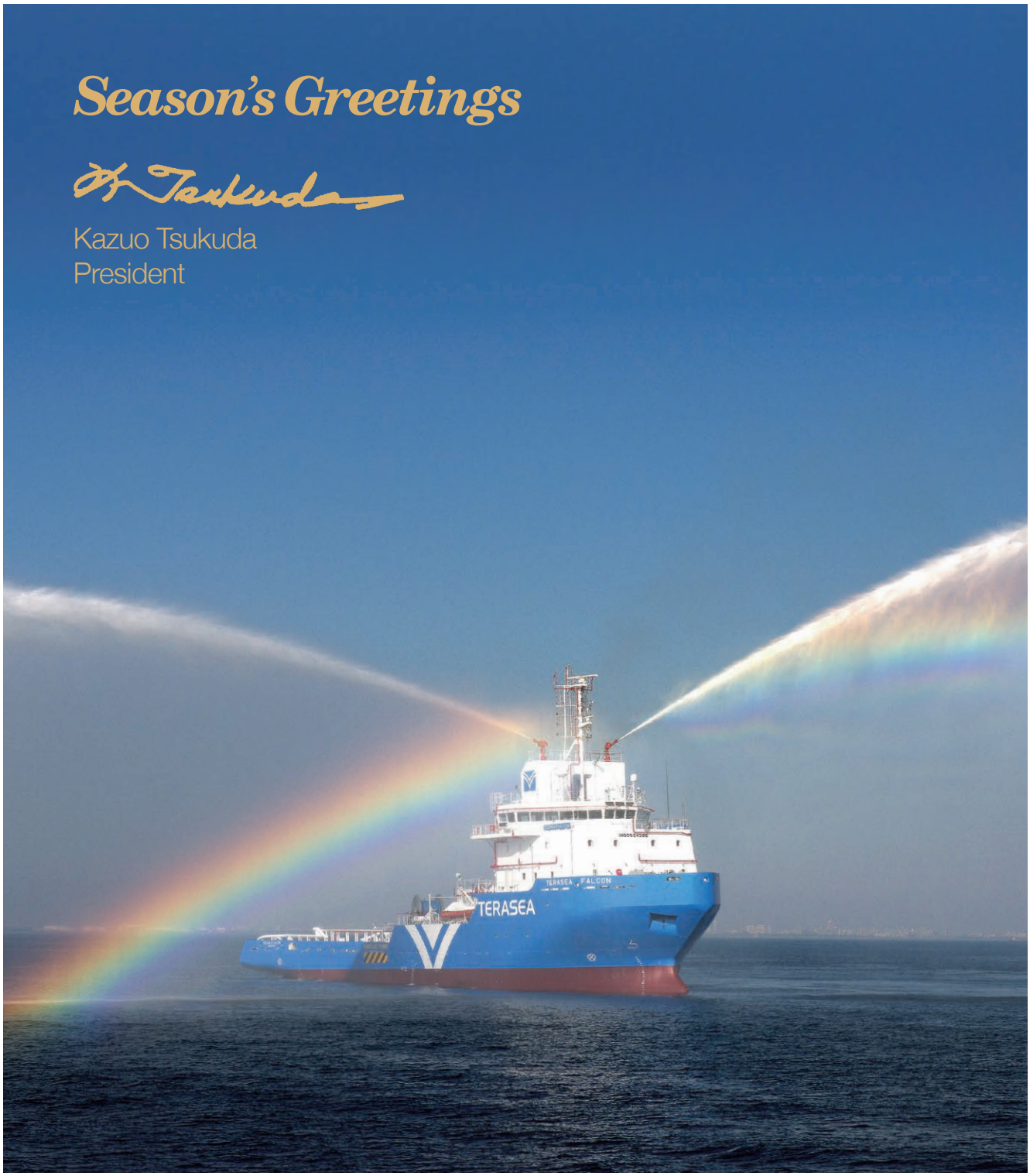
SEA-Japan

No. 380 Dec.- Jan. 2017



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Ship collision safety

Imabari-build large bulker awarded ClassNK notation HP-HDS

Nippon Kaiji Kyokai (ClassNK) has conferred the world's first Class Notation "HP-HDS" (Hull Protection by Highly Ductile Steel) to the large bulk carrier ORANGE PHOENIX built by Imabari Shipbuilding Co., Ltd., which uses NSafe™-Hull (highly ductile steel plate) for increased collision safety. The NSafe™-Hull developed by Nippon Steel & Sumitomo Metal Corporation (NSSMC) was used for the side shell of the cargo holds, the fuel oil tank section, and other areas, where collision safety is required. The total ductile steel weight used amounted to 3,000 tons.

The superior ductility of NSafe™-Hull is resistant to developing cracks or holes in a collision, which may result in severe damage to the hull, when compared with the conventional steel hull. Such ductile material was approved for shipbuilding in cooperation with ClassNK after the joint R&D efforts made by three organizations, NSSMC, Imabari, and the National Institute of Maritime, Port and Aviation Technology (MPAT).

Based on high-precision numerical simulations conducted by MPAT during the joint R&D of the three organizations, ClassNK has adopted the Class Notation for "Hull Protection by Highly Ductile Steel" for ships using the NSafe™-Hull. This Class Notation will help to promote safe and ecofriendly ship construction to consignors and shipowners. ClassNK has also given the certificates of KD36-HD50 and others to NSSMC for the new ductile steel with superior elongation 50% greater than the values required for conventional steel.

Ten vessels have so far adopted the NSafe™-Hull and are highly evaluated for safety. Nine more vessels are scheduled to be built using NSafe™-Hull by Imabari, and the total weight of NSafe™-Hull will amount to 24 thousand tons. In May this year, Imabari received the "Award of Safety at Sea" sector of Seatrade Awards Global. In the same month, NSSMC, Imabari, MPAT and ClassNK jointly obtained the Award of The Japan Society of Naval Architects and Ocean Engineers (JASNAOE) for development and practical use of the NSafe™-Hull.

(See SEA-Japan No. 367 - Oct.-Nov. Issue, 2014 for more information)

Principal particulars of ORANGE PHOENIX

First NSafe™-Hull ship
Builder: Saijyo Shipyard, Imabari Shipbuilding Co., Ltd.
Ship type: Bulk carrier
L (o.a.) x B x D: 299.94m x 50.00m x 24.70m
DWT: 206,600t
Launched: August 2, 2014
NSafe™-Hull used: about 3,000t

Methanol-fueled diesel engine

MES receives Marine Engineering Award of the Year 2015

Mitsui Engineering & Shipbuilding Co., Ltd. (MES) has received Marine Engineering of the Year 2015, an award commending excellent vessel and marine equipment technologies from the Japan Institute of Marine Engineering, for the development of a dual-fuel diesel engine (an electronically controlled liquid gas injection diesel engine called ME-LGI) that uses methanol and heavy oil for fuel.

The ME-LGI engine can use low flash-point fuel, such as methanol and liquefied petroleum gas (LPG), using the fuel injection system. MAN Diesel & Turbo SE designed the concept for the methanol-fueled ME-LGI engine that won the present award. MES took charge of the development of the engine. The safety examination for this engine and methanol supply equipment was adopted as a Ministry of Land, Infrastructure, Transport and Tourism project for assisting the development of next-generation technologies related to the marine environment. MES is also performing safety evaluations as part of joint research with Nippon Kaiji Kyokai (Class NK).

MES received the order for three methanol-fueled ME-LGI engines from Minaminippon Shipbuilding Co., Ltd., and the first engine was mounted on a methanol carrier, TARANAKI SUN, of Mitsui O.S.K. Lines, Ltd.

Methanol is an environmentally friendly fuel, which can substantially reduce the discharge of sulfur oxides (SO_x) and particulate matter (PM), in addition to suppressing the emissions of carbon dioxide (CO_2).

JMU completes mega container ship, NYK EAGLE

Japan Marine United Corporation (JMU) delivered the NYK EAGLE, a mega container ship, to Obana Ship Holding S.A. at its Kure Shipyard on September 2, 2016. This is the third vessel of a new series of 15 vessels, which will be constructed by JMU based on its expertise and experience, and on data and information about actual operations of the Far East - Europe route.

The vessel can load containers in 18 rows and 11 tiers in the cargo holds, and 20 rows and nine tiers on the deck, with a total of 14,000TEUs (including 1,120 reefer containers).

The vessel achieves high propulsion efficiency through its sophisticated lower resistance hull form and JMU's original energy saving devices such as the Surf-Bulb (Rudder Fin with Bulb) and L.V. fin (Low Viscous resistance Fin). The vessel is designed to operate with minimum ballast water under loaded conditions, due to the superior stability and hull strength.

The hull construction incorporates the structural brittle crack arrest design for ultralarge container ships, which has been developed by JMU and JFE STEEL CORPORATION. The engine is a DIESEL UNITED WARTSILA W9X82, which is electronically controlled with the common rail system to reduce the fuel oil consumption in various speed ranges, achieving environmentally friendly operation.

Principal particulars

L (o.a.) x B (mld) x D (mld) x d (mld): 364.15m x 50.6m x 29.5m x 15.75m
DWT/GT: 139,335t/144,285
Main engine: WARTSILA W9X82 diesel x 1 unit
Speed: 22.5kt
Complement: 30
Classification: NK

Kawasaki installs world's first dual fuel main engine on PCTC

The AUTO ECO, a pure car and truck carrier (PCTC) capable of carrying 3,985 units, is the world's first vessel fitted with dual-fuel system main (ME-GI) and auxiliary engines supplied by Kawasaki Heavy Industries, Ltd. These engines can operate on either liquefied natural gas (LNG) or conventional fuels.

Compared with fuel oil, use of LNG as the main engine's fuel source can cut carbon dioxide (CO_2) emissions by 23%, nitrogen oxide (NO_x) emissions by 13%, sulfur oxide (SO_x) emissions by 92% and particulate matter (PM) emissions by 37%. Furthermore, the adoption of LNG as fuel enables the fulfillment of the Energy Efficiency Design Index (EEDI) Phase 3 standards.

Regulations imposed by the International Maritime Organization (IMO) on various types of exhaust gases are becoming increasingly strict, so Kawasaki is focusing on the building of a wide range of ships that run primarily on LNG in response to the predicted rise in global demand for LNG-fueled vessels.

In addition to transport vessel construction, the company plans to build LNG supply ships and to take advantage of the synergy achieved through coordinated application of the wide range of LNG-related technologies possessed by the Kawasaki Group in order to establish the supply chains necessary for the transition to widespread LNG fuel dissemination. All of these measures are part of active efforts toward making LNG a primary fuel source throughout the commercial shipping industry.

Principal particulars

L (o.a.) x L (b.p.) x B (mld) x D (mld) x d (full): Approx. 181m x 170.50m x 30.00m x 30.22m x 9.60m
Total tonnage: 42,424 t
Deadweight tonnage: 16,995 t
Total car-loading capacity: 3,985 cars
Main engine: MAN B&W 8S50ME-C8.2-GI engine x 1 unit
MCO: 11,100kW at 113rpm
Complement: 30
Registry: Madeira
Classification: LR
Ice Class: 1A Super, Finnish-Swedish Ice Class

MHISB completes 83,000m³ type LPG carrier, GLOBE ATLAS

Mitsubishi Heavy Industries Shipbuilding Co., Ltd. (MHISB) completed construction of the GLOBE ATLAS (HN: 2317), an LPG carrier with a tank capacity of 83,320m³, and delivered the vessel on September 30, 2016.

This is the seventh vessel of the third generation LPGC series developed by the MHI Group based on the first and second generation LPGC series, of which the MHI Group has delivered 51 vessels. This new LPGC has been designed with the concept of environmentally-friendly, easy, highly reliable, and flexible operation as well as good maintainability as main features.

Higher propulsive performance with less vibration compared with the conventional LPGC was achieved by the sophisticated hull form, optimum design of propeller and Mitsubishi Reaction Fin. Furthermore, the electronically controlled main engine achieves low fuel consumption and complies with NO_x limitation Tier II, and low sulfur fuel can be used to comply with the SO_x limitation of SECA (SO_x Emission Control Areas). The Ballast Water Treatment System is installed onboard.

Various improvements are incorporated for efficient and flexible cargo operation such as higher unloading rate using auxiliary cargo pumps, elimination of loading restrictions, cargo manifold arrangement allowing docking at various terminals, etc. In addition, the necessary fittings are provided to pass through the Panama Canal New Locks.

Higher reliability was achieved using the IMO IGC-code type B independent tank newly developed based on long experience, design expertise accumulated through constructions of MOSS type LNG carriers and the state-of-the-art structural analysis system MHI-DILAM (Direct Loading Analysis Method).

Principal particulars

L (o.a.) x L (b.p.) x B x D x d (summer): 230.0m x 219.0m x 36.6m x 21.65m x 11.575m
Gross tonnage: 47,995
Cargo tank capacity: 83,320m³
Main engine: MAN B&W 7S60ME-C8.2 diesel x 1 unit
Output: 13,000 kW x 100min^{-1}
Service speed: 16.6kt
Classification: NK

Naikai Zosen completes Ro/Ro cargoship, FUOU MARU

Naikai Zosen Corporation completed construction of the FUOU MARU, an 11,413GT Roll-on/Roll-off cargoship, for delivery to Kawasaki Kinkai Kisen Kaisha, Ltd. at the Innoshima Shipyard on September 30, 2016.

The cargoship has been designed to carry vehicles including passenger cars, chassis, and heavy vehicles. Four decks are provided, one of which is allotted for passenger cars, and three other decks can load chassis, trucks, and heavy vehicles. The ship has two shore-ramps at the starboard side of the midship section and stern, through which vehicles go aboard. Vehicles can move between decks via inboard ramps.

The ship's hull form was designed to achieve excellent speed performance through repetitive water tank tests, and energy-saving devices are attached for increased fuel efficiency, which include "STEP" (Spray Tearing Plates), aft energy-saving fins, and an energy-saving rudder with a bulb. Ship stability during navigation is maintained with fin-stabilizers and anti-rolling tanks. Bow and stern thrusters facilitate berthing and unberthing.

The main engine is an electronically controlled diesel engine (ME-C model), which provides improvement of fuel consumption and combustion conditions.

Principal particulars

L (o.a.) x L (b.p) x B x D x d: 173.08m x 162.00m x 27.00m x 22.60m x 6.90m
GT: 11,413
Vehicle loading capacity
163 chassis (12m long x 2.5m wide)
88 passenger cars (5m long x 1.7m wide)
Main engine: MAN B&W 9S50ME-C8.2 diesel x 1 unit
MCO: 15,930kW x 135min^{-1} (Up-rating adopted)
Speed, max. trial: 25.149kt
Speed, service: about 22.6kt
Registry: Tokyo
Classification: NK
Completion: September 30, 2016

Sanoyas completes self-propelled versatile workvessel, AUGUST EXPLORER

Sanoyas Shipbuilding Corporation completed construction of the self-propelled versatile workvessel, AUGUST EXPLORER, and the vessel was named and delivered to TOYO Construction Co. Ltd. at the Sanoyas Mizushima Shipyard on August 31, 2016.

The AUGUST EXPLORER can work on not only dredging and offshore-structure construction but also marine survey and exploration. The vessel is designed to be operable continuously for about three months in open sea included by the Japanese Exclusive Economic Zone.

Main mechanical features of the vessel include a jib crane with a hoisting capacity of 500 tons, two detachable spuds to settle the vessel at the shallow water. The vessel has five thrusters with DPS, one of which is a tunnel thruster, and two stern azimuth thrusters are used for navigation. Two retractable azimuth thrusters at the bow allow the vessel to operate at the shallow water up to 2.7 meters.

The AUGUST EXPLORER has the accommodation capacity of 52 persons and a widely open deck area is provided for carrying construction materials such as artificial fishery-reef blocks and construction blocks. A remotely operated vehicle (ROV), unmanned survey helicopter, and research-lab container booth can be loaded for investigation purpose.

In case of disaster, the vessel can also support the stricken area, for which it is equipped with a 1,000kl fuel oil tank and a fresh water generator of 2,000 persons-per-day capacity. A supply boat is loaded on the deck. The vessel is thus expected to contribute to various services in marine construction area.

Principal particulars

Owner: TOYO Construction Co., Ltd.
L (o.a.) x B x D x d (summer):
89.90m x 27.00m x 5.00m x 3.95m
Gross tonnage: 4,831
Navigable area: Greater coasting area (non-international)
Main engine: Yanmar 6EY26W diesel x 2 units
MCO/unit: 1,471kW
Complement: 52
Registry: Osaka, Japan
Classification: NK
Delivery: August 31, 2016

Niigata delivers 300t BP ocean-going tugboat, ALP STRIKER

Niigata Shipbuilding & Repair, Inc., wholly owned by Mitsui Engineering & Shipbuilding Co., Ltd. (MES), delivered the ALP STRIKER to ALP Striker B.V. (ship owning company of ALP Maritime Services B.V., the Netherlands) on September 12, 2016. The ALP STRIKER is the first of a four-ship series.

The ALP STRIKER is one of the most powerful and largest tugboats in the world, with maximum speed of 19.16 knots and service speed of 13 knots. The towing capacity of the vessel is 309.6 tons. The tugboat can tow various large floating objects such as FPSO, FLNG, drilling rigs, etc. for long distances (non-stop navigation of 45 days possible). Anchor handling can be performed as well.

The ALP STRIKER has been designed and constructed to have class notations of Ice Class 1B, External Fire Fighting System Fi-Fi II, and Dynamic Positioning System DP Class II.

Niigata Shipbuilding is now working on construction of three more tugboats and all are scheduled to be delivered in the first quarter of 2017.

Principal particulars

L (o.a.) x B x D: 88.5m x 21.0m x 9.5m
DWT/GT: 4,230t/5,901
Main engine: 4,500kW x 4 units
Propeller: 4-blades 5,000mm dia. CPP with fixed nozzle x 2 units
Side thruster: 4 units (Bow: 2 units, Stern: 2 units)
Complement: 35
Classification: DnV-GL

BERGE SHARI

Owner: BERGE SHARI COMPANY INC.
Builder: The Hakodate Dock Co., Ltd.
Hull No.: S874
Ship type: Bulk carrier
L (o.a.) x B x D x d: 179.97m x 30.00m x 14.05m x 9.80m
DWT/GT: 34,534t/21,530
Main engine: Mitsubishi 6UEC45LSE-Eco-B2 diesel x 1 unit
Speed, service: abt. 14.0kt
Registry: Isle of Man
Classification: DNV
Delivery: September 16, 2016

KANG MAY

Owner: Kang May Maritime LLC
Builder: Oshima Shipbuilding Co., Ltd.
Hull No.: 10783
Ship type: Bulk carrier
L (o.a.) x B x D x d (ext.): 228.41m x 36.5m x 19.89m x 13.944m
DWT/GT: 85,001t/46,990
Main engine: Mitsui-MAN B&W 6S60ME-C8.2 diesel x 1 unit
Speed, service: 14.30kt
Registry: Liberia
Classification: BV
Completion: September 1, 2016

WINDS 3

Owner: Trio Happiness, S.A./Toda Ship Co., Ltd.
Builder: Shin Kurushima Dockyard Co., Ltd.
Hull No.: S-5935
Ship type: General cargo ship
L (o.a.) x B x D: 120.93m x 19.60m x 10.80m
DWT/GT: 11,759t/7,341
Main engine: MAN B&W 6L35MC6.1 diesel x 1 unit
Speed, service: 13.3kt
Registry: Panama
Classification: NK
Completion: August 25, 2016

ECO BUSHFIRE II

Owner: Cardinal Maritime S.A.
Builder: Kanda Shipbuilding Co., Ltd.
Hull No.: 558
Ship type: Open hatch cargo ship
L (o.a.) x B x D x d (ext.): 179.9m x 28.40m x 14.25m x 10.026m
DWT/GT: 33,190t/21,265
Main engine: MAN B&W 6S46MC-C8.2 diesel x 1 unit
Speed, service: 14.0kt
Registry: Panama
Classification: NK
Completion: August 8, 2016

ULTRA PUMA

Builder: Tsuneishi Shipbuilding Co., Ltd.
Hull No.: 1550
Ship type: Bulk carrier
L (o.a.) x B x D x d: 225.10m x 32.26m x 20.00m x 14.40m
DWT/GT: 81,855t/43,028
Main engine: MAN-B&W 6S60ME-C8.2 diesel x 1 unit
Registry: Majuro
Classification: NK
Delivery: August 26, 2016

Cover Photo

Lady Luck with Blessing Rainbow

On a sunny spring day, "TERASEA FALCON" was blessed with the rainbow during Fire-Fighting test. This Ocean Towing/Salvage Tug was built by the Yokohama Shipyard Tsurumi Works of Japan Marine United Corp.