

AOMORI MARU Fisheries Training Vessel 74

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AOMORI MARU Fisheries Training Vessel 74

Contents By Builder By Ship Type

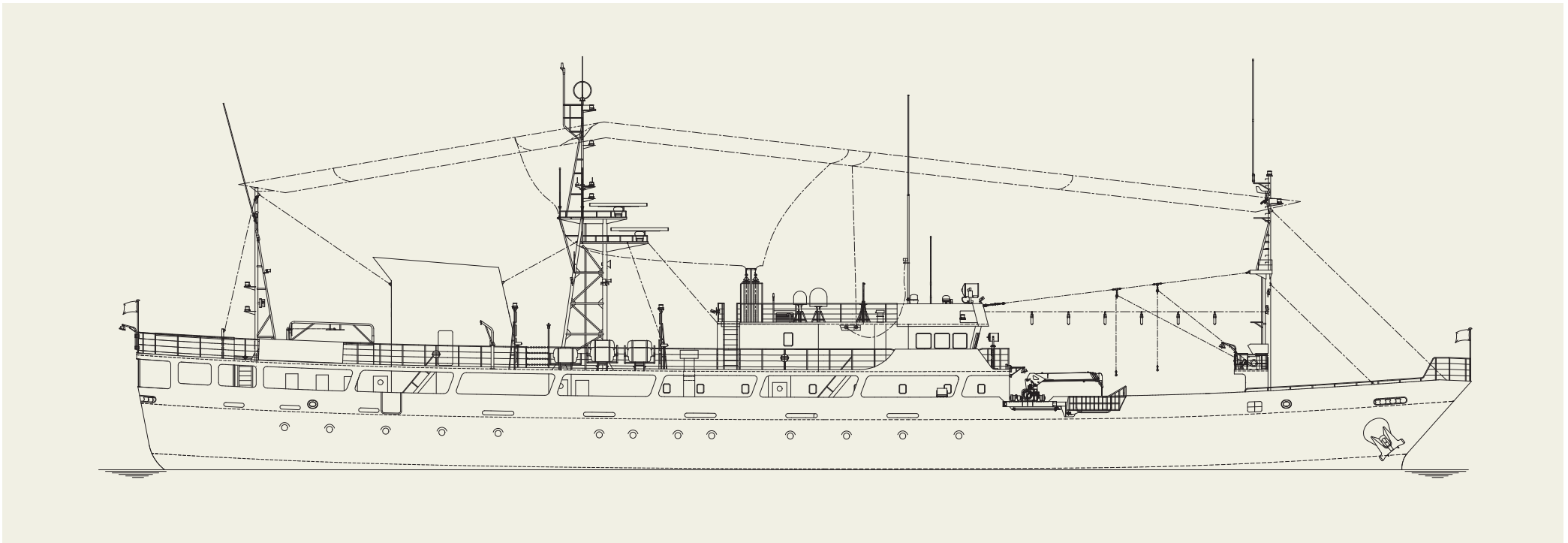
Features

1. "AOMORI MARU" is a one-engine, one-shaft type Fisheries Training Vessel that into the route of between Japan and Hawaii, for international voyage.
2. Controllable Pitch Propellers(CPP) are adopted for Improvement of propulsion efficiency and reduced the stern vibration.
3. For good maneuverability in harbor, the bow thruster and frap rudder is provided.
4. It is equipped with an anti-rolling tank to reduce rolling

PRINCIPAL PARTICULARS

Length (o.a.).....	65.33 m	Main engine.....	IHI 6M34BFT-4 x 1
Breadth (mld.).....	10.10 m	Speed (service).....	abt 12.00 knots
Depth (mld.).....	4.00 m	Complement.....	83 persons
Draft (mld.).....	3.95 m	Classification.....	JG
Gross tonnage.....	998 (International)	Builder:.....	Naikai Zosen Corporation

during navigation, ensuring a safe and comfortable ship living.



HEIANMARU Sea research vessel **75**

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HEIANMARU Sea research vessel 75

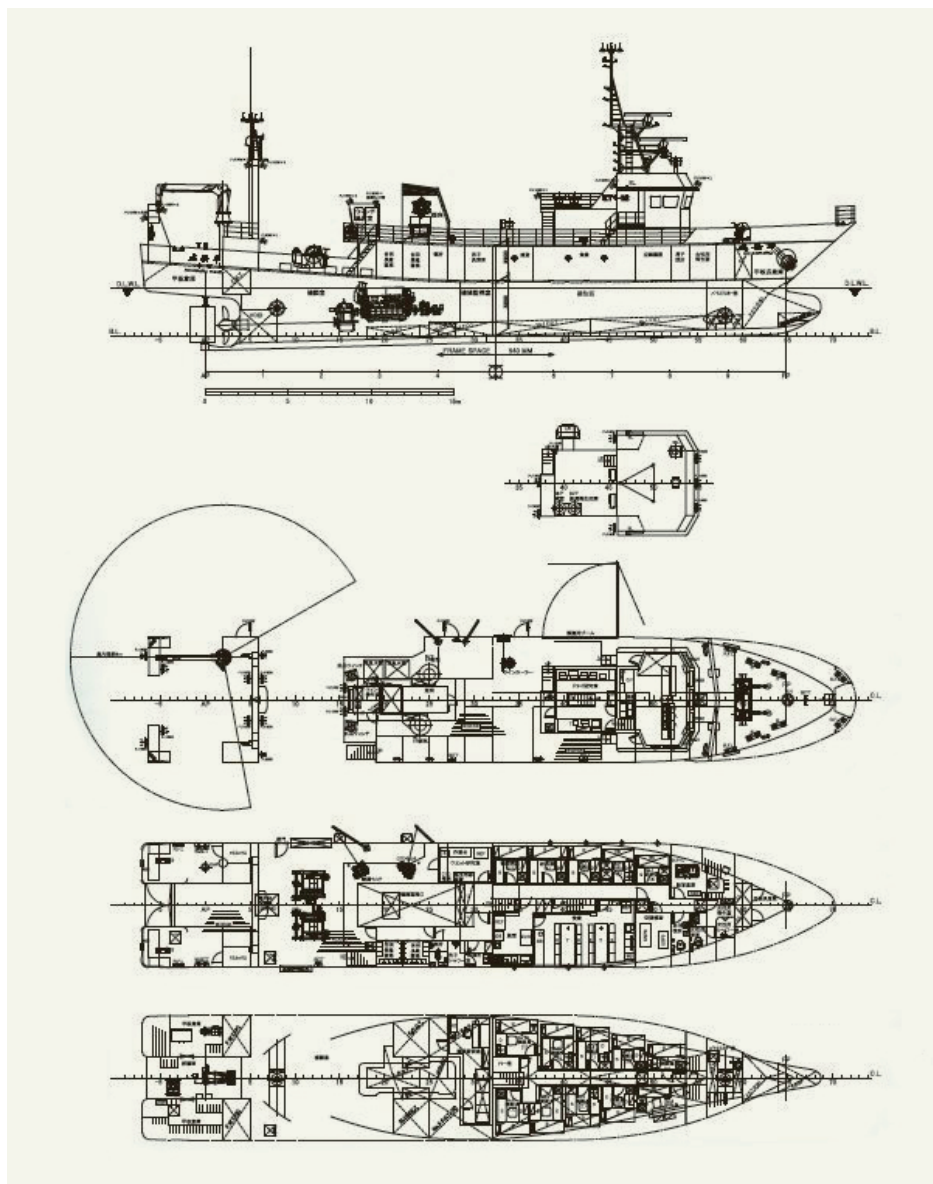
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This ship was built as a marine research vessel for Kyoto Prefecture, Japan, for the purpose of conducting fisheries research and ocean observation along the coast of Kyoto Prefecture and offshore.

The ship is a steel, single-deck ship with a long forecastle. Furthermore, in order to reduce the weight of this ship and lower the center of gravity, her wheelhouse and dry laboratory were made of light alloy. The bow of this ship was equipped with a bulbous bow to reduce wave-making resistance and improve wave-survival, and the stern of the ship was a square stern, and the stern below the water surface was shaped like a stern bulb. This ship also employed a highly skewed variable pitch propeller to reduce stern vibrations. Additionally, each bottom transducer on this ship was placed to avoid interference with sonic equipment, integrated with False Keel.

PRINCIPAL PARTICULARS

Length (o.a.)	43.14 m
Length (b.p.)	35.42 m
Breadth (mld.)	7.50 m
Depth (mld.)	3.2 m
Draft (mld.)	2.9 m
Gross tonnage	191 ton
Main engine	YANMAR 6EY22A
MCR (kw x rpm)	1330kW x 900 rpm
Speed (max. trial)	14.63 knots
(service)	13 knots
Builder	Niigata Shipbuilding & Repair, Inc.



OSHIMA MARU Training Ship 76

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OSHIMA MARU Training Ship 76

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Oshima Maru is the successor to the same name ship which was built by Mitsubishi Heavy Industries, Ltd. in 1993. Compared with its predecessor, new Oshima Maru is enlarged in gross tonnage, which has enhanced the safety and learning environment as follows.

- The student rooms have been moved from below to above waterline.
- Dedicated area for female students for convenience and security.
- Air-conditioning system designed to prevent infectious diseases.
- A wide variety of research equipment to enable research and survey of seabed topography, oceanography and meteorology.

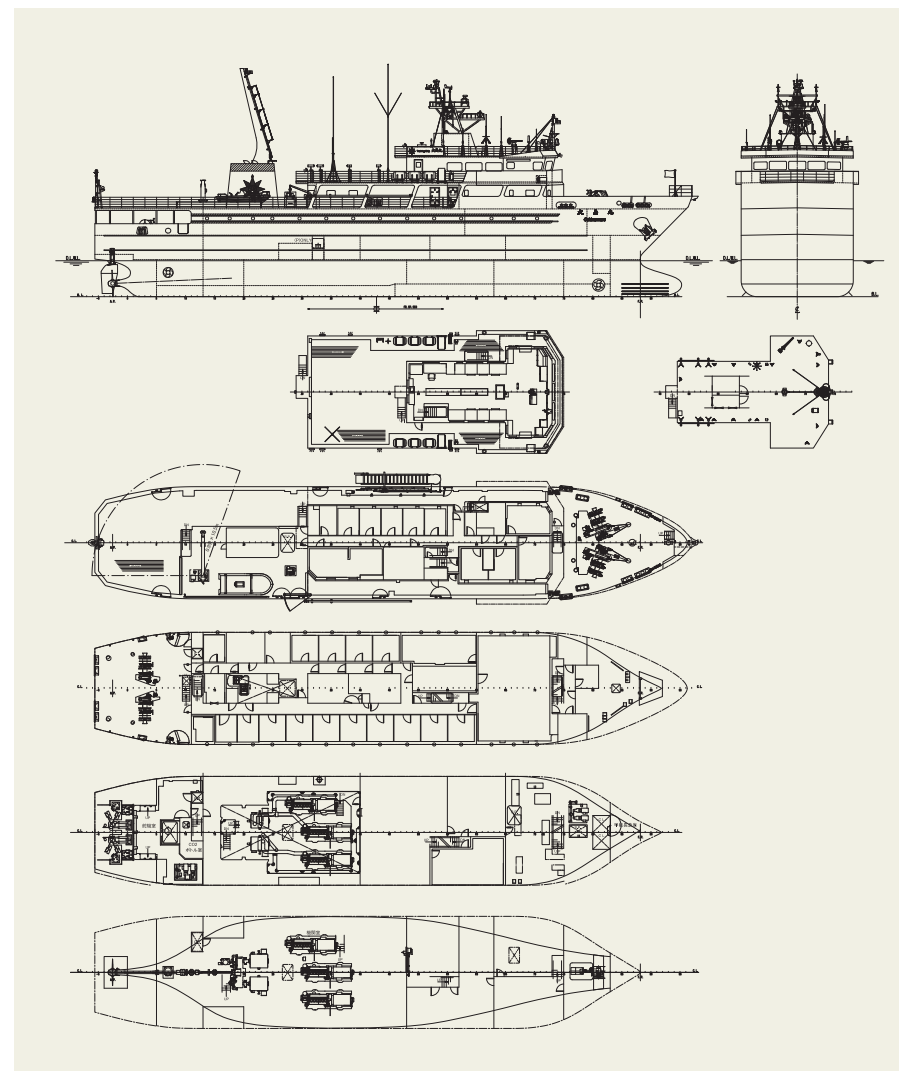
It also functions as a support vessel in the event of a disaster by providing electricity, water and sanitary facilities. The propulsion system of Oshima Maru employs two two-

speed propulsion motors and one Controllable Pitch Propeller (CPP) via a clutched reduction gear. The system is equipped with a function to limit the propulsion motor output by automatic load control (ALC) of CPP to protect the propulsion motor overload and the power plant. Other protective functions, such as emergency stop and automatic slow down, ensure the safety of the propulsion system. Furthermore, an electric propulsion system has resulted in low vibration and noise, which contributes to improved concentration during training and reduced fatigue.

It is equipped with three main generators as main power supply and a lithium-ion battery as auxiliary power supply. This hybrid power supply system has energy-saving functions such as main generator output levelling/peak shaving and suppression of bus line frequency fluctuations, in addition to number control of generator in accordance with the ship's load such as propulsion motors.

In home port, it has a dedicated land-based power supply system, which receives power from shore when the ship is moored, and the main generator can be switched off, thereby reducing fuel consumption and CO₂ emissions. During onboard tours and training at

berths in other ports, the main generator can be shut down and the battery system alone can provide onboard power, achieving zero emissions for limited time.



PRINCIPAL PARTICULARS

Length (o.a.)	56.49 m
Length (b.p.).....	49.90 m
Breadth (mld.).....	10.60 m
Depth (mld.).....	5.80 m
Draft (mld.).....	3.40 m
Gross tonnage.....	373
Main generator	750 kW x 3 units
lithium-ion battery	417kWh x 1 unit
Propulsion motor.....	745/220kW x 2units
Speed (max. trial).....	13.44 knots
(service).....	12.5 knots
Complement.....	60
Classification	JG
Builder.....	Mitsubishi Shipbuilding Co., Ltd.

KAIKI Environment Survey/Cleaning Ship **77**

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Kaiki is the successor to the same name ship which was constructed by Mitsubishi Heavy Industries, Ltd. in 2003. The mission of Kaiki is to carry out marine environment improvement projects such as survey and observation in closed shallow water area, collection of floating debris and drifting wood. In addition, a dedicated fresh water supply line is provided as a disaster support device, and a small container for transporting relief supplies can be mounted. With reference to the design concept of Kaiki, it is able to work in shallow water with a water depth of about 2 meters. There is enough space on board to accommodate various types of observation equipment in a restricted deck area. Moreover, it is able to travel at high-speed movement in order to cover widespread observation points.

In view of efficient navigation, it has the following features;

- A catamaran hull configuration and a water jet propulsion system are adopted.
- A skipper type debris recovery system is installed in the bow of the ship between the two hulls.

- Grab is attached to an articulated crane, and drifting wood can be picked up and recovered by the grab.
- Equipped with a number of survey equipment to carry out water quality surveys, sediment surveys, tidal current observations, deep shallow surveys, etc.

PRINCIPAL PARTICULARS

Length (o.a.)	29.50 m
Length (b.p.).....	27.80 m
Breadth (mld.).....	9.00 m
Depth (mld.).....	3.3 m
Draft (mld.).....	1.3 m
Gross tonnage.....	128
Deadweight.....	14.63 t
Main engine.....	MTU16V2000M72 x 2 sets
MCR (kw × rpm).....	1,440 x 2,250 x 2 sets
Speed (max. trial)	above 24 knots
Complement	[24h or more] 6p(Officer & Crew) [Less than 24h] 6p(Officer & Crew), 10p(passengers), 2p(others)
Classification	JG
(tank)	FO 21.42m ³ / FW 11.86m ³ / BW 20.35m ³
Builder.....	Mitsubishi Shipbuilding Co., Ltd.

