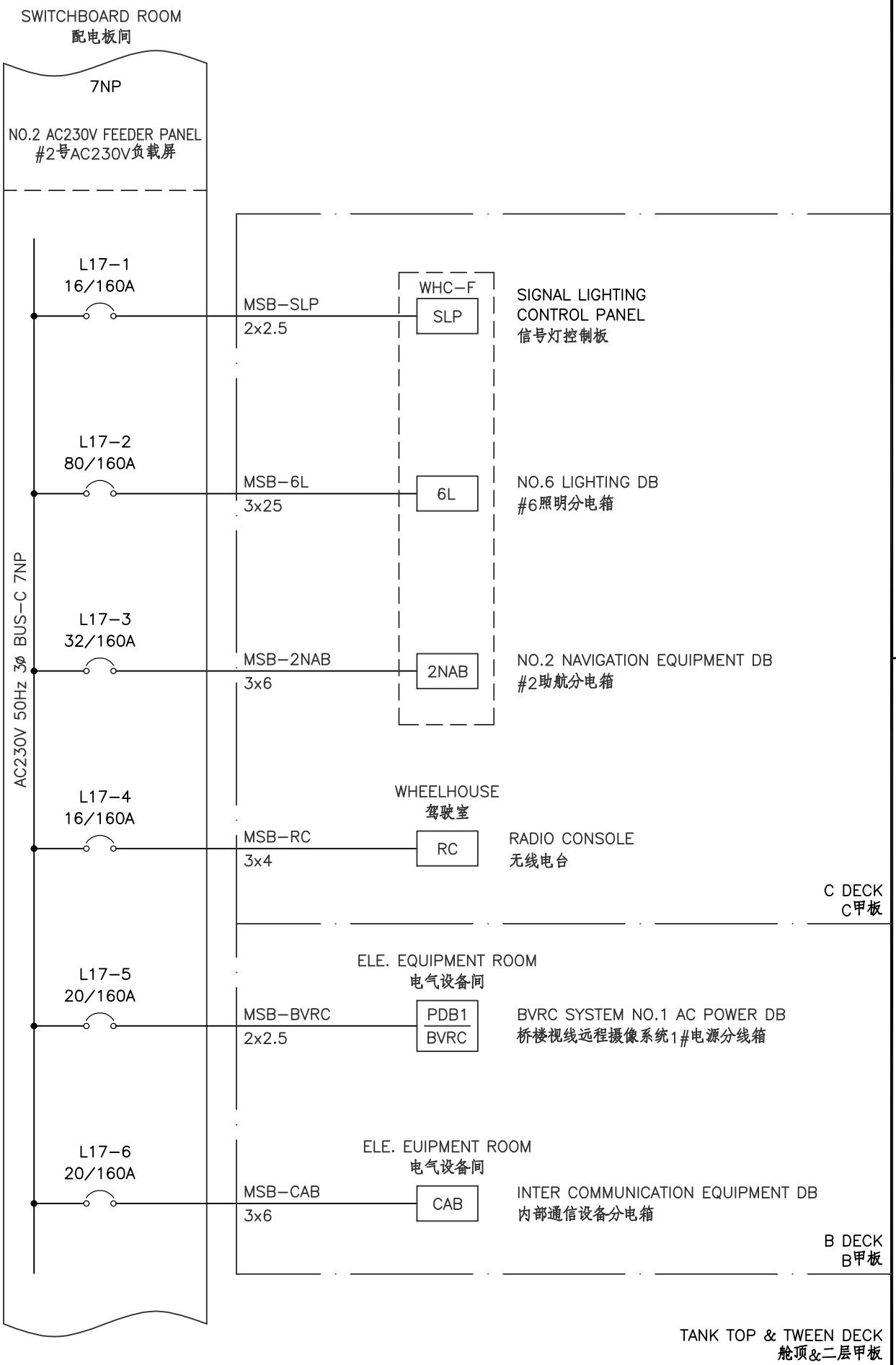


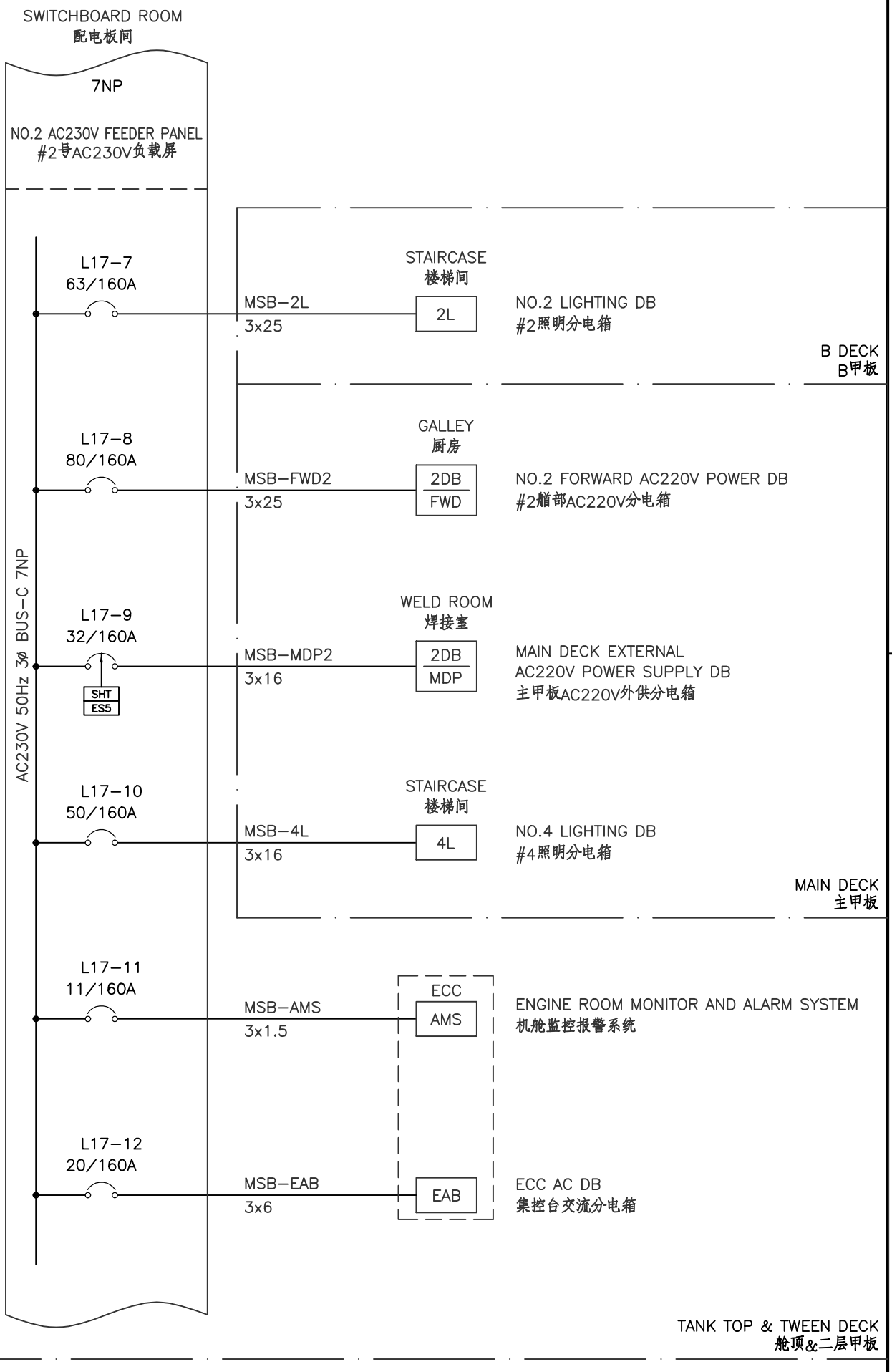


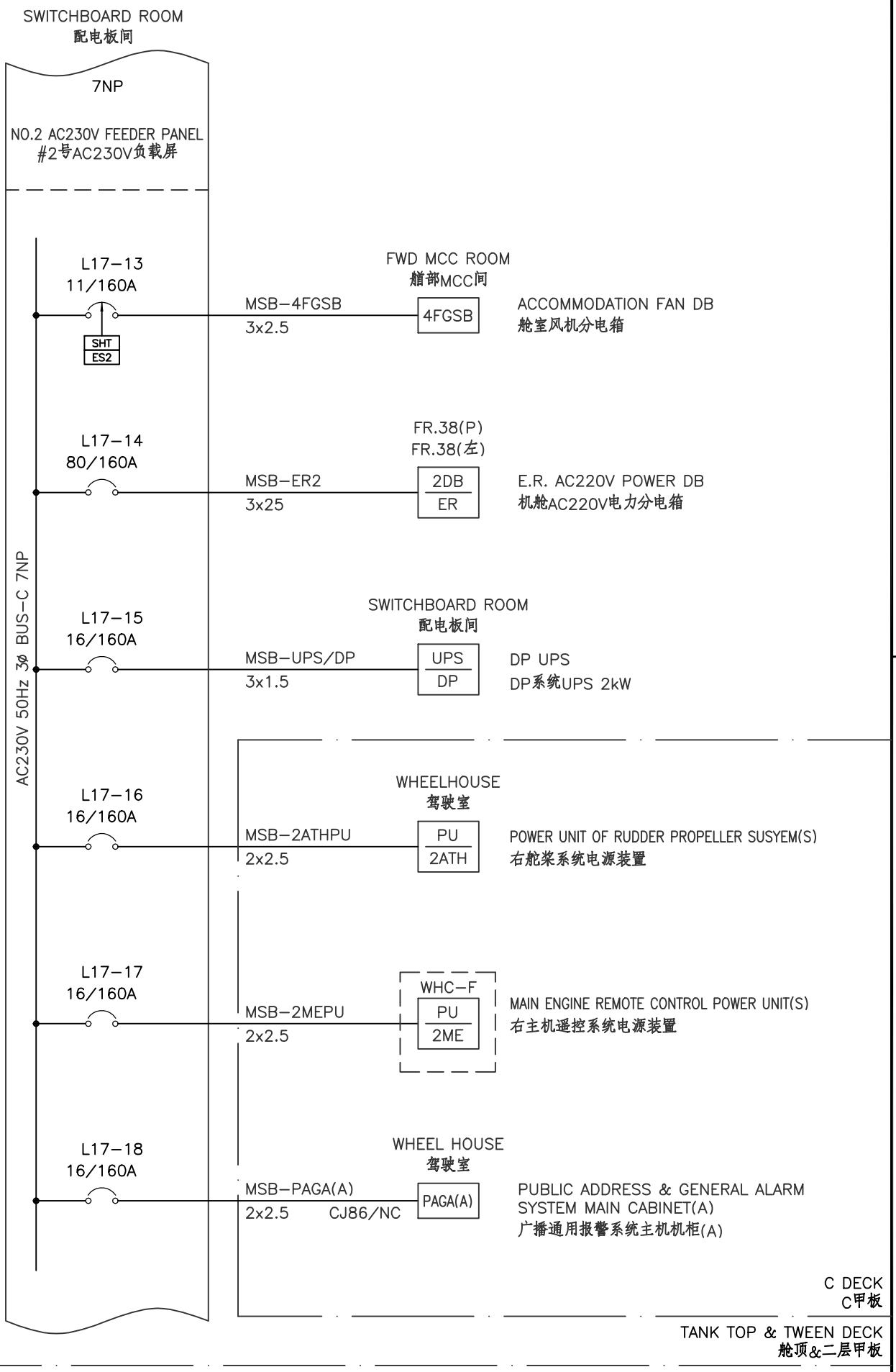


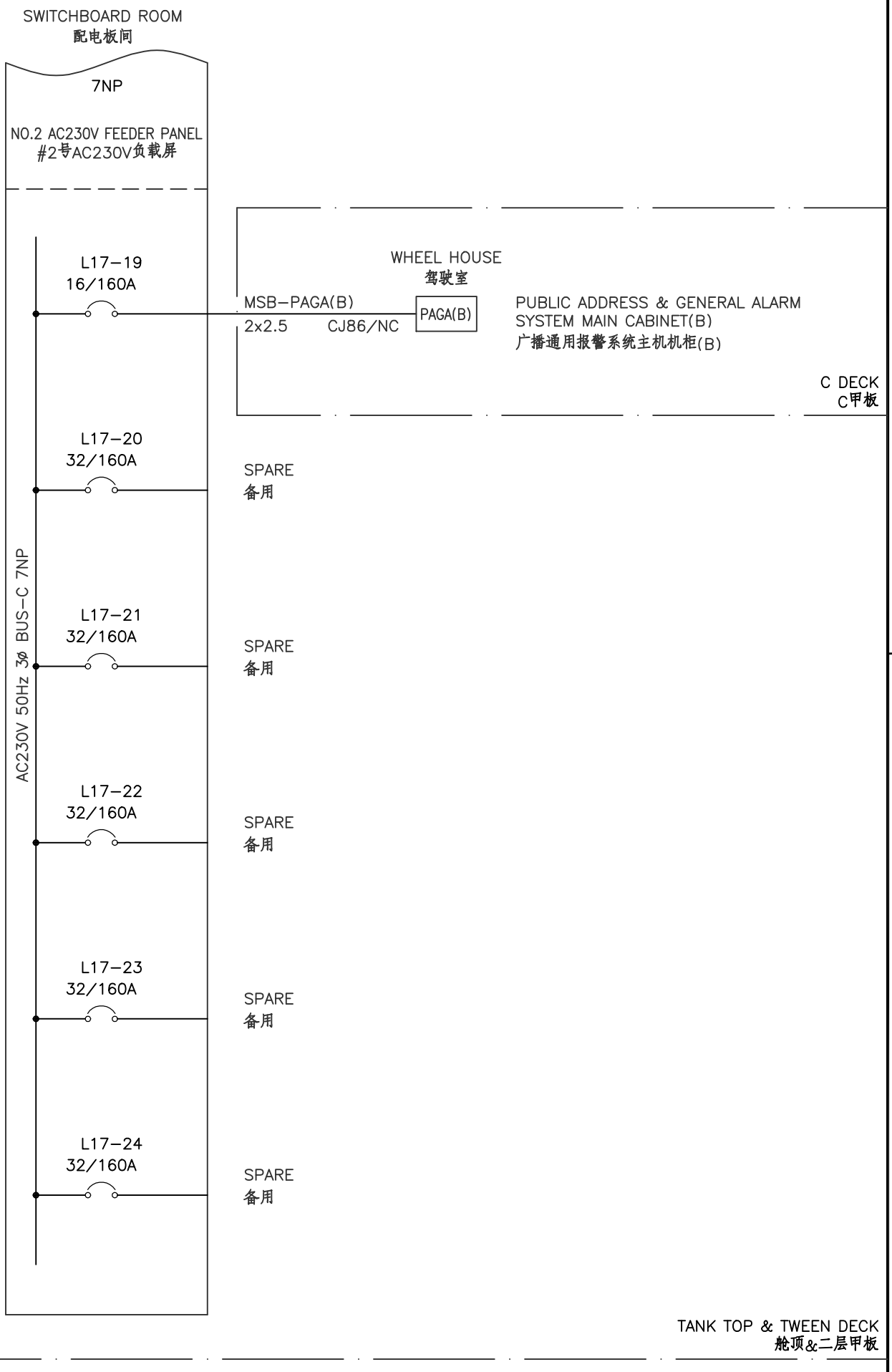


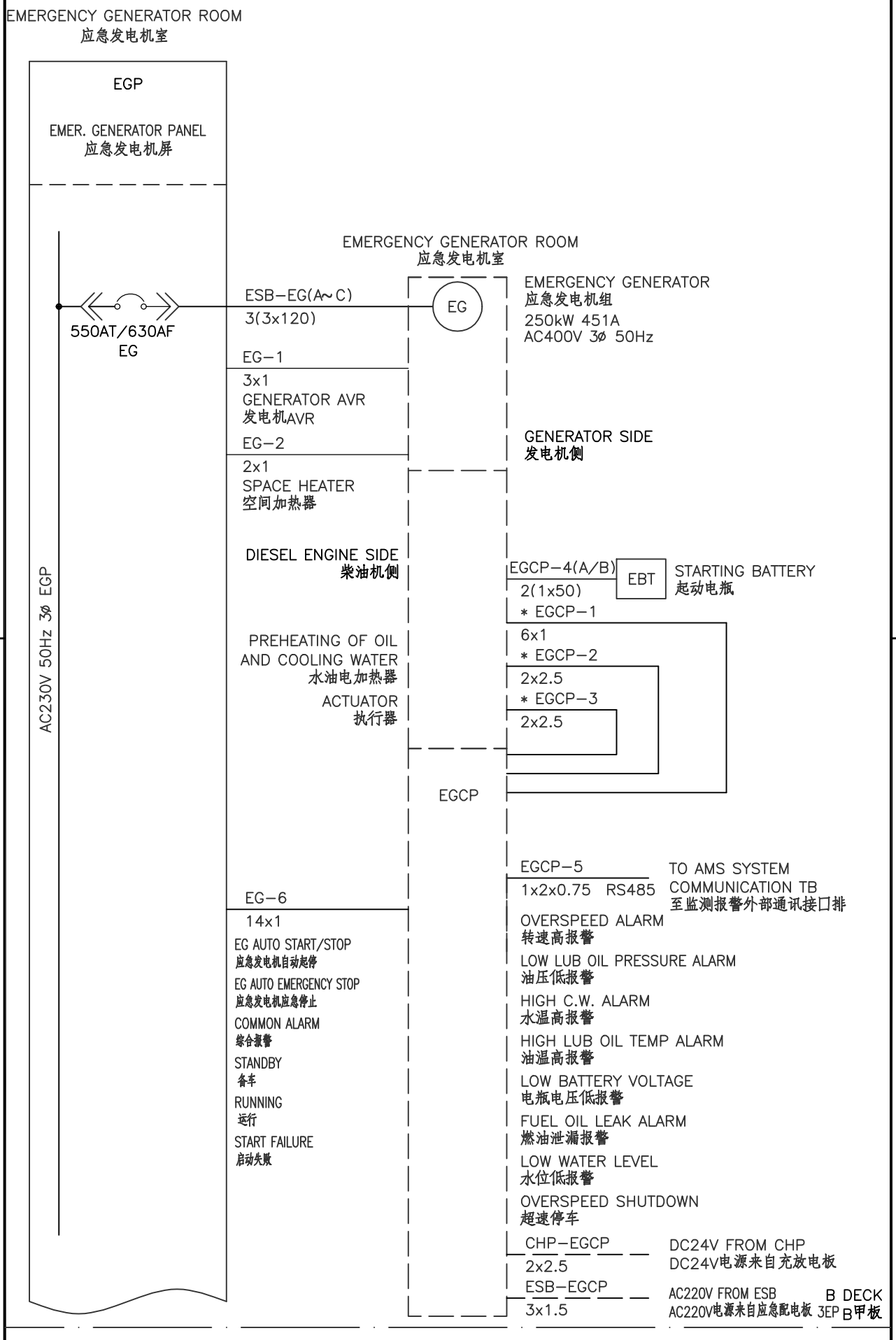












EMERGENCY GENERATOR ROOM
应急发电机室

EGP

EMER. GENERATOR PANEL
应急发电机屏

AC230V 50Hz 3φ EGP

ESB–EGF1
3x1
AUTO START SIGNAL
自起动信号
TO EMER.GEN.RM. FAN STARTER
至应急发电机室风机起动器

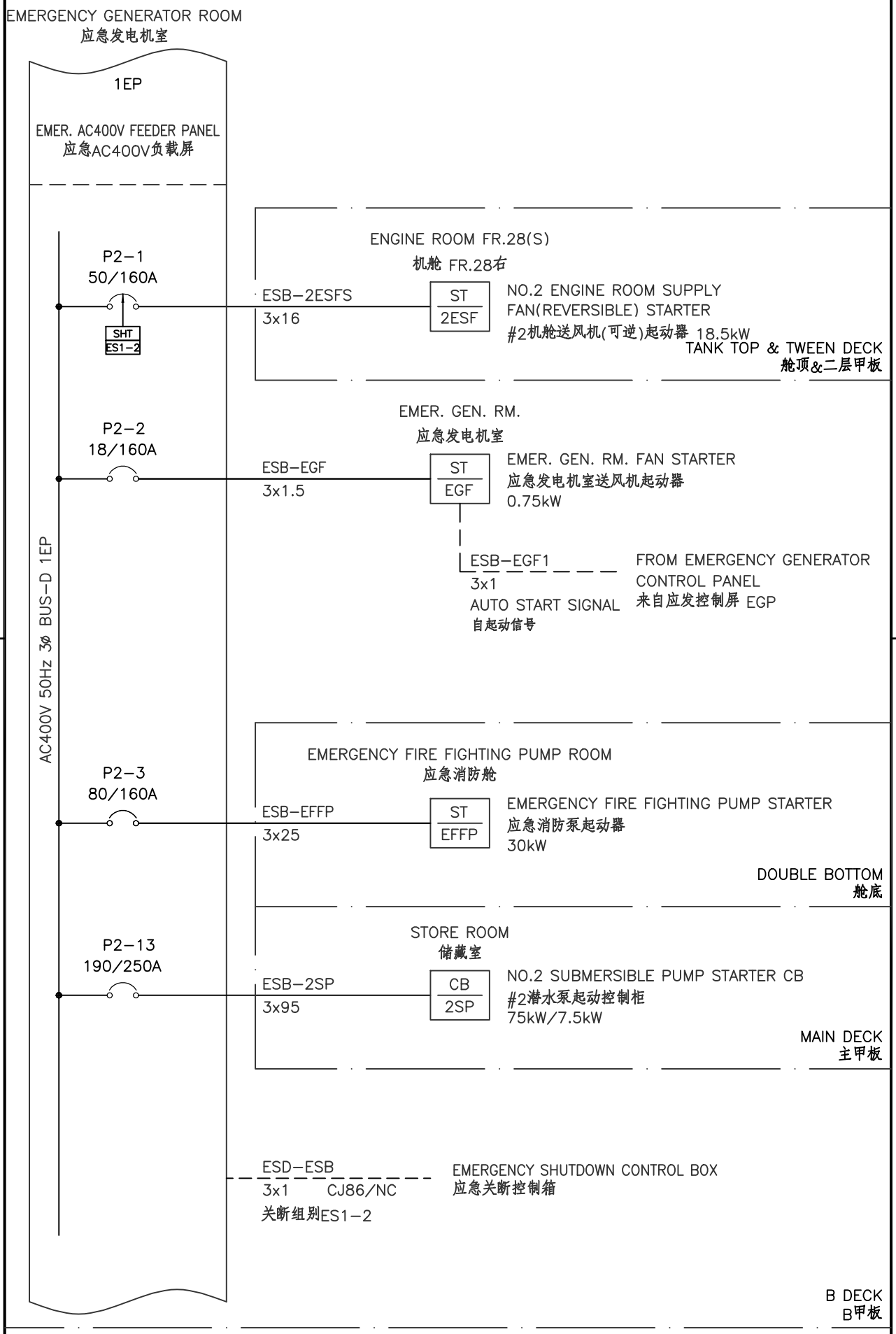
ESB–MSB
16x1
ESB STAND–BY
应急发电机备车
E/G RUNNING
应急发电机运行
E/G ACB CLOSED
应急发电机开关合闸
E/G START FAIL
应急发电机起动失败
E/G ACB ABNORMAL TRIP
应急发电机开关异常脱扣
TO MSB SYNCHRONOUS & FEEDER PANEL
至主配电板同步及负载屏

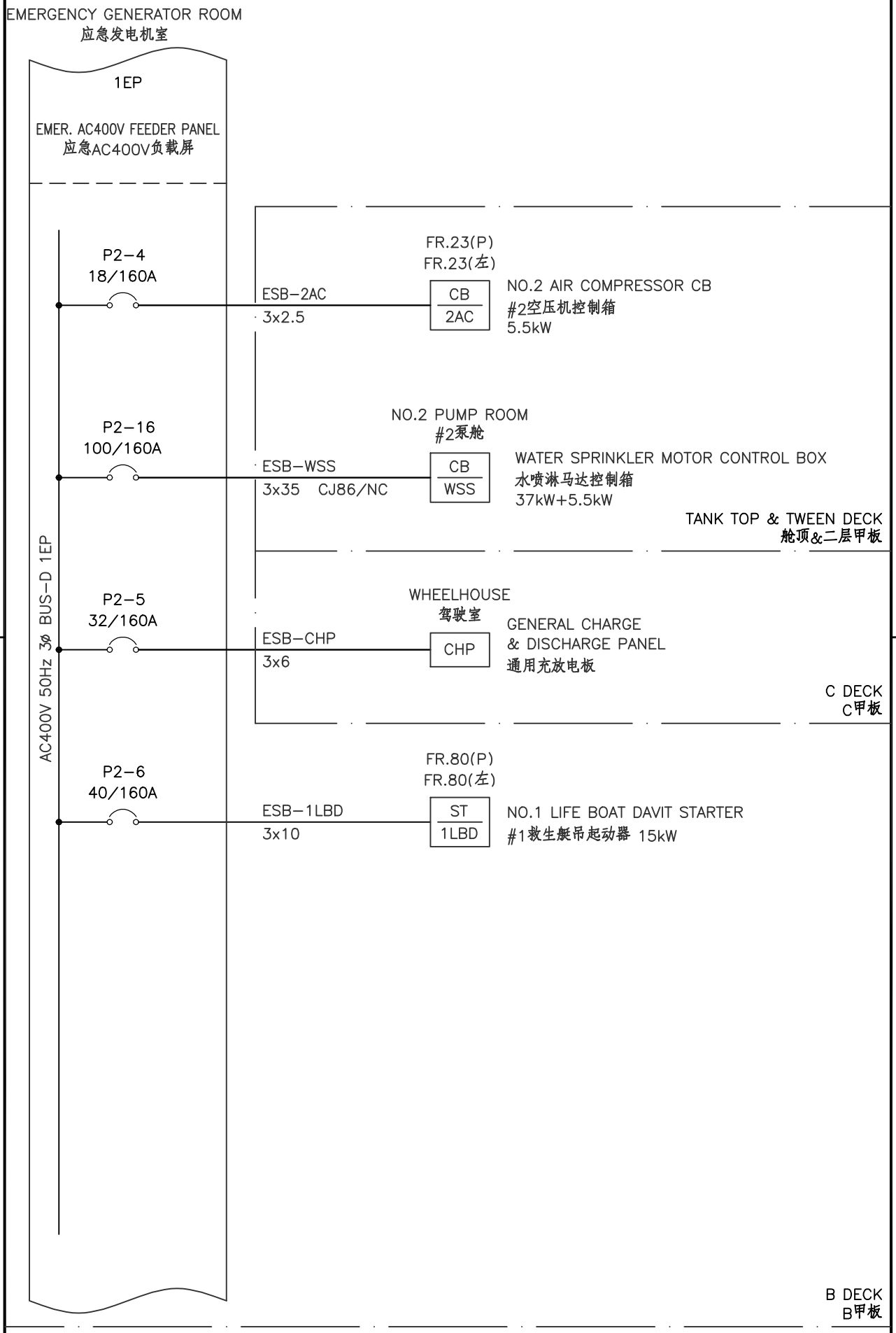
AMS–ESB
19x1
AC380V LOW INSULATION
AC380V绝缘低
AC220V LOW INSULATION
AC220V绝缘低
EMERGENCY CUT–OFF ALARM
应急切断报警
EMERGENCY CUT–OFF POWER FAILURE
应急切断电源故障
DC24V POWER FAILURE
DC24V电源故障
EG ABNORMAL TRIP
应急发电机异常脱扣
ESB COMMON ABNORMAL
应急配电板综合故障
EG OVER CURRENT
应急发电机过流
FROM ALARM & MONITORING SYSTEM
来自监测报警系统

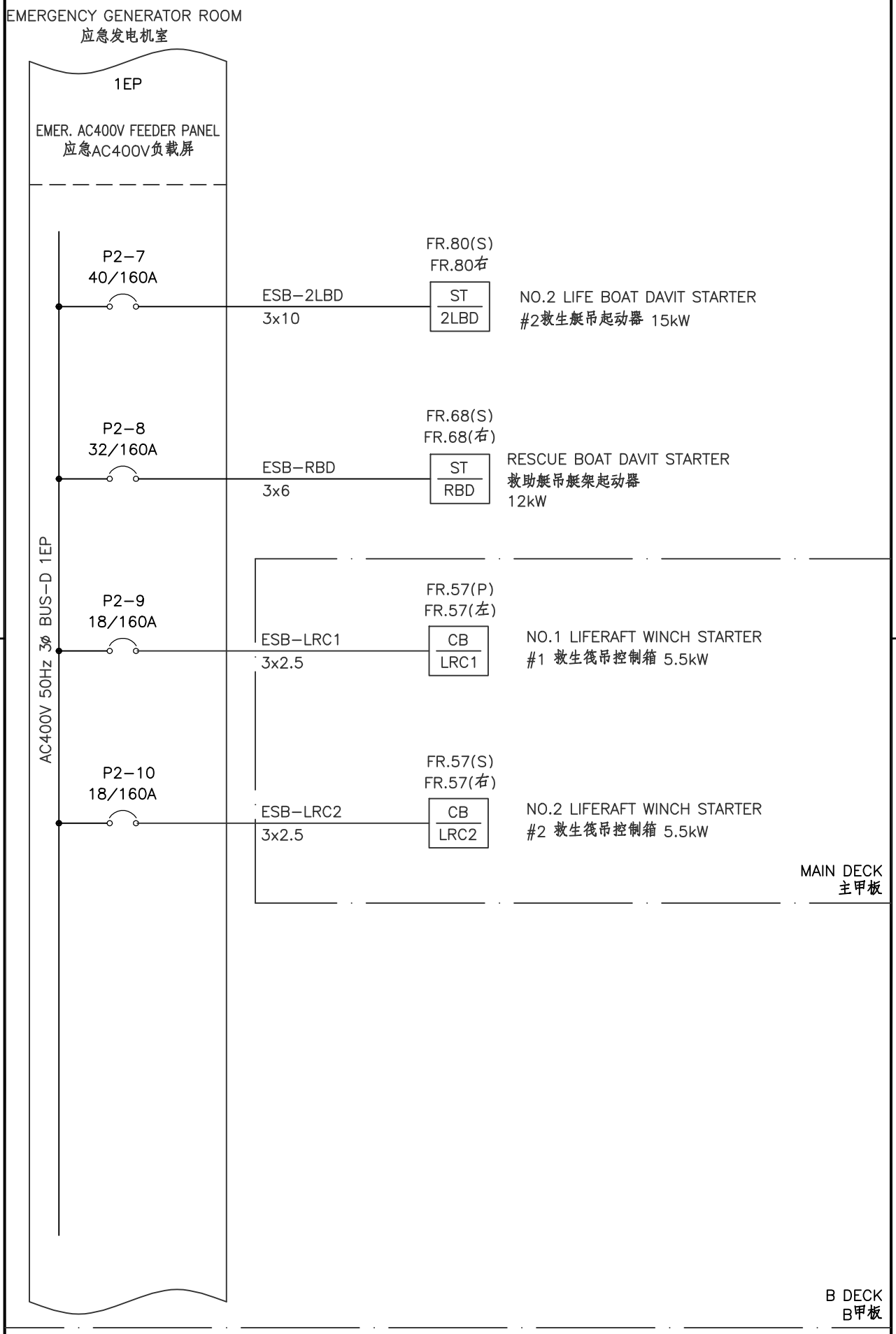
CHP–ESB
2x6 CJ86/NC
DC 24V POWER SUPPLY
FROM CHP
来自通用充放电板

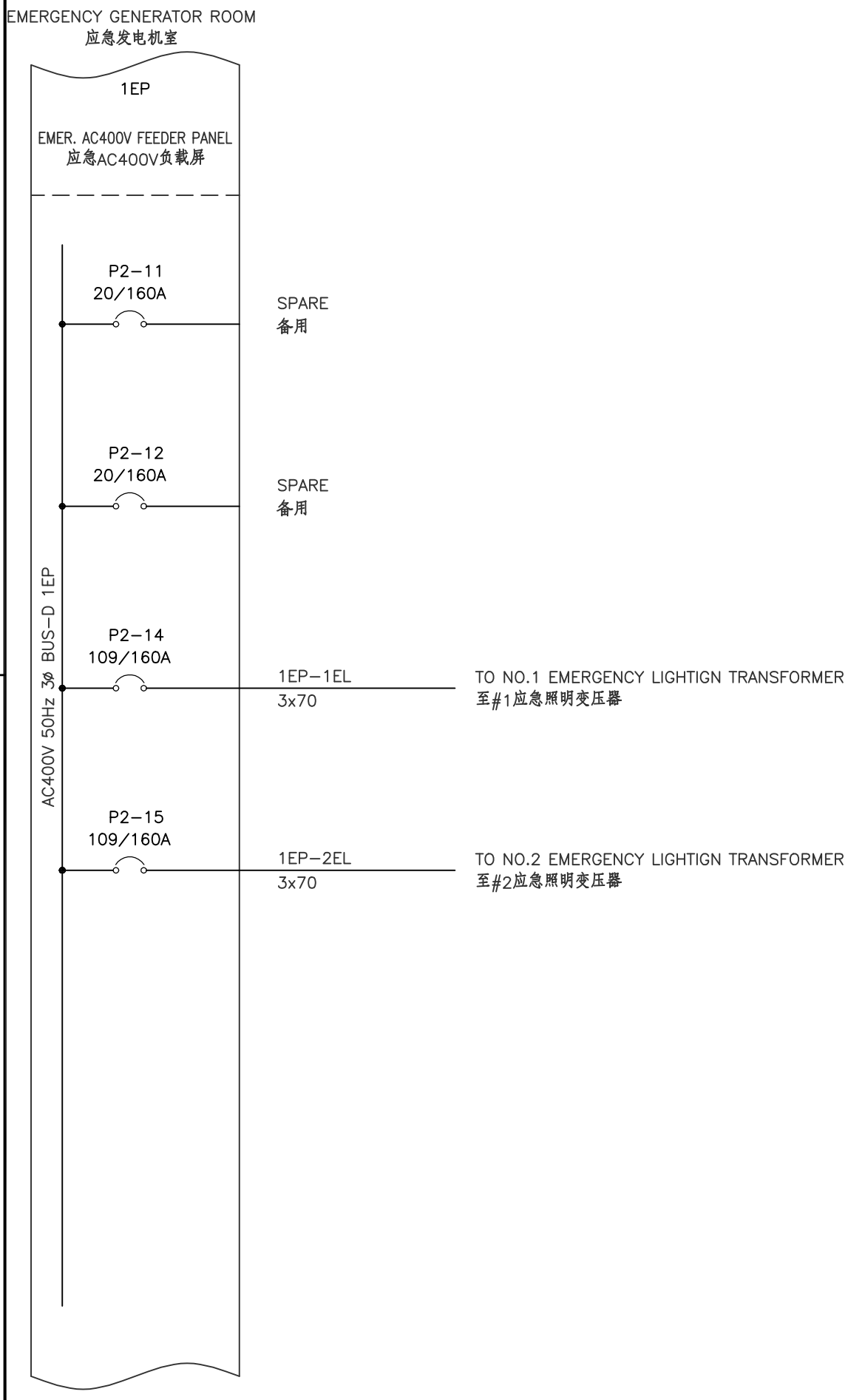
ESB–CHP1
2x1.5 CJ86/NC
ESB AC220V POWER FAIL
TO CHP INVERTER
至通用充放电板逆变器

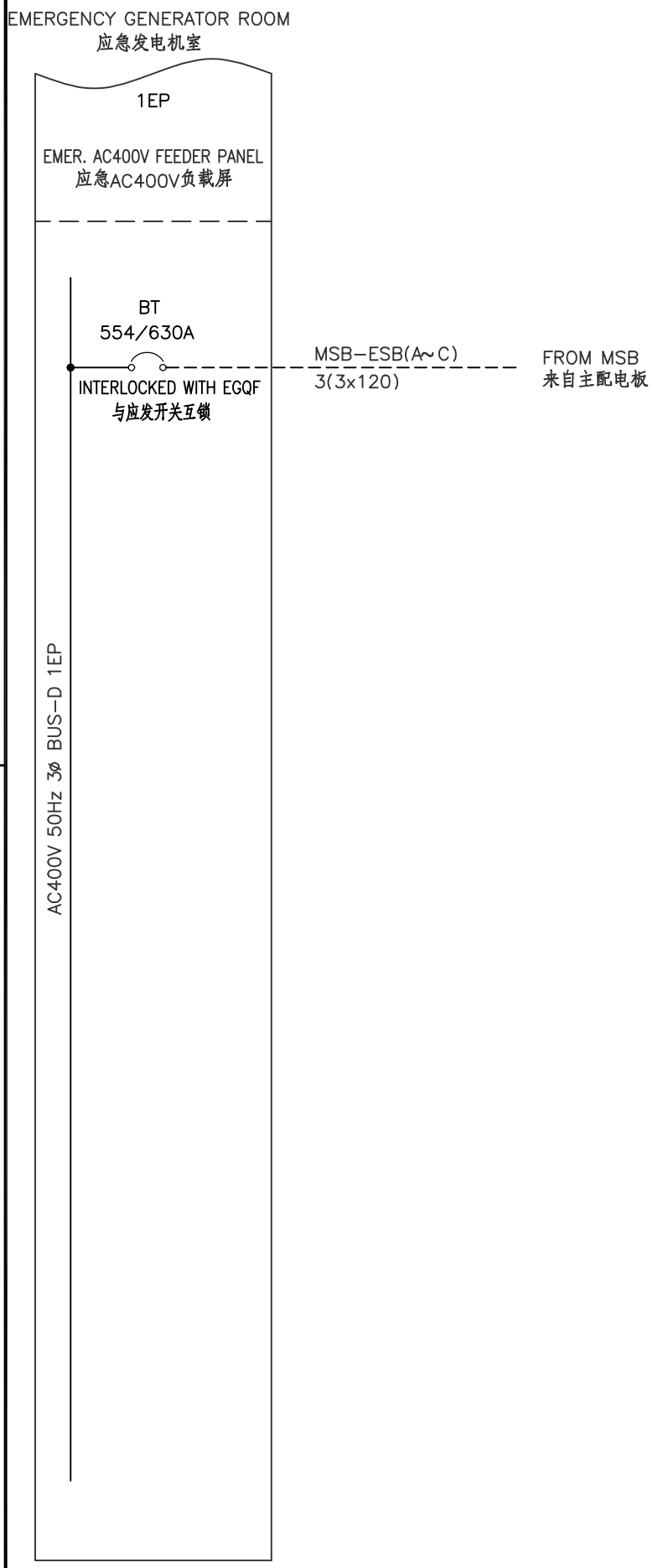
B DECK
B甲板



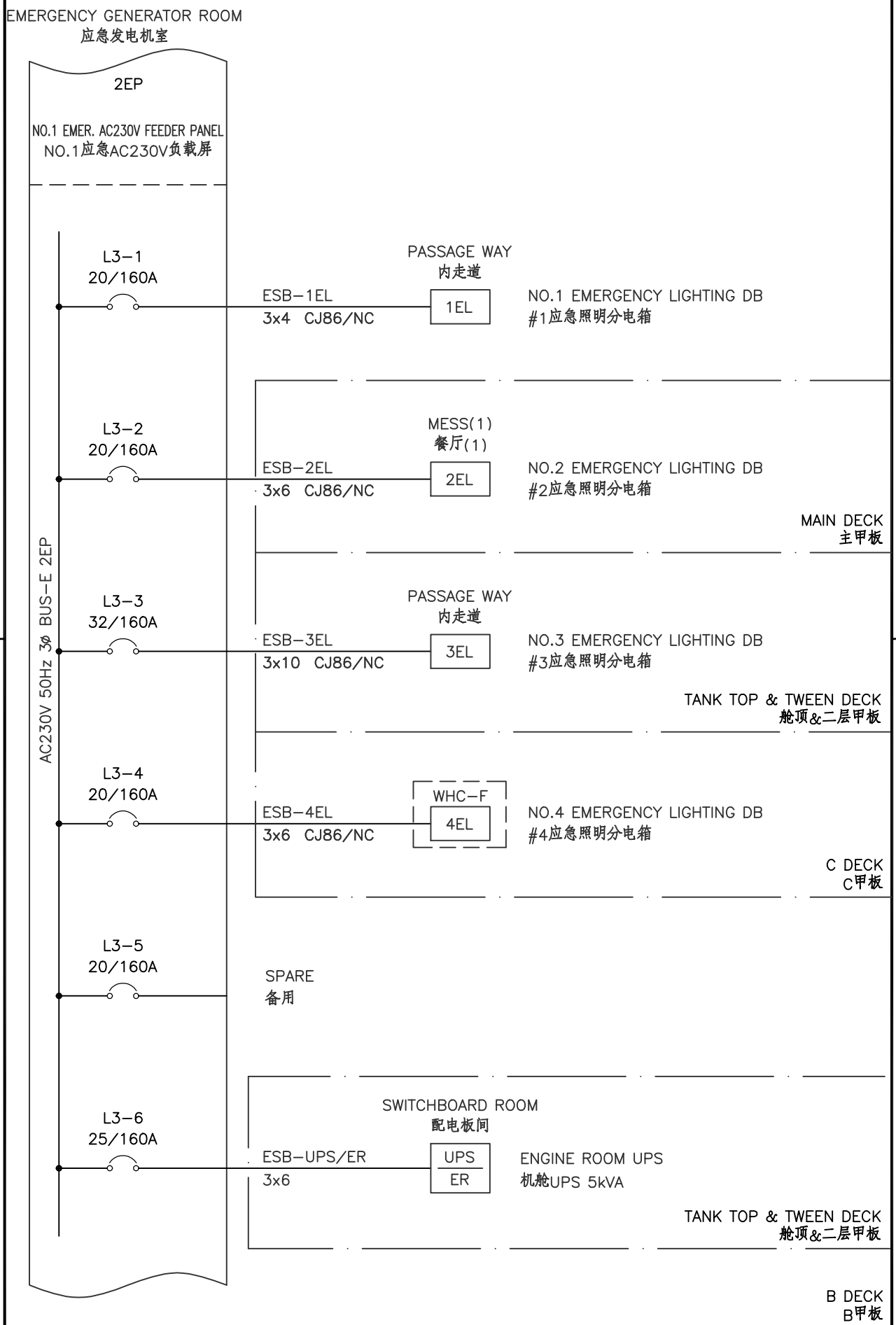








B DECK
B甲板



EMERGENCY GENERATOR ROOM
应急发电机室

2EP

NO.1 EMER. AC230V FEEDER PANEL
NO.1应急AC230V负载屏

AC230V 50Hz 3φ BUS-E 2EP

L3-7
16/160A
ESB-NLP
2x2.5
WHC-F
NLP
NAVIGATION LIGHTING
CONTROL PANEL
航行灯控制板

L3-8
16/160A
ESB-SLP
2x2.5
SLP
SIGNAL LIGHTING
CONTROL PANEL
信号灯控制板

L3-9
32/160A
ESB-1NAB
3x6
1NAB
NO.1 NAVIGATION EQUIPMENT DB
#1助航分电箱

C DECK
C甲板

ET1
200/250A
1EL-ESB
3x120
1ET
1EP-1EL
3x70
FROM EMER. AC400V FEEDER PANEL
来自应急AC400V负载屏

EMERGENCY GENERATOR ROOM
应急发电机室

NO.1 EMERGENCY LIGHTIGN TRANSFORMER
#1应急照明变压器
400V/230V 75kVA

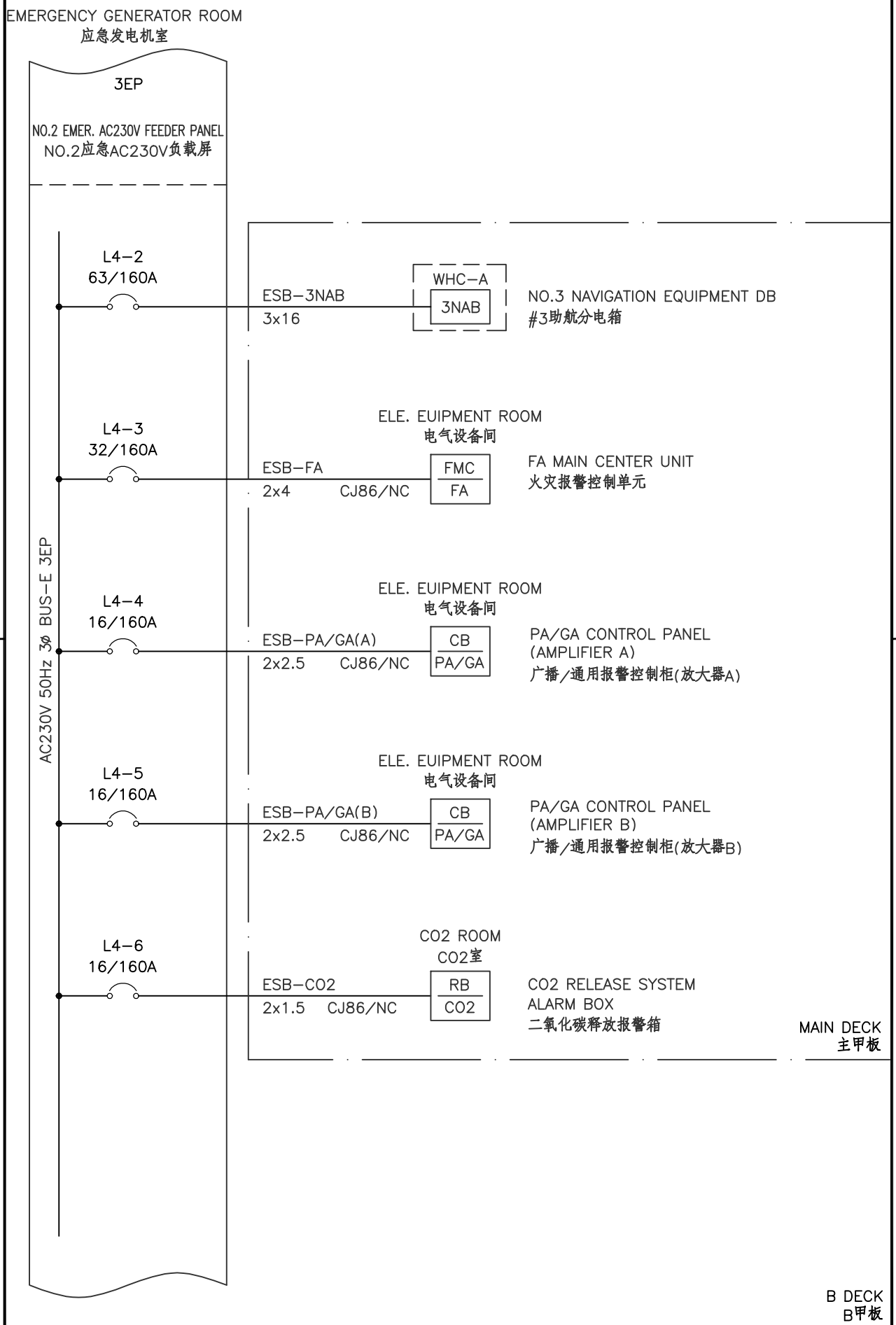
INTERLOCKED
互锁

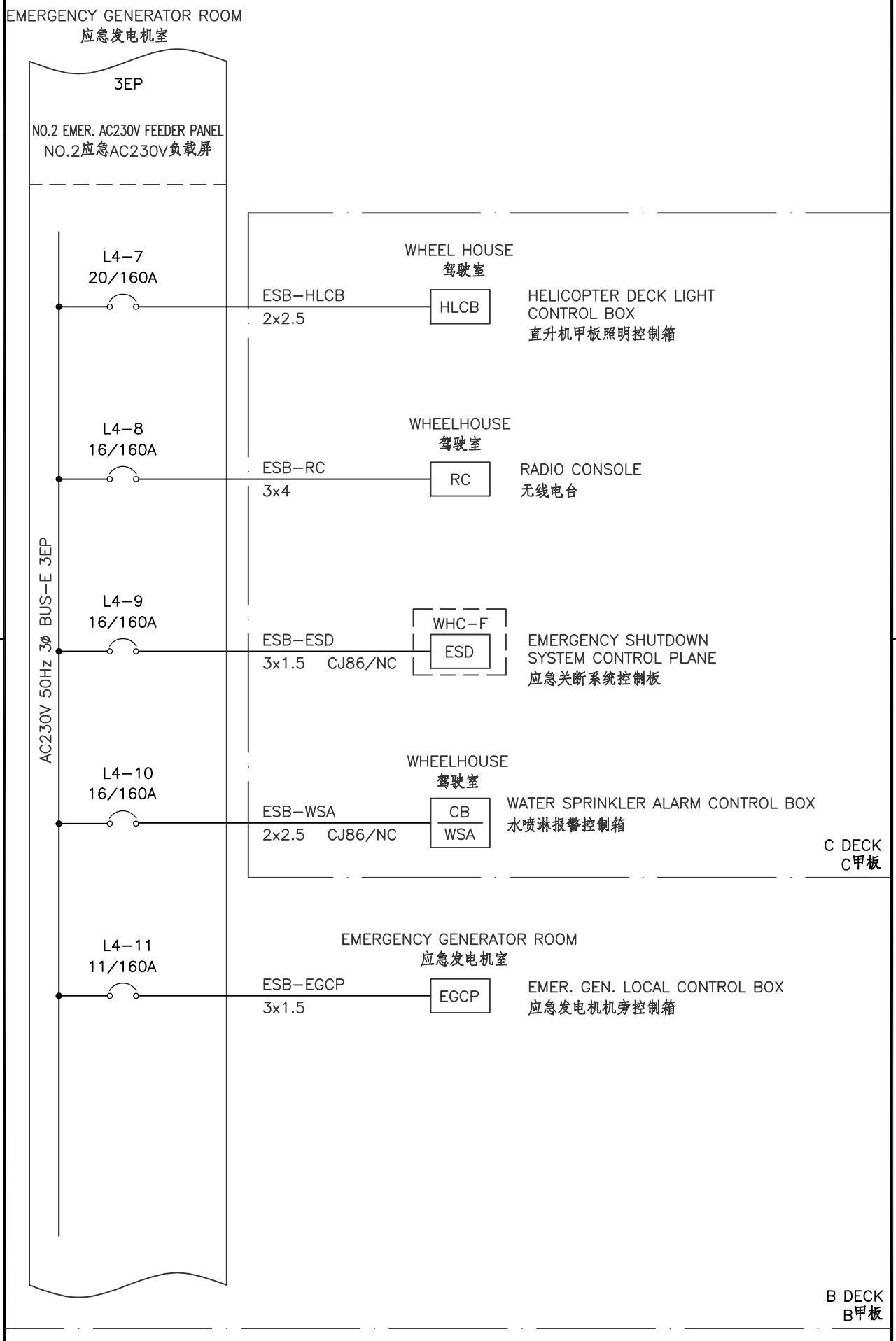
ET2
200/250A
2EL-ESB
3x120
2ET
1EP-2EL
3x70
FROM EMER. AC400V FEEDER PANEL
来自应急AC400V负载屏

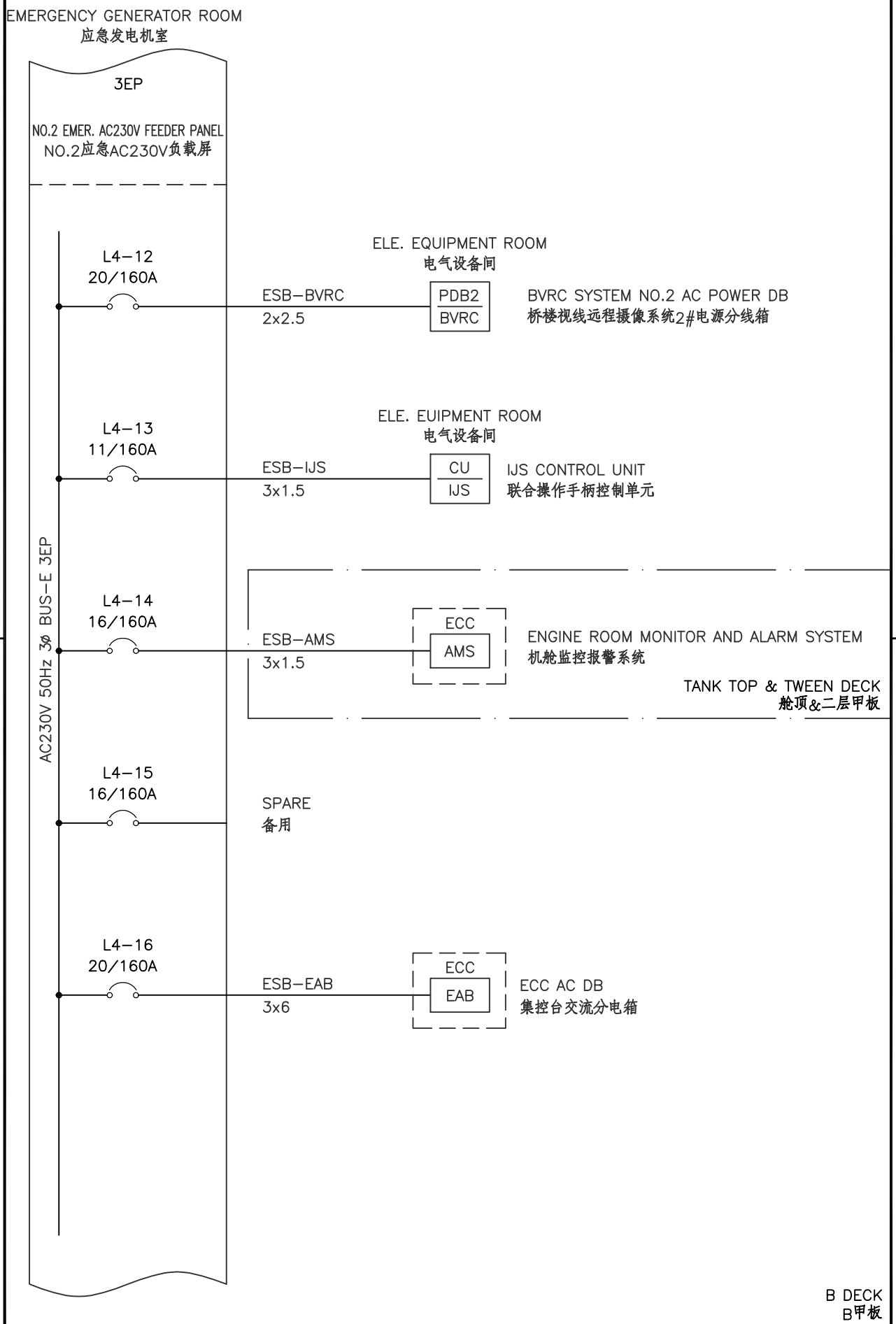
EMERGENCY GENERATOR ROOM
应急发电机室

NO.2 EMERGENCY LIGHTIGN TRANSFORMER
#2应急照明变压器
400V/230V 75kVA

B DECK
B甲板







EMERGENCY GENERATOR ROOM
应急发电机室

3EP

NO.2 EMER. AC230V FEEDER PANEL
NO.2应急AC230V负载屏

AC230V 50Hz 3Φ BUS-E 3EP

L4-17
20/160A
SPARE
备用

L4-18
20/160A
SPARE
备用

L4-19
20/160A
SPARE
备用

L4-20
20/160A
SPARE
备用

L4-21
20/160A
SPARE
备用

L4-1
32/160A
ESB-2NAB
3x6
WHC-F
2NAB
NO.2 NAVIGATION EQUIPMENT DB
#2助航分电箱

C DECK
C甲板

B DECK
B甲板

REV 版本号	DATE 日 期	DESCRIPTION 描 述	DESIGNED 设 绘	CHECKED 校 对	VERIFIED 审 核	APPROVED 审 定
Z	2018.04.27	AS BUILT DRAWING	G.H.Song	P.Lu	N.Zhao	

NOTE:
备注:

1. ALL POWER & CONTROL CABLES NOT MARKED SHALL BE OF CJ86/SC TYPE .
   未注明型号的电力和控制电缆为CJ86/SC.

2. THE CABLES MARKED WITH " * " TO BE SUPPLIED BY MAKER.
   带"*"电缆均由制造厂商提供.

SIGN 会 签

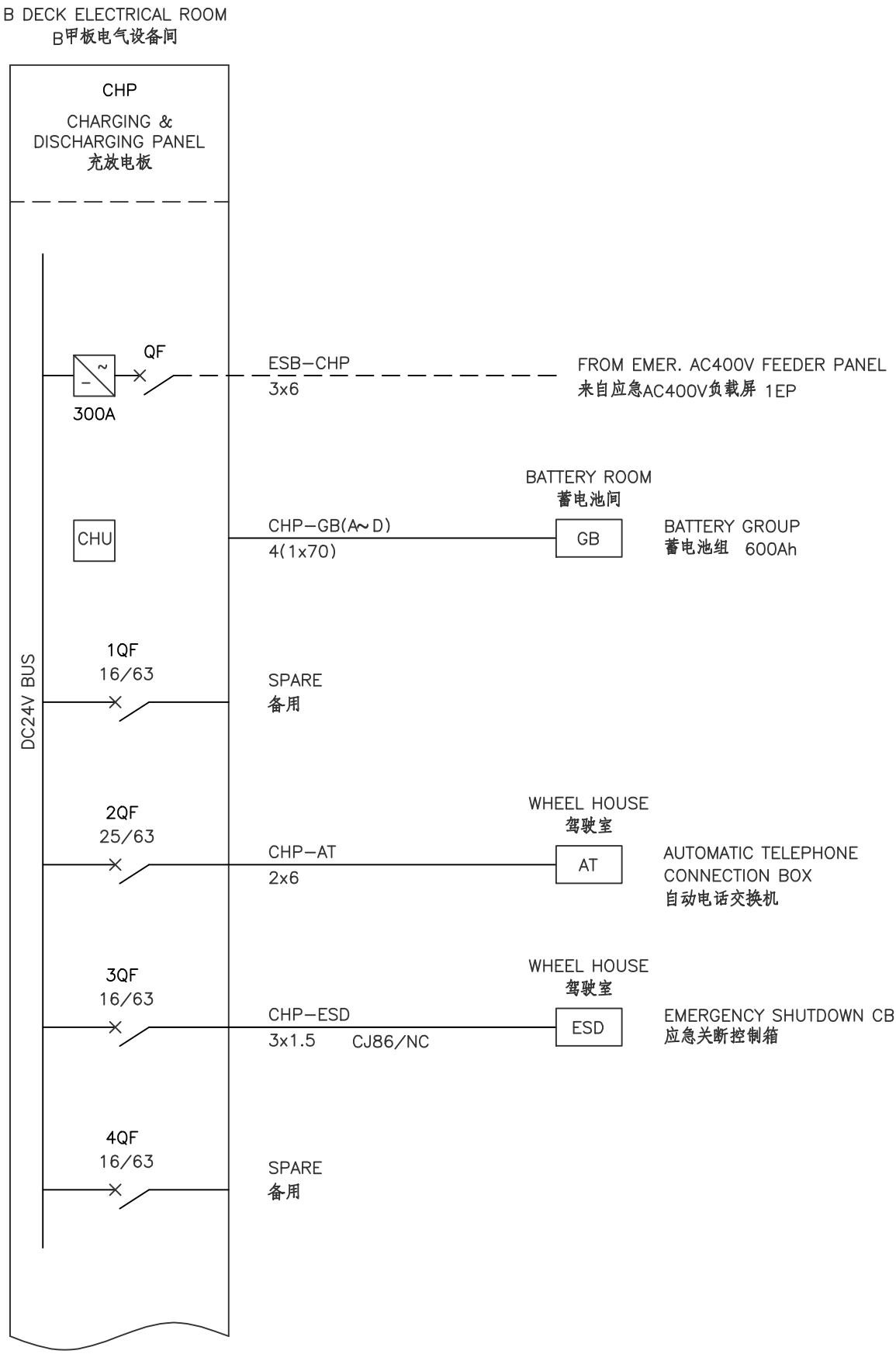
OWNER 船 东	QMS BANI YAS INC.	HULL NO. 工 程 号	HXLB3007
BUILDER 船 厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD 青岛海西重机有限责任公司	CLASS 船 级 社	ABS
TITLE 船 名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图 名	CHARGING & DISCHARGING PANEL SYSTEM DIAGRAM 充放电板系统图	DWG. NO. 图 号	JH316G-611-03

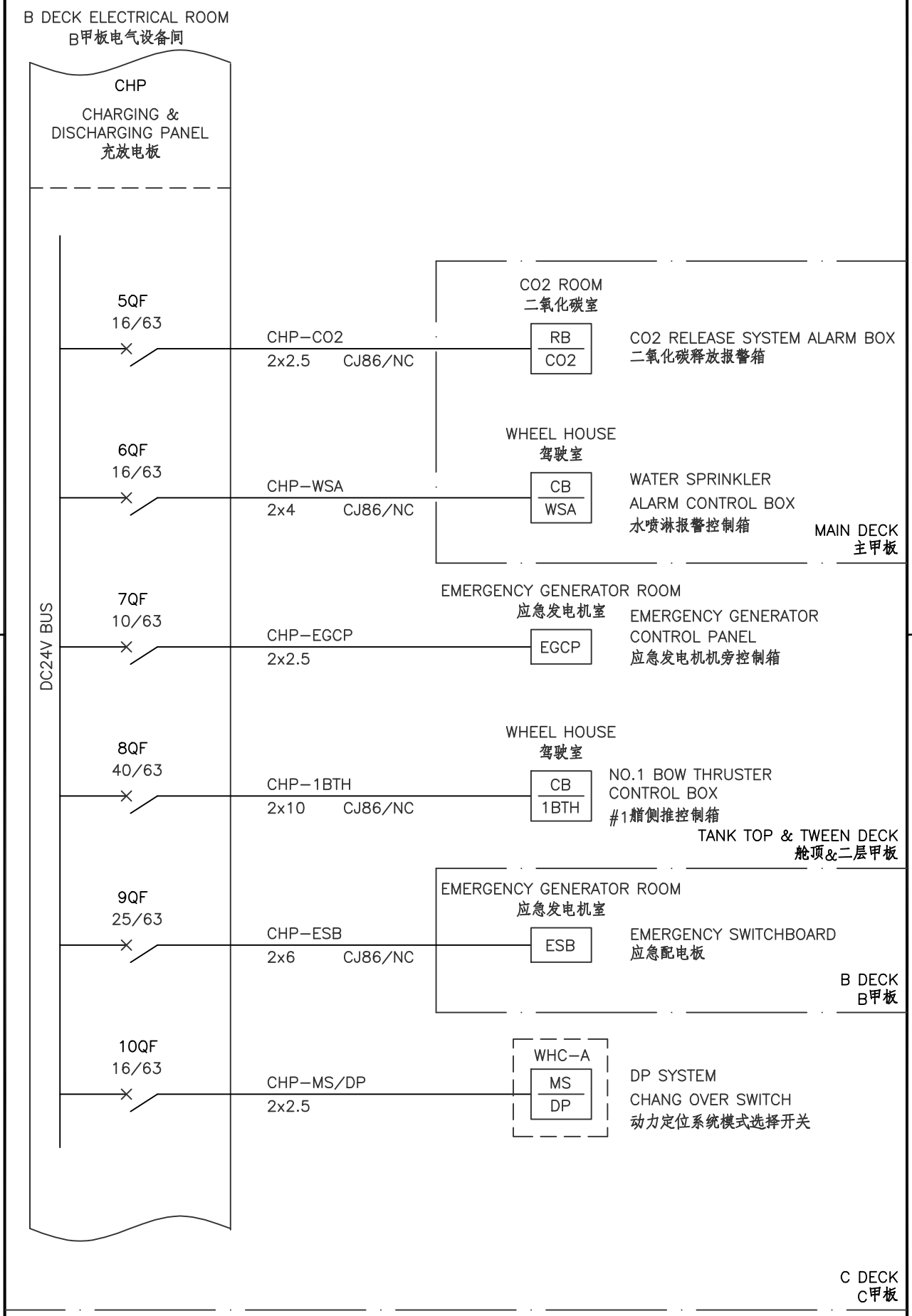
SCALE 比 例	WEIGHT 重 量	PAGE 页 数	DATE 日 期
1:1	-	1/7	

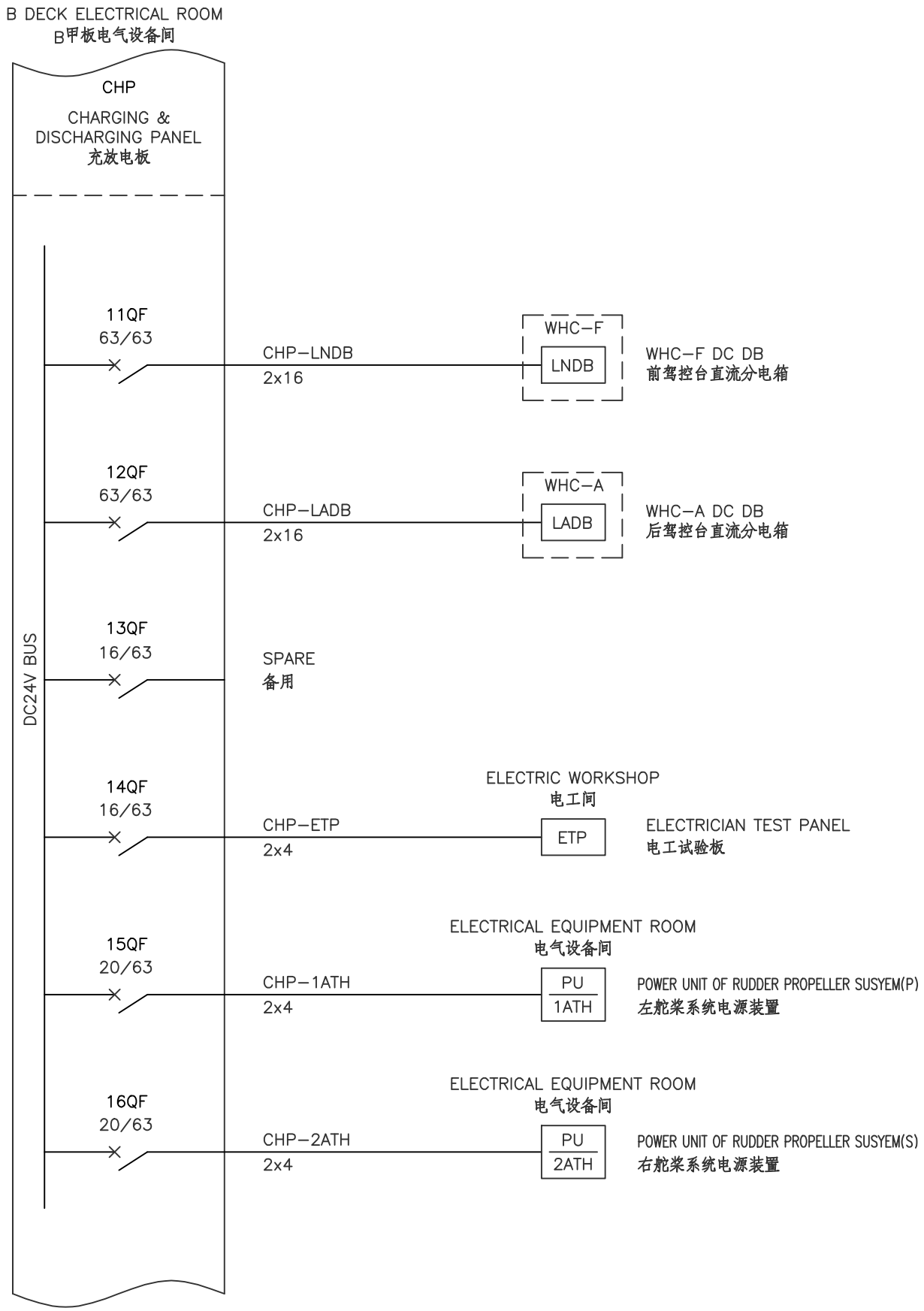
BESTWAY WMMP
上海佳豪船海工程研究设计有限公司
SHANGHAI BESTWAY MARINE ENGINEERING DESIGN CO.,LTD
No.10 Building, No.518 Xinzhuan Road Shanghai, CHINA P.C : 201612 Web : www.bestwaysh.com
Tel : 86-21-6085 9800 Fax : 86-21-6085 9842

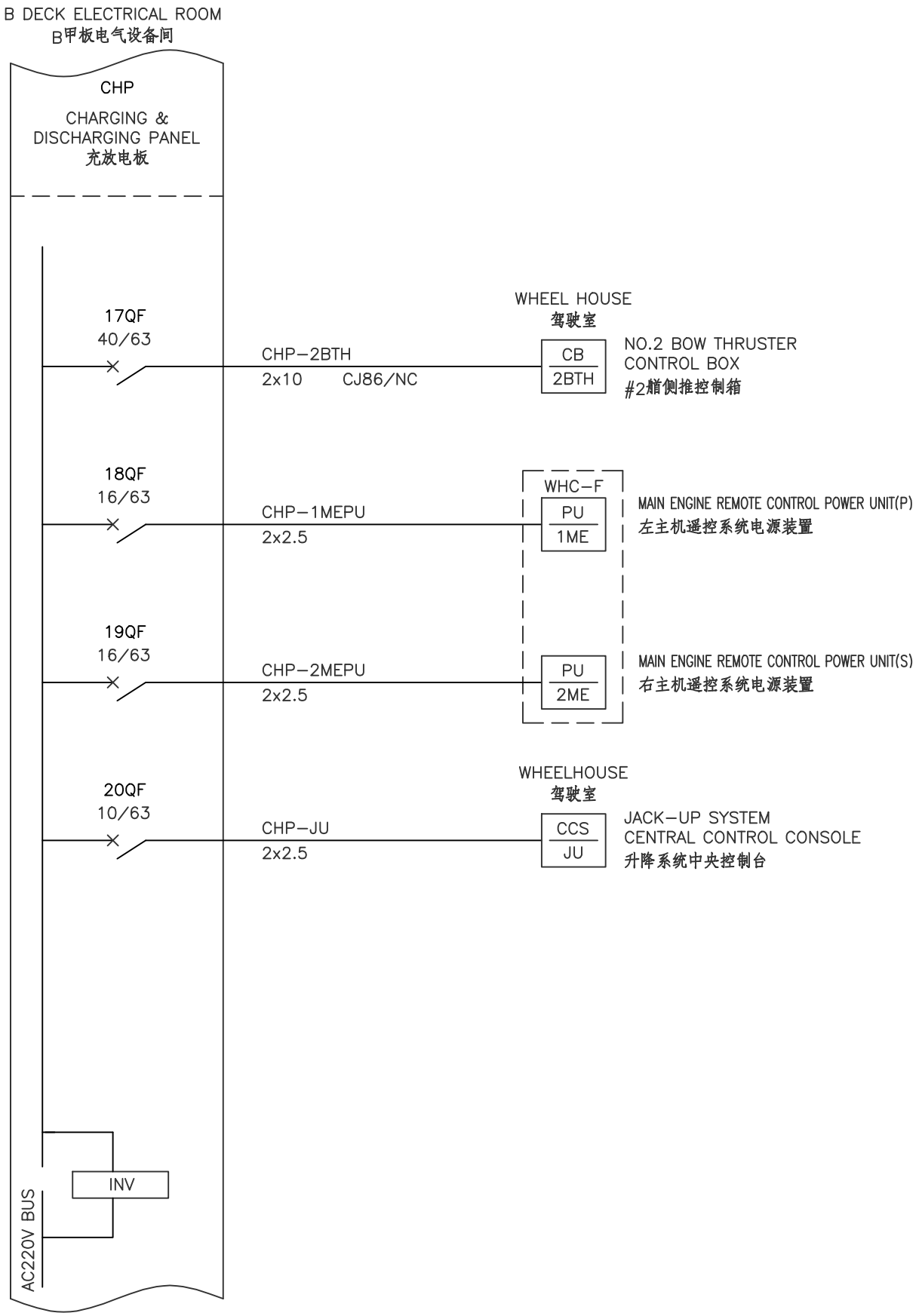
A4:0.0625m²

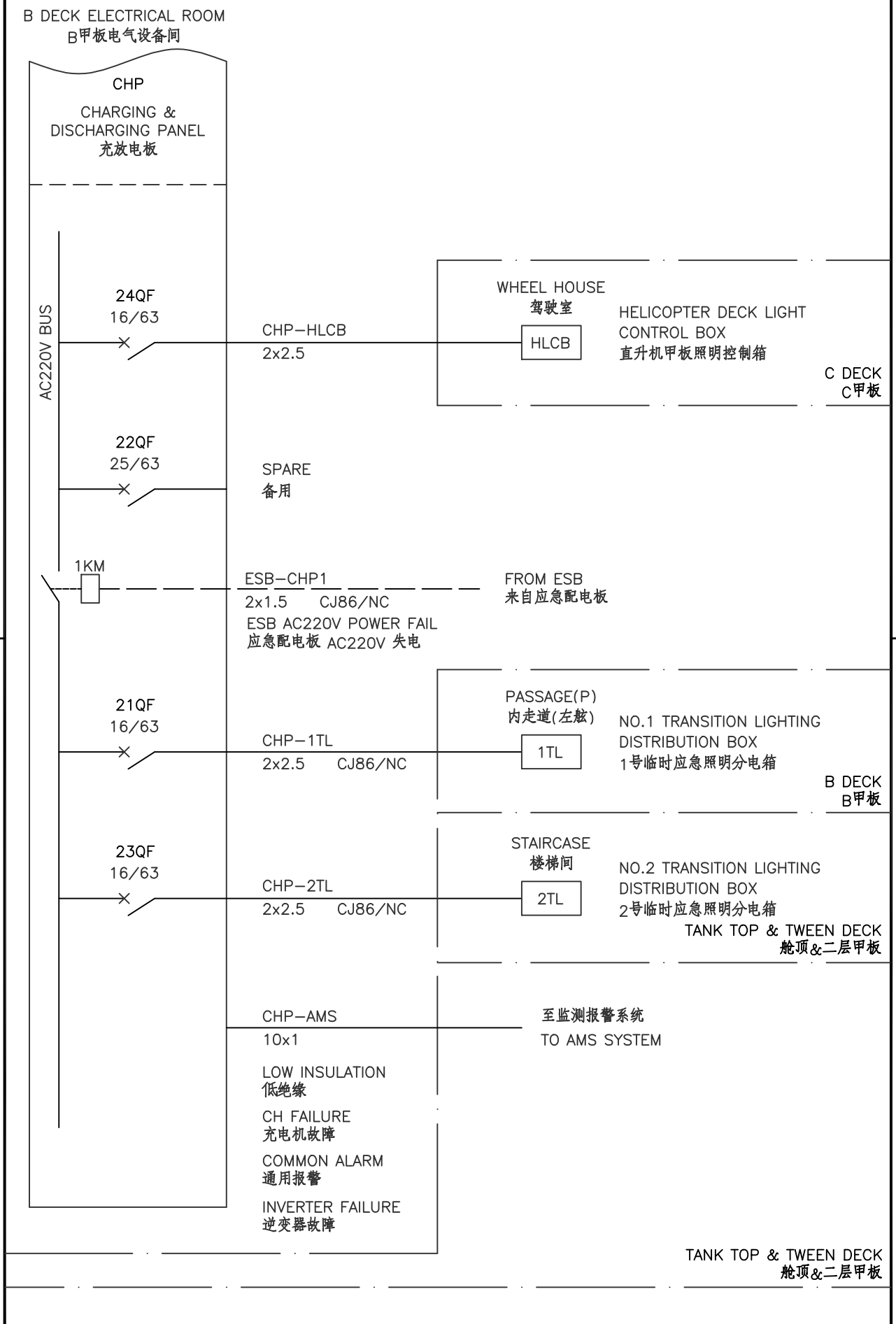
NO. 序号	MARK 代 号	NAME 名 称	QTY. 数量	TYPE AND SPECIFICATION 型 号 与 规 格	REMARK 备 注
26					
25	PU / ME	MAIN ENGINE REMOTE CONTROL POWER UNIT 主机遥控系统电源装置	2	AC220V 50Hz	
24	INV	INVERTER 逆变器	1	DC24V/AC220V 4kW	
23	ECC	ENGINE ROOM CONTROL CONSOLE 机舱集控台	1		
22	WHC-A	AFT WHEELHOUSE CONTROL CONSOLE 后驾控台	1		
21	WHC-F	FORWARD WHEELHOUSE CONTROL CONSOLE 前驾控台	1		
20					
19	2TL	NO.2 TRANSITION LIGHTING DISTRIBUTION BOX 2号临时应急照明分电箱	1	10AX14 IP22	
18	1TL	NO.1 TRANSITION LIGHTING DISTRIBUTION BOX 1号临时应急照明分电箱	1	10AX12 IP22	
17					
16	BC 1BTH ~ BC 2BTH	NO.1~NO.2 BOW THRUSTER CONTROL BOX #1~#2艏侧推系统控制箱	2		
15	HLCB	HELICOPTER DECK LIGHT CONTROL BOX 直升机甲板照明控制箱	1		
14	EDB	ECC DC DB 集控台直流分电箱	1		
13	LADB	WHC-A DC DB 后驾控台直流分电箱	1		
12	LNDB	WHC-F DC DB 前驾控台直流分电箱	1		
11	ETP	ELECTRICIAN TEST PANEL 电工试验板	1		
10	ESB	EMERGENCY SWITCHBOARD 应急配电板	1		
9	AVAB	AUDIO VISUAL ALARM COLUMN RELAY BOX 声光报警灯柱继电器箱	1	WALL MOUNTING, IP44 壁挂式, IP44	
8	RB / CO2	CO2 RELEASE SYSTEM ALARM BOX 二氧化碳释放报警箱	1		
7	FGP	FIRE/GAS DETECTION CONTROL PANEL 火灾/气体探测报警板	1	AC220V 50Hz	
6	EGCP	EMERGENCY GENERATOR CONTROL PANEL 应急发电机机旁控制箱	1		
5	AT	AUTOMATIC TELEPHONE CONNECTION BOX 自动电话交换机	1		
4					
3	CHU	CHARGER 充电机	1	60A	
2	GB	BATTERY GROUP 蓄电池组	1	600Ah 0.5h	
1	CHP	CHARGING & DISCHARGING PANEL 充放电板	1		











REV 版本号	DATE 日 期	DESCRIPTION 描 述	DESIGNED 设 绘	CHECKED 校 对	VERIFIED 审 核	APPROVED 审 定
Z	2018.04.27	AS BUILT DRAWING	P.Lu	Y.Wang	N.Zhao	

THE PLAN IS TO BE DESIGNED IN ACCORDANCE WITH THE FOLLOWING DRAWINGS:
本图依据以下系统图绘制:

1. JH316G-662-02 CO2 RELEASE ALARM SYSTEM DIAGRAM
   JH316G-662-02 CO2施放预报警系统图
2. HOSPITOL & REFRIGERATOR ALARM SYSTEM DIAGRAM
   JH316G-662-03 医务室及冷库呼叫系统图
3. JH316G-662-05 AUDIO VISUAL ALARM COLUMN SYSTEM DIAGRAM
   JH316G-662-05 机舱报警灯板系统图
4. JH316G-662-06 WATERTIGHT DOOR ALARM ELECTRIC SYSTEM DIAGRAM
   JH316G-662-06 水密门关闭报警电气系统图
5. JH316G-652-02 COMMAND SOUND POWERED TELEPHONE SYSTEM DIAGRAM
   JH316G-652-02 声力电话系统图
6. JH316G-641-02 EMERGENCY SHUTDOWN SYSTEM DIAGRAM
   JH316G-641-02 应急切断系统图
7. JH316G-652-07 EMERGENCY TELEGRAGH SYSTEM DIAGRAM
   JH316G-652-07 应急车钟系统图
8. JH316G-662-11 ENGINEER CALL ALARM SYSTEM
   JH316G-662-11 轮机员呼叫报警系统图

SIGN 会 签

OWNER 船 东	QMS BANI YAS INC.	HULL NO. 工 程 号	HXLB3007
BUILDER 船 厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD 青岛海西重机有限责任公司	CLASS 船 级 社	ABS
TITLE 船 名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图 名	INTERIOR COMMUNICATION & ALARM EQUIPMENT ARRANGEMENT 内部通讯及报警设备布置图	DWG. NO. 图 号	JH316G-604-06

SCALE 比 例	WEIGHT 重 量	PAGE 页 数	DATE 日 期
	-	1/6	

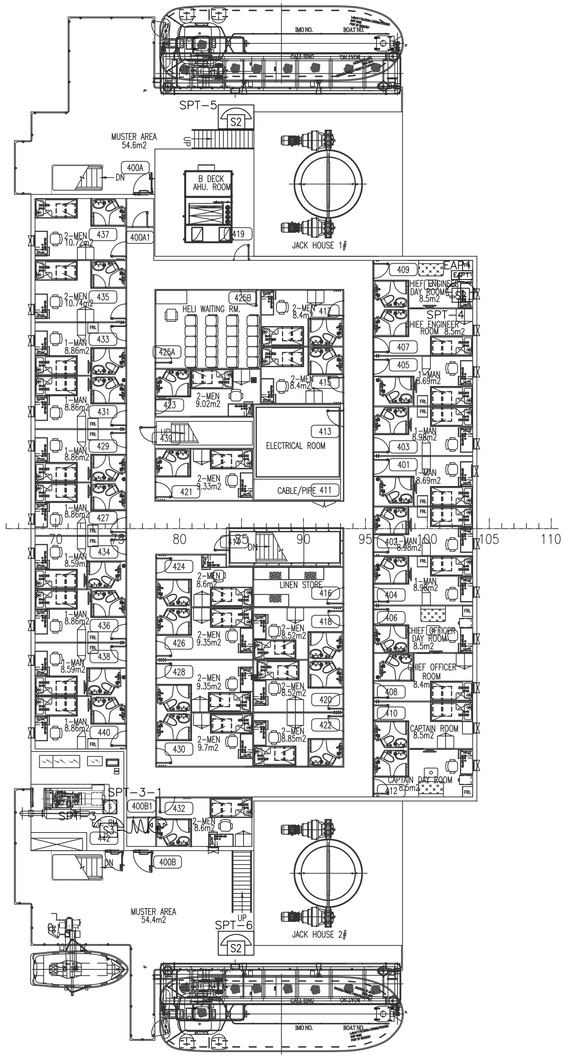
BESTWAY WMMP
上海佳豪船海工程研究设计有限公司
SHANGHAI BESTWAY MARINE ENGINEERING DESIGN CO.,LTD
No.10 Building, No.518 Xinzhuan Road Shanghai, CHINA P.C : 201612 Web : www.bestwaysh.com
Tel : 86-21-6085 9800 Fax : 86-21-6085 9842

A4:0.0625m²

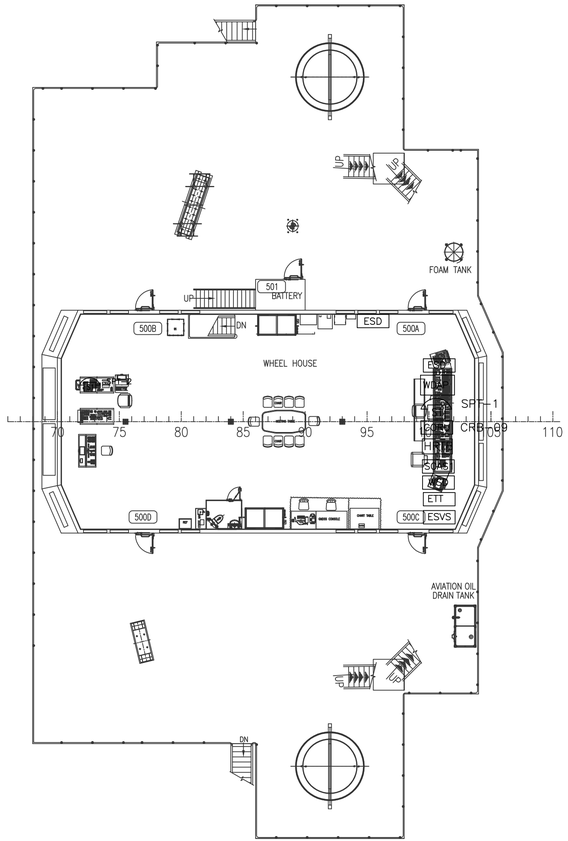
NO. 序号	MARK 代 号	NAME 名 称	QTY. 数量	TYPE AND SPECIFICATION 型 号 与 规 格	REMARK 备 注
26	AVAB	AUDIO VISUAL ALARM COLUMN RELAY BOX 声光报警灯柱继电器箱	1	WALL MOUNTING, IP44 壁挂式, IP44	
25	HRTB	HOSPITAL & REF. ALARM SYSTM TERMINAL BLOCK 病房及冷库报警接线端子排	1		WHC SUPPLY 驾控台提供
24	⊗	HOSPITAL & REF. ALARM SYSTM LIGHT 嵌入式呼叫报警器	2		
23	HRSW	HOSPITAL & REF. ALARM SYSTM SWITCH 病房报警开关	2		
22	HRRU	HOSPITAL & REF. ALARM SYSTM REFRIGERATION UNIT 冷库报警单元	2	WALL MOUNTING 壁装式	医务室及冷库呼叫
21	SCAS3	HOSPITAL & REF. ALARM SYSTM HOSPITAL UNIT 病房报警单元	1	WALL MOUNTING 壁装式	
20	SCAS2	HOSPITAL & REF. ALARM SYSTM GALLEY UNIT 病房及冷库系统厨房报警单元	1	WALL MOUNTING 壁装式	
19	SCAS1	HOSPITAL & REF. ALARM SYSTM BRIDGE UNIT 病房及冷库系统驾控台报警单元	1	FLUSH TYPE 嵌入式	
18	CORU	CO2 REPEATER UNIT 二氧化碳复示单元	1		
17	AVA	AUDIBLE AND VISUAL ALARM 声光报警器	2		
16	COK1~2	REMOTE CONTROL RELEASE STATION TRAVEL SWITCH 机舱遥控施放站行程开关	2		
15	EGV3	RELEASE PIPE PRESSURE SWITCH 施放管路压力开关	1		CO2 施放预报警
14	EGV2	RELEASE VALVE TRAVEL SWITCH OF E/R 机舱施放阀行程开关	1		
13	EGV1	LEAKAGE PRESSURE SWITCH 泄漏压力开关	1		
12	RB / CO2	CO2 RELEASE ALARM BOX CO2预施放报警箱	1		
11	◎S	JUNCTION BOX 声力电话接线盒	2	4 CABLE GLAND, IP56	
10	SPRB	SOUND POWERED TELEPHONE RELAY BOX 声力电话继电器盒	1	RL-24-4	
9	S	LIGHT AND BELL 声力电话闪光灯铃组	6	SON-160,IP55	
8	S3	ANTINOISE SOUND POWERED TELEPHONE 头戴式声力电话	2	VSP-22M,IP66	
7	S3	ANTINOISE SOUND POWERED TELEPHONE 头戴式声力电话	6	VSP-212M-L	声力电话
6	S2	SOUND POWERED TELEPHONE WITH WATERPROOF BOX 壁式安装声力电话(带水密箱)	2	VSP-22M,IP66	
5	S2	WALL MOUNTING SOUND POWERED TELEPHONE 壁式安装声力电话	6	VSP-213M-L	
4	S1	FLUSH TYPE SOUND POWERED TELEPHONE 嵌入式声力电话	1	VSP-212M-L	
3	S1	FLUSH TYPE SOUND POWERED TELEPHONE 嵌入式声力电话	1	VSP-213M-L	
2	S1	FLUSH TYPE SOUND POWERED TELEPHONE 嵌入式声力电话	1	VSP-211M-L	
1	SPT	CONNECTION BOX 声力电话汇接箱	1	IP22 ,VSP-JB-20 (18+1)门	

NO. 序号	MARK 代号	NAME 名称	QTY. 数量	TYPE AND SPECIFICATION 型号与规格	REMARK 备注
52					
51					
50					
49					
48					
47					
46	DI2 / RPP	THAWING ROOM DISPLAY BOX 缓冲间显示盒	1		
45	DI1 / RPP	GALLEY DISPLAY BOX 厨房显示盒	1		
44	EAP1 ~ EAP5	ENGINEER CALL AND ALARM EXTENSION ALARM PANEL 轮机员呼叫延伸报警板	5	IP20	
43	ESB4	EMERGENCY SHUTDOWN BUTTON 应急切断按钮	2	WALL TYPE WATER TIGHT 壁式,水密	FOR ES4 用于 ES4
42	ESB2	EMERGENCY SHUTDOWN BUTTON 应急切断按钮	2	WALL TYPE WATER TIGHT 壁式,水密	FOR ES2 用于 ES2
41	ESB1-2	EMERGENCY SHUTDOWN BUTTON BOX 应急切断按钮盒	2	WALL TYPE WATER TIGHT 壁式,水密	FOR ES1-2 用于 ES1-2
40	ESB1-1	EMERGENCY SHUTDOWN BUTTON BOX 应急切断按钮盒	2	WALL TYPE WATER TIGHT 壁式,水密	FOR ES1-1 用于 ES1-1
39	ESD	EMERGENCY SHUTDOWN CONTROL PANEL 应急关断控制箱	1	WALL TYPE 壁式	
38	WDI* / *WTD	DOOR INDICATION LIGHT 水密门状态指示灯	12	IP68	
37	WDA / *WTD	WATERTIGHT DOOR ALARM SENSOR 水密门报警传感器	6	IP68	水密门
36	RB / *WTD	RELAY BOX 继电器	6	IP67	
35	WDAP	WATERTIGHT DOOR ALARM PANEL 水密门报警板	1	IP22	
34	ESVS	STABILIZED VOLTAGE SUPPLY 稳压电源	1	IP22	
33	ETTR	ENGINE TELEGRAPH REPEATER 车钟复示器	1	IP20	
32	FLBUP FLBUS	FIASH LIGHT AND BUZZER UNIT 闪光灯铃组	2	IP44	应急车钟
31	ETR1~2	ENGINE ROOM TELEGRAPH RECIVER 机舱回令钟	2	IP44	
30	ETT	WHEELHOUSE TELEGRAPH TRANSMITTER	1	IP20	
29	AVDB	AUDIO VISUAL ALARM COLUMN DISTRIBUTION BOX 声光报警灯柱分配箱	1	WALL MOUNTING, IP22 壁挂式, IP22 ,12FX-8	
28	AVAL	AUDIO VISUAL ALARM COLUMN 声光报警灯柱	8	WALL MOUNTING, IP44 壁挂式, IP44	
27	AVAQ	AUDIO VISUAL ALARM INDICATOR PANEL 声光报警指示板	1	FLUSH TYPE, IP20 嵌入式, IP20	

B DECK



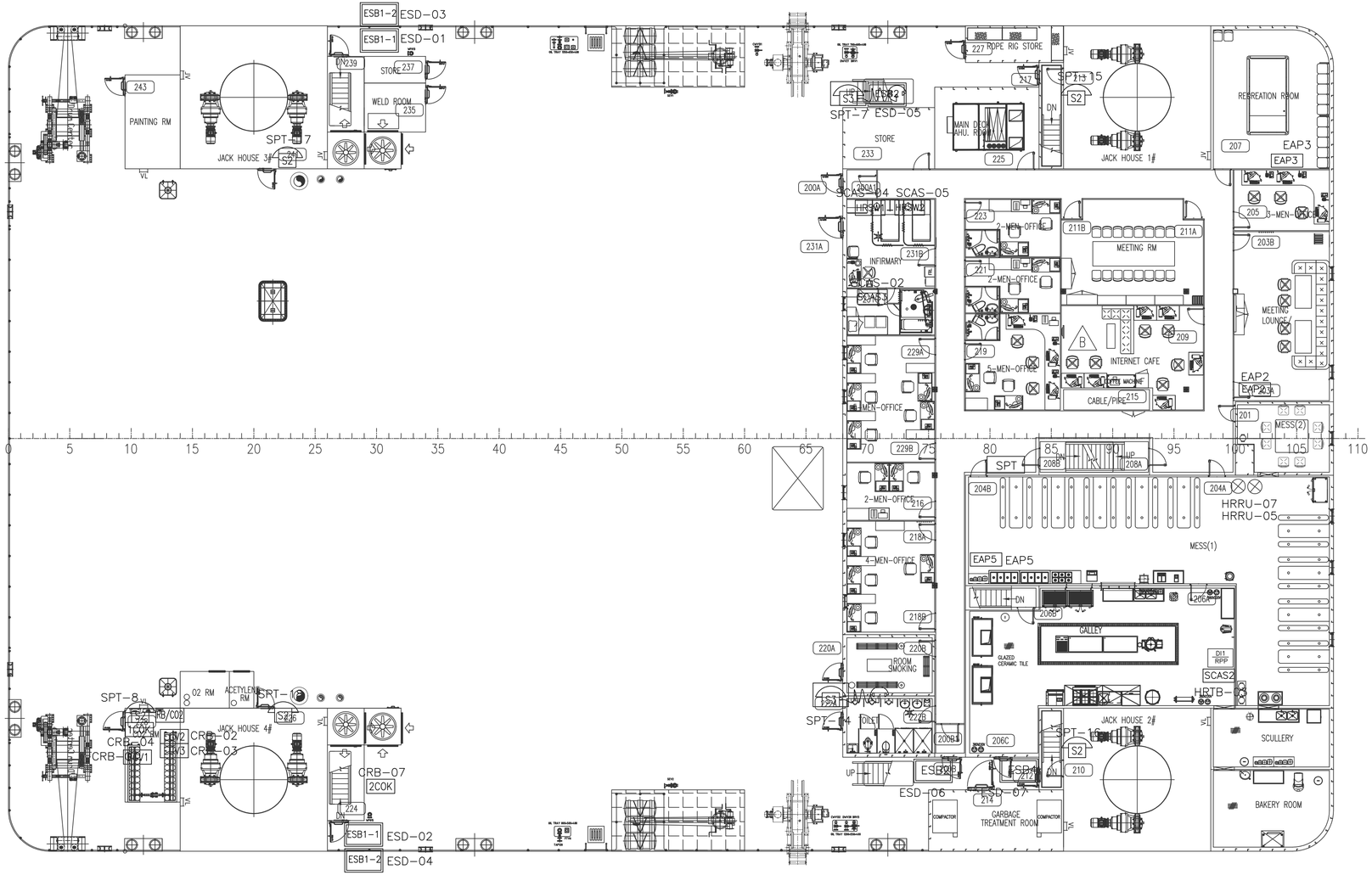
C DECK



A2+ : 0.375 m²

MAIN DECK

INTERIOR COMMUNICATION & ALARM EQUIPMENT ARRANGEMENT 内部通讯及报警设备布置图	JH316G-604-06 Rev.Z	PAGE 5/6



A2+ : 0.375 m²

TANK TOP & TWEEN DECK

INTERIOR COMMUNICATION & ALARM EQUIPMENT ARRANGEMENT 内部通讯及报警设备布置图	JH316G-604-06	PAGE
	Rev.Z	6/6

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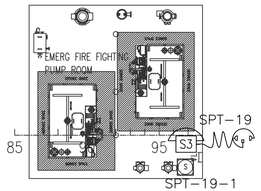
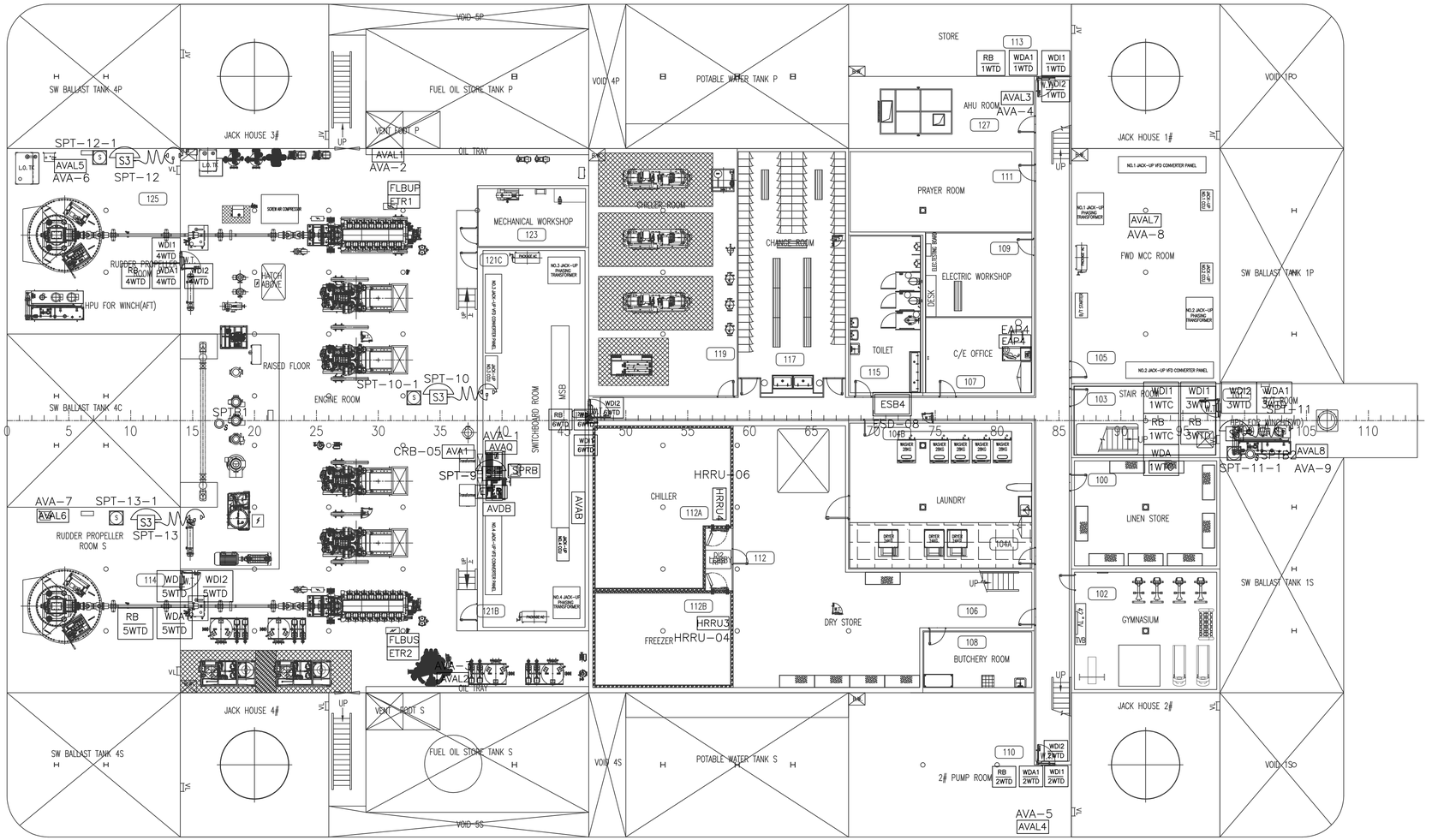




A2+ : 0.375 m²

REV 版本号	DATE 日 期	DESCRIPTION 描 述	DESIGNED 设 绘	CHECKED 校 对	VERIFIED 审 核	APPROVED 审 定
Z	2018.04.27	AS BUILT DRAWING	P.Lu	Y.Wang	N.Zhao	

SIGN 会 签

OWNER 船 东	QMS BANI YAS INC.	HULL NO. 工 程 号	HXLB3007
BUILDER 船 厂	QINGDAO HAIXI HEAVY-DUTY MACHINERY CO.,LTD 青岛海西重机有限责任公司	CLASS 船 级 社	ABS
TITLE 船 名	QMS BANI YAS WMPP300(BW-300LB)	DETAIL DESIGN 详细设计	
DRAWING 图 名	ARRANGEMENT OF FIRE AND GAS DETECTION ALARM EQUIPMENT 火灾及气体探测报警设备布置图	DWG. NO. 图 号	JH316G-604-07

SCALE 比 例	WEIGHT 重 量	PAGE 页 数	DATE 日 期
1:100	-	1/5	

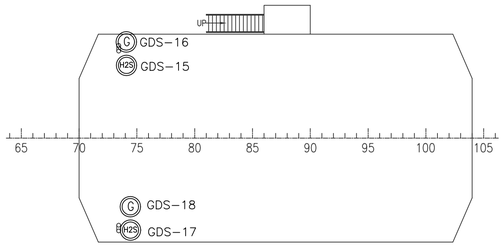
BESTWAY WMMP
上海佳豪船海工程研究设计有限公司
SHANGHAI BESTWAY MARINE ENGINEERING DESIGN CO.,LTD
No.10 Building, No.518 Xinzhuan Road Shanghai, CHINA P.C : 201612 Web : www.bestwaysh.com
Tel : 86-21-6085 9800 Fax : 86-21-6085 9842

A4:0.0625m²

NO. 序号	MARK 代 号	NAME 名 称	QTY. 数量	TYPE AND SPECIFICATION 型 号 与 规 格	REMARK 备 注
19					
18	R	TERMINAL RESISTOR 终端电阻	2		Consilium
17	H2S	TOXIC GAS DETECTION SENSOR(EXd.-PROOF) 有毒气体探头(防爆)	11		Consilium
16	G	COMBUSTIBLE GAS DETECTION SENSOR(EXd.-PROOF) 可燃气体探头(防爆)	11		Consilium
15	GMC GDS	GAS DETECTION CENTRAL UNIT 气体探测控制单元	1		Consilium
14	FCP	FIRE ALARM CONTROL PANEL 火警控制板	1	CM 4.3	Consilium
13		MANUAL CALL POINT 手动报警按钮	24	MCP-A/SCI IP23	Consilium
12		MANUAL CALL POINT(DAMP PROOF) 手动报警按钮(防潮)	13	MCP-A/SCI IP67	Consilium
11	T IS	HEAT DETECTOR((EXid.-PROOF)) 温度探头(本安防爆)	1	FOR BATTERY ROOM 蓄电池室	
10	T3	HEAT DETECTOR(84C,DAMP PROOF) 温度探头(84度,防潮)	10	EV-H/84C+SPB- ADAPTSCI+2- IP55	Consilium
9	T1	HEAT DETECTOR(54C) 温度探头(54度)	1	EV-H/54C+UB-6+SCI	Consilium
8	IC10	ADDRESS UNIT 地址单元	2	IC10 IP55	Consilium
7	ISOL	BARRIER 隔离栅	2	NS-ISOL IP55	Consilium
6	TIM	TIMER(0-30min) 延时继电器(0~30分钟)	1	TC10 IP55	Consilium
5	S3 IS	SMOKE DETECTOR(EXP.-PROOF) 烟雾探头(防爆)	2	EVC-PY-IS+NS- ADAPT-IS+2 - IP55	Consilium
4	S2	SMOKE DETECTOR(DAMP PROOF) 烟雾探头(防潮)	45	EV-P+SPB- ADAPTSCI+2-IP55	Consilium
3	S1	SMOKE DETECTOR 烟雾探头	125	EV-P+UB-6SCI	Consilium
2	REP	FIRE ALARM REPEATER PANEL 火灾复示板	1	Repeat M 4.3	Consilium
1	FMC/FA	FIRE ALARM CONTROL UNIT 火警控制单元	1	CONSILIUM SALWICO CARGO	Consilium

ARRANGEMENT OF FIRE AND GAS DETECTION ALARM EQUIPMENT 火灾及气体探测报警设备布置图	JH316G-604-07 Rev.Z	PAGE 3/5

TOP DECK



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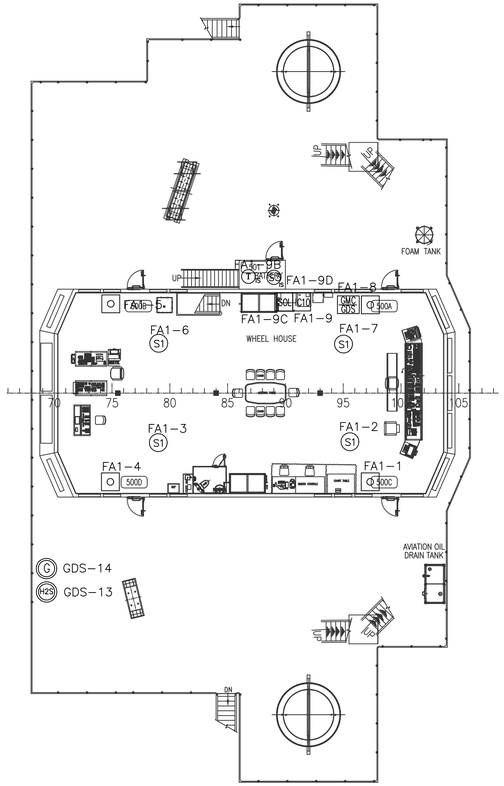

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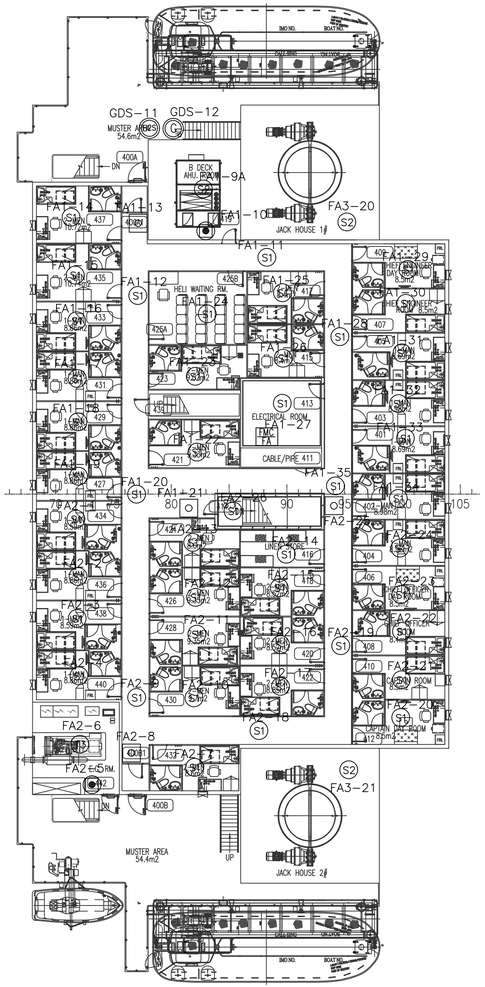
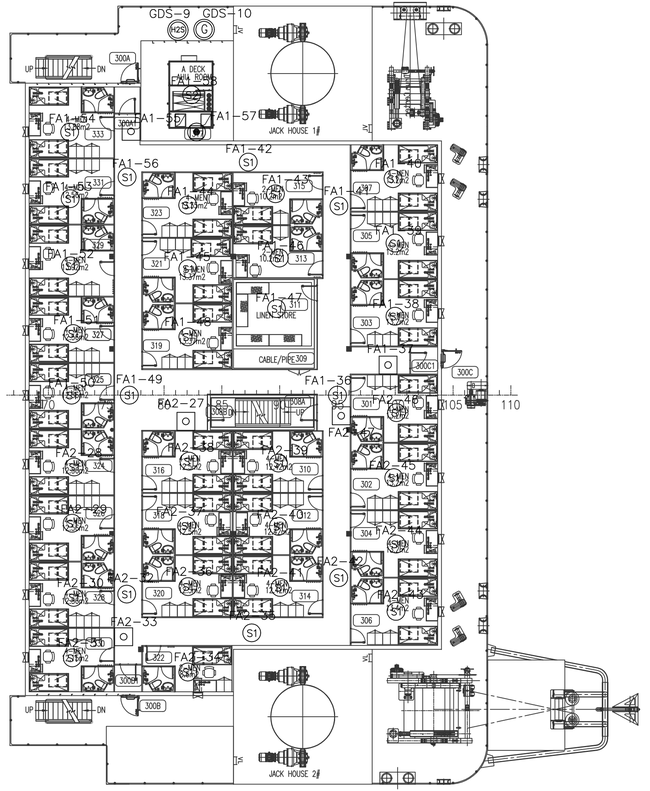


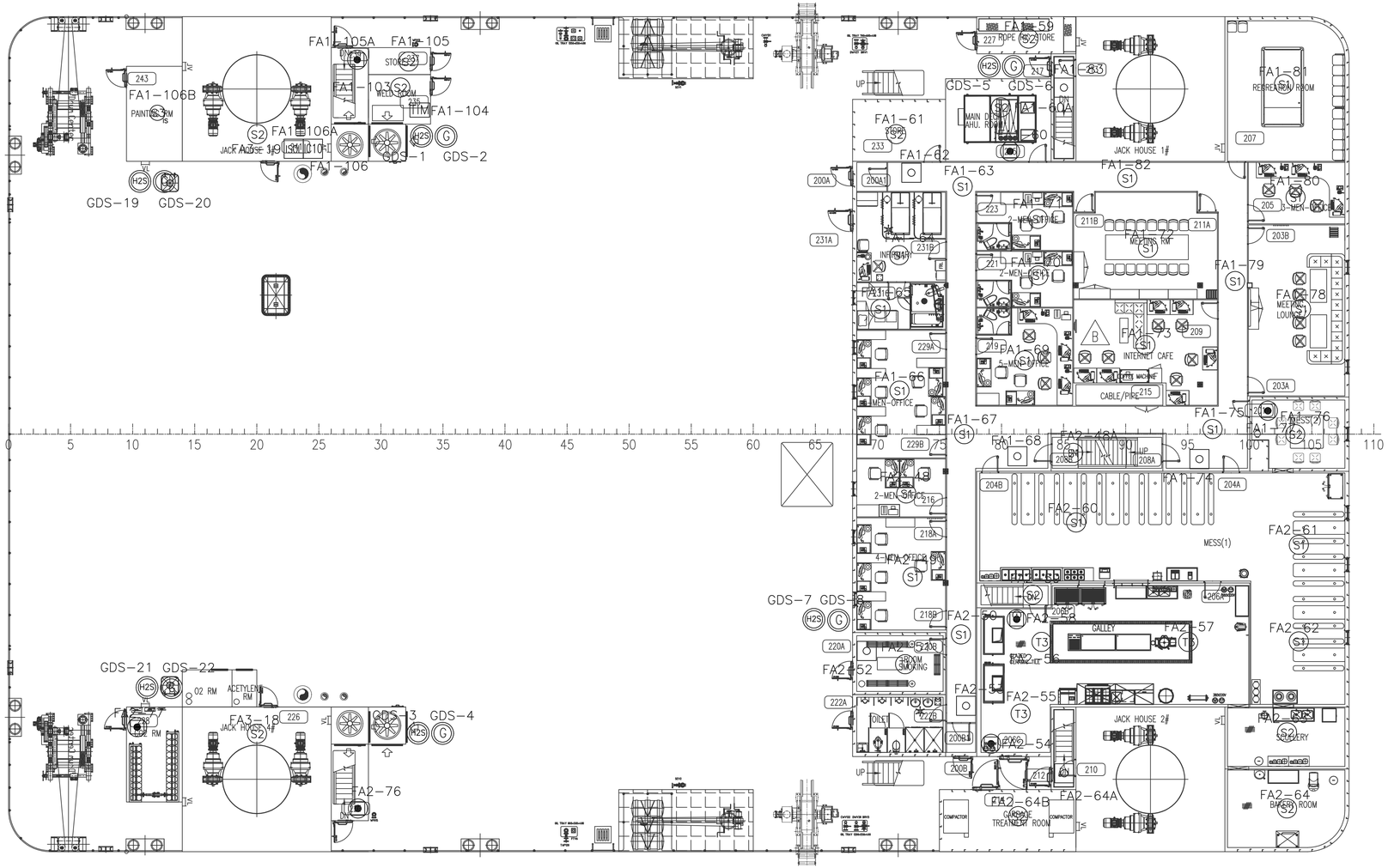
A DECK



A2+ : 0.375 m²

MAIN DECK

ARRANGEMENT OF FIRE AND GAS DETECTION ALARM EQUIPMENT 火灾及气体探测报警设备布置图	JH316G-604-07 Rev.Z	PAGE 4/5

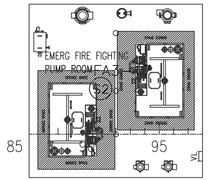


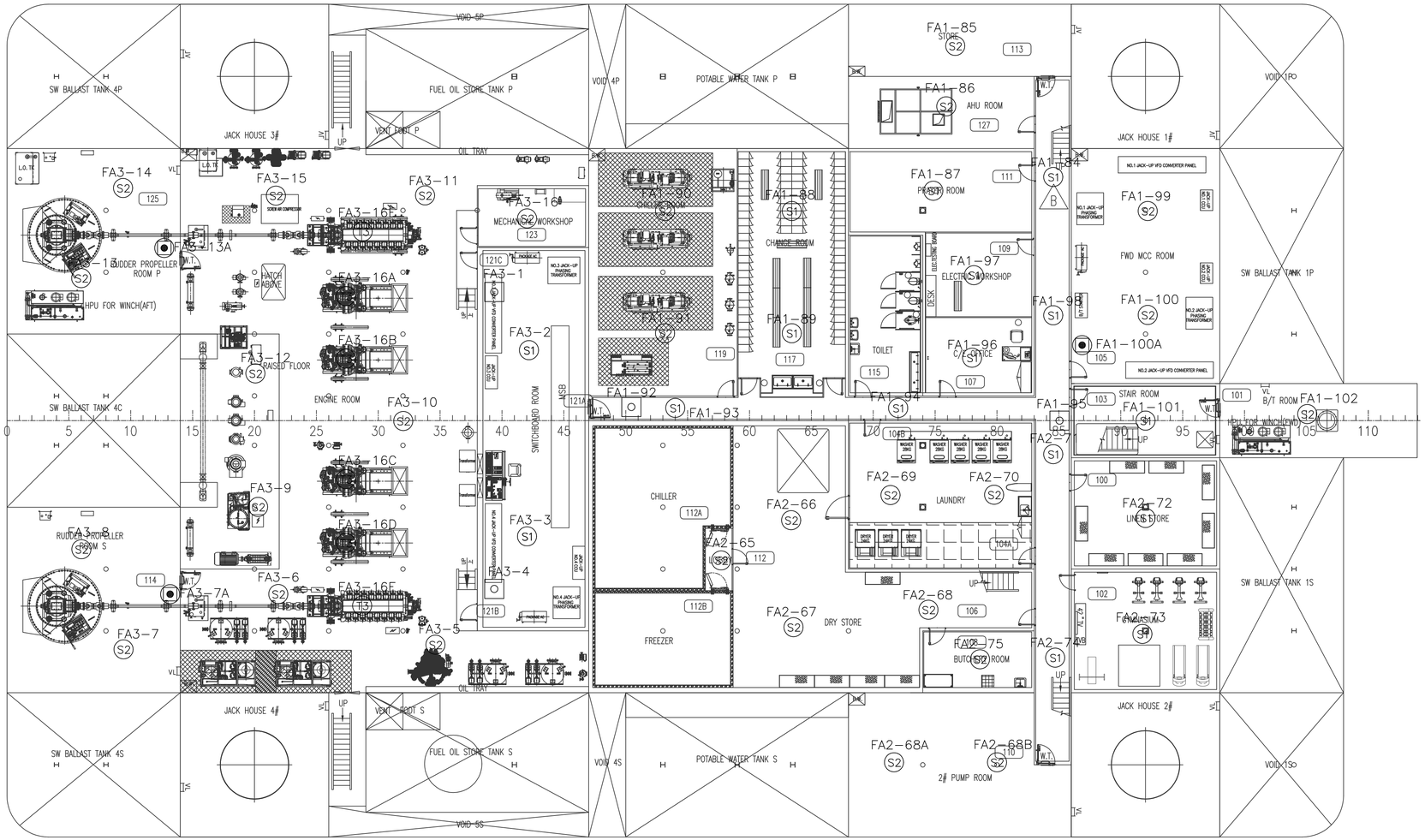
A2+ : 0.375 m²

TANK TOP & TWEEN DECK

ARRANGEMENT OF FIRE AND GAS DETECTION ALARM EQUIPMENT 火灾及气体探测报警设备布置图	JH316G-604-07 Rev.Z	PAGE 5/5

DOUBLE BOTTOM





A2+ : 0.375 m²

7.6.12 DP system operating manual

Please refer to a separated operating manual supplied by KONGSBERG.

Tasks – T1754995/T1754996/T1754997
ABS ID: YY269889
Qingdao Haixi Heavy-duty Machinery Co., Ltd.,
Hull No. HXLB3007
Flag: Republic of Panama

Attention: Mr. Bing Li, Shanghai Bestway Marine Engineering Design Co., Ltd. (WCN: 527856)

The document shown in the attached list is reviewed in accordance with the applicable requirements of the following:

- ABS Guide for Building and Classing Mobile Offshore Units- 2008 (with Rule Change Notices 1, 2, 3, 4, 5, 6, 7 & 8);
- ABS Rules for Building and Classing Mobile Offshore Drilling Unit, 2016 (Referred by ABS MOU Guide as applicable);
- IMO Resolution A.1023 (26) "Code for the Construction and Equipment of Mobile Offshore Drilling Units" (2009);
- International Convention on Load Lines, 1966 (1988 Protocol), Regulation 10(2), Annex 1.

Please note our review is based on the following conditions:

1) **The subject Operating Manual has been reviewed solely to ensure the presence of the information indicated in Section 14.1 of the IMO MODU Code and Section 1-1-5 of the Part 1 Supplement of the ABS MODU Rules and its consistency with the design information and limitations considered in the unit's classification. The American Bureau of Shipping is not responsible for the operation of the unit.**
2) **It is the Owner's responsibility to provide training, supervision and guidance to assure that the unit is operated within the limits of classification and applicable regulations.**
3) One stamped copy of the document together with this review letter should be placed on board for the guidance of the operating personnel.

Our comment S-072 is closed hereby.

For any clarifications, contact Ms. Lijing Hao at +86-21-23270860 or (Lhao@eagle.org).

Very truly yours,

Hong Zhu
Director of Engineering

Electronically Signed by: Zhenhai Qian

Document List

Drawing No.	Rev. NO.	TITLE	Status
JH316G-102-07	B	Operating Manual	Approved / Approved on behalf of Government

Electronic copies of the document, appropriately stamped are available through the ABS Eagle Construct Engineering Manager (O2E), Web portal.