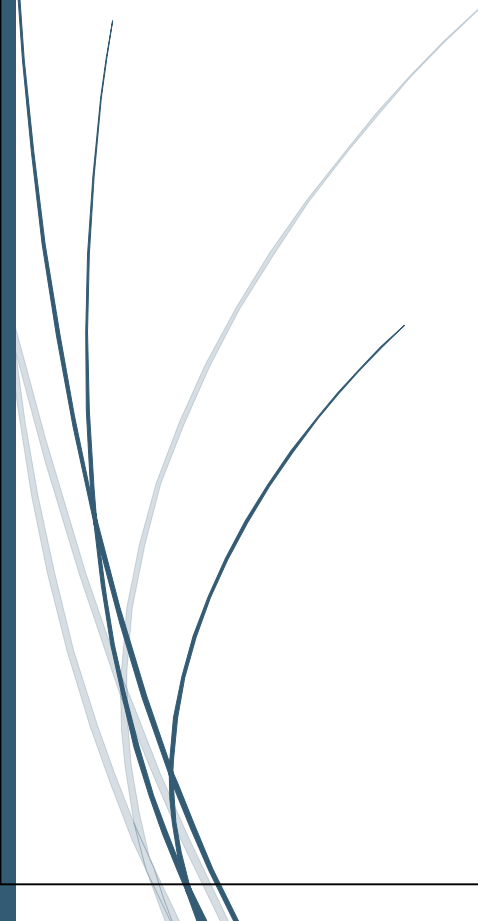


A large blue arrow pointing to the right, positioned to the left of the main title.

Point Aqua TM – 160701

Outline Specification Workboat

Design type: 14,2 – 7,6

Abstract blue lines of varying thickness and color (from light to dark blue) that curve upwards from the bottom left corner of the page.

First issue: 14.09.2016 ika

CONTENT:

MAIN GROUP 0:.....	3
0. PARTICULARS AND CONDITIONS.....	3
02 General Conditions	3
03 Design Rights	3
04 Trade amrk.....	3
05 Maker's List.....	3
MAIN GROUP 1:.....	4
1. SHIP GENERAL.....	4
BASIC INFORMATION	4
11 General description.....	4
12 Main particulars.....	4
13 Capacities (*)	5
15 Performance	5
20 Reference system.....	5
30 Class, Certificates and Regulations	5
40 Building method and Workmanship	5
45 Instruction manuals.....	5
50 purchase routines.....	6
70 Spare parts	6
MAIN GROUP 2:.....	7
20 Hull materials	7
21 Steel construction in general	7
22 Watertight divisions.....	7
25 Superstructure - wheelhouse.....	7
27 Blasting, shop priming, cleaning of materials.....	7
28 Cathode protection	7
33 Deck cranes	8
34 Hatches.....	8
MAIN GROUP 4:.....	9
40 Maneuvering machinery and equipment	9
41 Navigation and searching equipment	9
42 Communication equipment.....	9
43 Anchoring and mooring equipment.....	10

44 High-pressure cleaning machine.....	10
46 Common hydraulic system.....	10
MAIN GROUP 5:.....	11
50 Safety equipment.....	11
51 Accommodation and inventory	11
57 Ventilation, AC and heating.....	11
58 Sanitary systems	11
MAIN GROUP 6:.....	12
60 Propulsion machinery	12
66 Diesel Generator sets.....	12
MAIN GROUP 7:.....	13
70 Fuel oil system.....	13
72 Cooling system.....	13
73 Compressed air	13
74 Exhaust system	13
79 Automation systems for machinery.....	13
MAIN GROUP 8:.....	14
803 Bilge & ballast system	14
804 Gutter pipes, outside accommodation.....	14
813 Fire fighting system	14
85 Common electric and electronic system.....	14

MAIN GROUP 0:

0. PARTICULARS AND CONDITIONS

02 GENERAL CONDITIONS

The General Arrangement plan, 160701-100-001_GA, this specification and other drawings and documentation from Point Offshore AS describes a workboat, hereafter described as the Vessel.

03 DESIGN RIGHTS

The design rights with specification and belonging documents are the property of Point Offshore AS and must not be copied from nor imparted to a third party without written consent, including also the interdependent information given. The receipt of these documents implies that these conditions are accepted.

04 TRADE AMRK

The design shall be branded as Point Aqua TM, a trade mark owned by Point Offshore AS.

05 MAKER'S LIST

The maker's list is reflecting designer's / Owner's preference with respect to different makes and shall be used as basis for the quotation. Proposals different from the Makers list may be presented for the Owner and the designer reflecting technical and commercial pros and cons.

MAIN GROUP 1:

1. SHIP GENERAL BASIC INFORMATION

11 GENERAL DESCRIPTION

Together with the enclosed General Arrangement plan, 160701-100-001-GA, this specification describes a workboat, hereafter described as the Vessel. The basic principle for the design of this Vessel is to meet operational demands with the best possible solutions. The Vessel shall be able to fulfil the general demands of the industry as workboat.

The vessel is designed to meet all working conditions requirements.

The vessel is seaworthy and manufactured in accordance with Nordic Boat Standard, further on referred to as NBS (Nordic Boat Standard for Denmark, Sweden, Finland, Iceland and Norway)

The vessel will be constructed and equipped for operation in North Sea weather conditions in the Norwegian coastline area. It is designed as monohull displacement vessel, driven by single propeller without nozzle and it is optimized for unrestricted sea state. The vessel is designed to have excellent stability and seakeeping qualities for heavy duty service and carrying out the following duties:

Will be sea going and capable of undertaking sea voyages under its own power at any design loaded condition and draught.

Working in sheltered and unsheltered waters and in the open seas

Fish Farming activities

Towing of another object

ROV operations

12 MAIN PARTICULARS

	Approx.
Length over all:	14,2 m
Length between perpendiculars:	12,45 m
Breadth moulded:	7,6 m
Depth to Main deck:	2,5 m
Scantling draught:	2,2 m
Deadweight at max. draught (*):	~100 t

Gross tonnage (*):	~ 42 t
--------------------	--------

(* - Approximate values)

13 CAPACITIES (*)

	Approx.	Remarks
Fuel oil:	4,6 m ³	2 tanks
Fresh water:	4,5 m ³	1 tank
Grey/sewage:	1,4 m ³	1 tank
Forepeak:	1,9 m ³	1 tank
Trim tank:	9,2 m ³	4 tanks
Deck load:	>20 t	Designated area
Crane capacity – condition 1	2t/10m arm SB	Without trim tanks
Crane capacity – condition 2	3t/10m arm SB	With trim tanks
Crane capacity – condition 3	5t/10m arm aft	Without FP ballast
Crane capacity – condition 4	7t/10m arm aft	With FP ballast

(* - Approximate values)

15 PERFORMANCE

Trial speed at Sea state 0 - 1 and 1,3 mtrs draft to be approx. 12 knots.

Vessel systems are to be designed for service at ambient air temperatures between -10 C° to +25 C° and sea temperature up to +25 C°

20 REFERENCE SYSTEM

All numerical units refer to the metric, SI system of measurement.

30 CLASS, CERTIFICATES AND REGULATIONS

The Vessel is designed to comply with rules, regulations and requirements laid down by NBS for vessel up to 15 meters and 15 knots.

40 BUILDING METHOD AND WORKMANSHIP

All workmanship to be carried out according to Western Europe Shipbuilding practice and approved drawings. Steel work to be carried out according to IACS standard for construction of new Vessels.

The Vessel with machinery, equipment and accessories in all aspects to be appropriate and solid. Due consideration to be given to obtain easy access for operation of equipment and machinery and, as far as practicable, to obtain good access for future maintenance and repair.

The electrical installation to be according to IEC norms, and when relevant, DIN norms.

All equipment and machinery to be installed according to manufacturer's instructions and shall be of best marine quality.

45 INSTRUCTION MANUALS

Instruction Manuals in four copies for all machinery and equipment to be delivered. Manuals to be in Norwegian or English language.

50 PURCHASE ROUTINES

All major equipment / sub suppliers shall be approved by Designer and Owner.

70 SPARE PARTS

Spare parts for all equipment, machinery etc. according to suppliers' normal standard.

MAIN GROUP 2:

2. HULL AND STRUCTURE

20 HULL MATERIALS

All materials to be new and of marine quality according to NBS MK2 and MK3 or similar. Materials are to be suitable for the service intended with this Vessel.

All steelwork to be executed according to approved drawings.

21 STEEL CONSTRUCTION IN GENERAL

All dimensioning to be according to NBS requirements. Excessive thickness of plates shall not be used. Frame spacing to be 500 mm.

22 WATERTIGHT DIVISIONS

The vessel to have minimum 3 watertight divisions. A watertight door to be arranged between the engine room and the cargo room.

25 SUPERSTRUCTURE - WHEELHOUSE

Superstructure – Wheelhouse to be built of sea water resistant aluminium. Dimensioning to be according to NBS requirements.

27 BLASTING, SHOP PRIMING, CLEANING OF MATERIALS

Steel building materials to be grit blasted, and primer of approved type to be applied. Paint work to be performed on clean surfaces, according to manufacturer recommendations for specified coating.

28 CATHODE PROTECTION

Zink anodes as per manufacturers recommendations to be installed.

MAIN GROUP 3:

3. CARGO / SERVICE HANDLING

33 DECK CRANES

1 of Knuckle boom crane with approximately 15 m outreach. SWL load on hook 5t at max heel/list 7 degrees. Dynamic factor 1,3.

The crane shall be operable locally as well as from wheelhouse.

The hydraulic power pack shall be of ample size for efficient operation as well as suitable for harbour operations. Hydraulic oil to be of "food approved" type.

34 HATCHES

On maindeck a hatch with coaming and size approximately 2,8 mtrs by 2,8 mtrs to be arranged.

Option:

Hydraulic opening of the hatch.

Option end.

MAIN GROUP 4:

4. SHIP EQUIPMENT

40 MANEUVERING MACHINERY AND EQUIPMENT

Rudder / steering gear

1 of Rudder with hydraulic steering gear to be installed. Installation to meet requirement in NBS MK 12/14.

The trunk to contain a grease lubricated neck bearing with stainless steel liner.

Remote control with indication in Wheelhouse. Interface to Autopilot. Emergency control to be arranged.

Tunnel thrusters

1 of Tunnel thrusters forward, Hydraulic driven.

Variable speed, fixed pitch type.

Propeller diameter approx.: 500 mm

Motor rating approx.: 50 kW

41 NAVIGATION AND SEARCHING EQUIPMENT

1 of Radar with colour display

1 of Chart system

1 of GPS for navigation.

1 of Compass with interface to Autopilot.

1 of Autopilot with interface to compass and rudder

1 of Echo sounder

1 of Speed log

1 of Radar transponder – EPIRB

42 COMMUNICATION EQUIPMENT

3 of Portable VHF units with charger and spare battery.

1 of Simplex VHF in wheelhouse

1 of GSM cellular phone in wheelhouse

1 of Access point WIFI with outside antenna

Light and signal equipment.

Light and signal equipment to be arranged in compliance with regulation for this type of ship and the operation profile:

- Horn – electric type
- Set of navigation lights

43 ANCHORING AND MOORING EQUIPMENT

The deck machinery to be hydraulic with “food approved” oil type.

Installation to include:

2 of Capstans SB side as indicated on GA. Diameter approx. 350 mm, max force approx. 3 t. Operation by foot pedal

1 of Anchor winch according to NBS regulations

2 of Bollards aft

2 of Bollards midship.

1 of Bollards foreship.

Fairleads according to Regulations and General arrangement plan.

Optional equipment:

Towing winch with approx. 500 mm diameter

Towing hook

Towing pins

Option end

44 HIGH-PRESSURE CLEANING MACHINE

1 of High-pressure cleaning machine, hydraulically driven.

46 COMMON HYDRAULIC SYSTEM

The vessel to be equipped with one common hydraulic system power by main engine PTO

An electrical pump with capacity of minimum 15 kw to be installed for harbor use and for redundancy.

MAIN GROUP 5:

5. EQUIPMENT FOR CREW AND PASSENGERS

50 SAFETY EQUIPMENT

Vessel to be fitted with safety equipment as follows and as a minimum according to NMD requirements:

- 1 of Life raft for 6 persons
- 3 of Survival suits
- 3 of Life jackets
- 1 set Rockets, hand flares, smoke signal etc.

51 ACCOMMODATION AND INVENTORY

Option:

The Vessel to be equipped to accommodate a total number of 3 persons in two cabins.

Option end:

A Locker room with three lockers, toilet and a shower to be arranged as per GA.

Insulation, lining, ceiling, deck covering, doors, outfitting and equipment to be of West European standard.

Windows and portholes to be installed as per GA.

57 VENTILATION, AC AND HEATING

Areas in general to be fitted with satisfactory ventilation, heating and cooling according to NBS standards. Separate exhaust fans for pantry and toilet.

58 SANITARY SYSTEMS

Sanitary supply systems

- 1 of FW hydrophore system.
- 1 of UV filter
- 1 of Hotwater boiler

Sanitary discharge systems

- 1 of Sewage/greywater tank.
- 1 of Sewage discharge pump.

MAIN GROUP 6:

6. MACHINERY MAIN COMPONENTS

60 PROPULSION MACHINERY

The vessel will be equipped with diesel engine propulsion system consisting of:

- 1 of Diesel engine approx. 550 hp
- 1 of Reduction gear with PTO
- 1 of Main propeller with pitch control.

66 DIESEL GENERATOR SETS

- 1 of Main generator set. Approx. 50 ekW.

Option:

- 1 of Main generator set. Approx. 99 ekW.

Option end.

MAIN GROUP 7:

7. SYSTEMS FOR MACHINERY MAIN COMPONENTS

70 FUEL OIL SYSTEM

Engines to use Fuel oil type marine gas oil according to ISO 8217, ISO-F-DMA.(Marine Diesel Oil)

2 of FO tank

72 COOLING SYSTEM

2 of Diesel engine cooling system taking sea water suction from a sea chest fitted with grid, AISI316 filter and stop valve; sea water is circulated through a cooler. Seawater pump with rubber impeller.

73 COMPRESSED AIR

1 of compressor of approximately 3 kw with a tank of minimum 100 liter to be installed. Pressure to be minimum 7 bar. Outlet in engine room and on main deck. Stainless steel piping on main deck.

74 EXHAUST SYSTEM

The exhaust systems shall be dry type as per engine manufacturers standard / recommendation with 35 db silencers.

79 AUTOMATION SYSTEMS FOR MACHINERY

Main Workstation for Navigation, Route planning, Maneuvering, Docking and Operation to be made of steel consoles as per GA.

1 of Pilot chair in wheelhouse.

1 of Safety- alarm system per engine as per manufacturers standard.

1 of Bilge alarm system

1 of Fire detection and alarm system

MAIN GROUP 8:

8. SHIP COMMON SYSTEMS

803 BILGE & BALLAST SYSTEM

2 of Bilge water pumps (minimum) with remote control from wheelhouse to be installed as per NBS requirement

1 of Ballast pump for anti-heeling tanks and FP tank with separate sea inlet/overboard. The flow shall accommodate that all BW shall be possible to transfer from SB side to PS or vice versa in maximum 3 minutes. Operation of valves and pump from steering house.

804 GUTTER PIPES, OUTSIDE ACCOMMODATION

Sufficient number of drain pipes to be laid from respective decks.

813 FIRE FIGHTING SYSTEM

A fixed fire extinguish system to be installed in Engine room using Inergen as extinguisher. Portable hand extinguishers to be installed in cargo hold, accommodation and wheelhouse. Fire blanket in pantry area.

1 of Fire detection and alarm system

85 COMMON ELECTRIC AND ELECTRONIC SYSTEM

General lighting, Emergency lights, equipment and alarm/ monitoring systems to be supplied from diesel engine generators and 24VDC batteries.

For lighting, power saving illumination (LED) to be used as far as practical.

2 powerful LED flood lights to be installed, 1 for main deck and 1 for SB sea area

Latest technology like MCCB/MCB etc to be used in power distribution system.

The arrangement of the electrical equipment throughout the vessel shall, as far as practicable, be such as it provides ready and safe access to parts required for inspection, maintenance and repair.

All electrical equipment shall be so located that they are not exposed to risk of mechanical injury or damage from water, oil or excessive heat.

Where unavoidable exposed to such risks, the equipment shall be suitably protected or enclosed.

System voltages 230VAC and 24VDC.