

Shin Kurushima completes rail carrier, PACIFIC SPIKE



The world's first 24,000DWT long-rail carrier, PACIFIC SPIKE, has entered the service, construction of which was completed at the Onishi Shipyard of Shin Kurushima Dockyard Co., Ltd. for Sky Tree Shipping S.A. on August 28, 2014.

The rails have high quality in durability against wear and defect and are available by a single rolling process. Transport of the products, however, had to be done by dividing long rail into several sections due to the structural limitation of the conventional cargo ship.

The PACIFIC SPIKE is designed to have a special construction of the hull, which permits loading long rails intact. The carrier measures 190m in overall length and has a 155m-long cargo hold provided with three deck cranes.

Principal particulars

Ship Name:	PACIFIC SPIKE
Owner:	Sky Tree Shipping S.A.
Builder:	Shin Kurushima Dockyard Co., Ltd. (Onishi Shipyard)
Hull No.:	S-5797
Ship type:	Rail carrier
Length (o.a.):	189.91m
Breadth:	28.20m
Depth:	14.00m
Draught:	8.00m
DWT/GT:	24,000t/20,500
Main engine:	B&W 6S42MC7.1 diesel x 1 unit
Speed, service:	14.0kt
Classification:	NK
Completion:	August 28, 2014



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Imabari launches world's first NSafe™-Hull-adopted bulker

The world's first bulk carrier adopting NSafe™-Hull was launched for Mitsui O.S.K. Lines, Ltd. at the Saijo Shipyard of Imabari Shipbuilding Co., Ltd. on August 2, 2014. NSafe™-Hull (a highly ductile steel plate for shipbuilding with improved collision safety) was developed by Nippon Steel & Sumitomo Metal Corporation (NSSMC), and the material was first applied to the bulker through the collaborative R&D by NSSMS, Imabari Shipbuilding Co., Ltd. and the National Maritime Research Institute (NMRI).

NSafe™-Hull has excellent ductility, while maintaining the workability (e.g., machinability and weldability) of conventional steels, which substantially improves ship's collision safety. NSSMC developed NSafe™-Hull through designing chemical composition and microstructural control in crystalline scale.

If a ship is made of NSafe™-Hull, because of superior ductility of the material, the energy absorbed before breaking hull could be roughly triple of one for a ship made of conventional steels, in case of side collision. It can therefore be said that NSafe™-Hull increases ship durability compared



Same type of ship as that in which NSafe™-Hull was used (Courtesy of Mitsui O.S.K. Lines, Ltd.)

with conventional steels. Such higher safety level has been achieved by the cooperative research of the aforementioned three organizations on steel ductility and ship collision safety.

On the ship for Mitsui O.S.K. Lines, Ltd., approximately 3,000 tons of NSafe™-Hull, in total, was used for structural parts where high collision safety performance was required, such as the side plates of cargo holds and fuel tanks. NSafe™-Hull, if used for ship's structure, owing to its improved anti-breaking performance in case of collision, contributes to pre-

venting oil leakage resulting in environmental pollution and ingress of water into cargo holds, which directly leads to cargo damage and may result even in capsizing.

Outline of the bulk carrier:

Deadweight: 206,600 tons

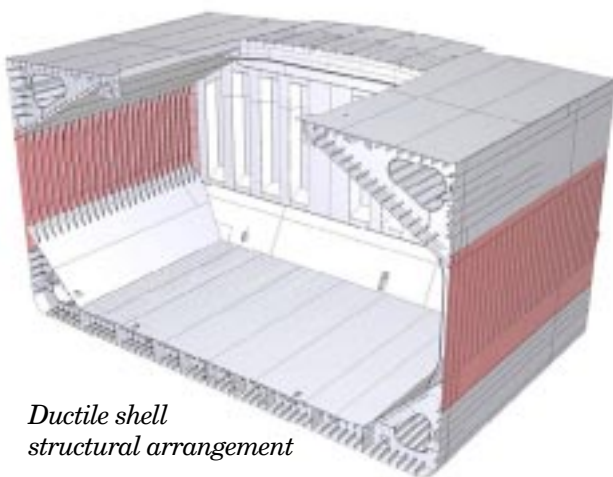
L (o.a.) x B x D: 299.94m x 50.00m x 24.70m

Builder: Imabari Shipbuilding Co., Ltd. (Saijo Shipyard)

Ship owner: Mitsui O.S.K. Lines, Ltd.

Launching: August 2, 2014

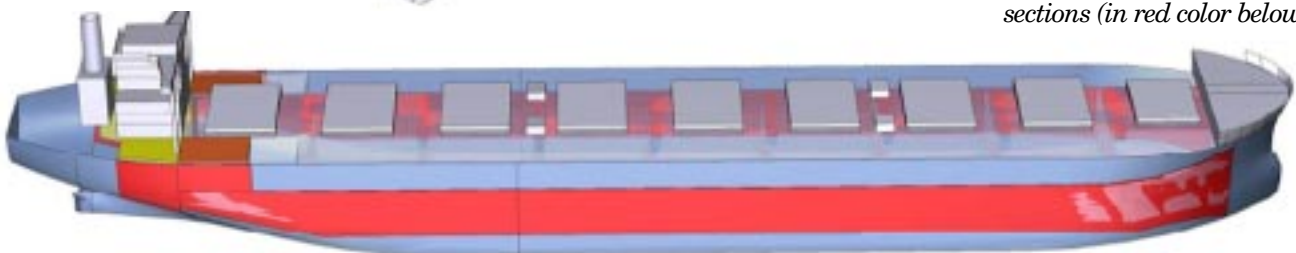
Amount of NSafe™-Hull used: Approximately 3,000 tons



Ductile shell structural arrangement



A collision image (above) and ductile shell applied sections (in red color below)



JMU completes Dunkirkmax bulk carrier of G-Series, PELOREUS

Japan Marine United Corporation (JMU) delivered the PELOREUS, an 182,000DWT bulk carrier, to Cape Horizon Shipping LLC at its Ariake shipyard on July 22, 2014. This is the first vessel of the "G-Series" Dunkirkmax bulk carrier series, called G182BC. JMU has built G-Series Newcastlemax and Panamax

bulk carriers, and this G182BC is the third ship type in the G-Series.

G182BC succeeded drastically in decreasing fuel oil consumption by using various and comprehensive measures for energy saving, so the Energy Efficiency Design Index (EEDI) is much improved.

G182BC has been developed with expertise and vast experience of JMU. The SSD (Super Stream Duct) and Surf-Bulb (Rudder Fin with Bulb) equipped forward and after of the propeller, respectively, much improve the propulsion

performance. Furthermore, the unique bow shape of the LEADGE Bow can decrease additional resistance in waves and the well-refined shape of the superstructure has low wind resistance.

In addition, the Vessel's features of low level EEDI, application of the ballast water treatment system and compliance with the MARPOL NO_x tier-II make the vessel environmentally friendly.

Principal Particulars

L (o.a.) x B x D x d:	292.0m x 45m x 24.55m x 18.18m
DWT/GT:	182,496t/93,297
Main engine:	MAN B&W 7S65ME-C diesel x 1 unit
Speed:	15.05kt
Complement:	27
Classification:	NK



MES delivers 5th Eco-Ship "Mitsui neo56," NORD TREASURE

Mitsui Engineering & Shipbuilding Co., Ltd. (MES) completed and delivered a 56,000DWT type bulk carrier NORD TREASURE (HN: 1828) at its Chiba Works on July 31, 2014 to Clio Marine Inc., Liberia.

This is the 5th ship of MES "neo56BC," the new generation eco-ship. This keeps the superior usability and reliability of "Mitsui 56" which is highly appreciated in the market and more than 160 ships have been delivered by MES.

The electronic controlled engine and optimized shape make the superior propulsive efficiency and fuel oil consumption. Other features include:

1. The vessel has four cranes and five cargo holds and keeps the superior usability of "Mitsui 56."
2. The length is less than 190m and secures the superior usability in consideration of domestic and foreign ports.
3. The vessel is designed for loading various cargos like coal, ore, grain, as well as lengthy/heavy cargo such as steel pipes and hot coils.

4. The new form of the bow and stern makes it possible to keep good performance in rough sea conditions as well as calm sea conditions and shows better maneuverability.

5. The size of hatch opening is the largest for this type of vessel in terms of both length and width.

6. The main engine, MITSUI-MAN B&W diesel engine 6S50ME-B9.3, complying with MARPOL NO_x restriction (Tier-II) for exhaust gas emissions, gives superior fuel oil consumption over wide range of output.

7. Considering strengthened restriction for SO_x emission, the ship has low sulfur fuel oil tanks, which are designed for operation in ECA (Emission Control Areas).

8. The vessel is

designed in accordance with IACS Common Structural Rules.

Principal particulars

L (o.a.) x B x D:	189.99m x 32.25m x 18.10m
DWT/GT:	55,888t/31,882
Main engine:	MITSUI-MAN B&W diesel 6S50ME-B9.3 x1 unit
MCO:	7,390kW
Speed, service:	about 14.4kt
Complement:	25
Classification:	NK
Registry:	Panama
Delivery:	July 31, 2014



New generation non-ballast tanker/bulk carrier developed

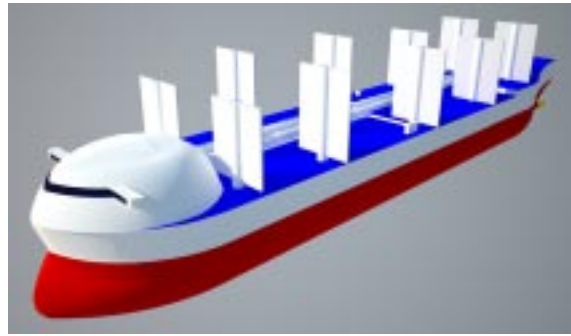
Collaborative development work has been completed on new energy-saving vessels which do not require ballast water. Prof. Yoshiho Ikeda, Department of Marine System Engineering, Osaka Prefecture University, has led this R&D project in collaboration with various Japanese shipbuilders.

This project utilized the industry-academia R&D collaboration system intended to encourage the development of innovative products. In the first phase (2009 to 2011), the project team carried out development of the non-ballast water vessel and confirmed performance of the vessel in calm water. In the second phase (2011 to 2013), the performance of the non-ballast water vessel was optimized under rough sea conditions. The basic concept was to develop a new generation energy-saving vessel requiring no ballast water, which would have less influence on the marine ecology and environment, and also

achieve energy-saving ship operation.

In Phase I, the project team designed the non-ballast water ship using electrical pod propulsion units that can move up and down to adjust the propeller depth below the waterline. This procedure eliminates the need for ballast water and reduces frictional resistance by 43% under the unloaded condition.

The cross sectional hull form is round, and the buttock-flow stern is employed, which decrease viscous resistance by 17% under the loaded conditions. To secure sufficient thrust force, the vessel is designed to use three large pod propulsion units. Seaworthiness of the vessel was ensured by the development of a new bow that can halve the slamming force at very shallow draught navigation with no ballast water. The superstructure located at the bow is a round and



streamlined shape to alleviate the wind pressure. A simple sail system was developed, which will help make up for ship speed lost in rough sea weather. An 80,000DWT tanker and 95,000DWT and 335,000DWT bulk carriers were designed as trials.

In Phase II, optimization of the bow shape was carried out to reduce the rough-sea wind resistance working on the hull developed in Phase I. Moreover, the distribution of the wave pressures working on the bow was obtained from CFD study. Based on the CFD study, small additive objects were developed to eliminate higher-pressure areas around stagnation points.

Study results in Phase I and II were arranged as a report of the study results and announced with 20 other reports to The Japan Society of Naval Architects and Ocean Engineers and other circles. The reports are available from the website of Prof. Ikeda's office.

Collaborators

Phase I: Oshima Shipbuilding Co., Ltd., Sanoyas Shipbuilding Corporation, Shin Kurushima Dockyard Co., Ltd., Sasebo Heavy Industries Co., Ltd., Nakashima Propeller Co., Ltd., West Japan Fluid Engineering Laboratory Co., Ltd., Daihatsu Diesel Mfg. Co., Ltd., IHI Marine United Inc., Imabari Shipbuilding Co., Ltd., and Nippon Kaiji Kyokai

Phase II: Oshima Shipbuilding Co., Ltd., Sanoyas Shipbuilding Corporation, Shin Kurushima Dockyard Co., Ltd., Sasebo Heavy Industries Co., Ltd., West Japan Fluid Engineering Laboratory Co., Ltd., and Imabari Shipbuilding Co., Ltd.

Niigata completes 4,000ps tugboat for Nihonkai Eisen

Niigata Shipbuilding & Repair, Inc., Niigata, Japan, completed construction of the RYUTO MARU, a 4,000ps tugboat/disaster prevention ship, for Nihonkai Eisen Co., Ltd. on July 4, 2014. The vessel is now engaged in the port service centered on Niigata Port.

The RYUTO MARU is equipped with two units of Niigata Z-Pellers that permit maneuvering the ship in any direction (360 degrees) on the spot. To function as a disaster prevention ship, fire fighting (foam/powder) jet nozzles are installed, which can be controlled remotely from the wheelhouse. A spilt oil recovery unit is also provided.

N i h o n k a i

Eisen is now operating ten tugboats: six stationed at Niigata Port, and four at Naoetsu Port. The newly built tugboat replaced one of six previous tugboats.

Principal particulars

Gross tonnage:	196
Length, o.a.:	34.55m
Beam:	9.70m
Towing force:	52.9t
Engine output, max.:	4,000ps
(2,000ps x 2 units)	
Speed, max.:	14.44kt



Naikai completes 37,700DWT general cargo ship, AFRICAN RAVEN

Naikai Zosen Corporation completed construction of the 37,700DWT general cargo ship, AFRICAN RAVEN, at the Innoshima Works on July 17, 2014.

The vessel is a newly developed dry cargo ship with double side shells at every cargo hold to ensure hull strength and stability against external damage in an accident, which will prevent cargo loss and quality damage. The fuel oil tanks are also protected with the double side shells conforming to the international regula-

tions as an eco-ship.

The vessel has shallow draught and wide beam, with the hull form design allowing calling at ports with shallow water and navigating rivers, canals, and lakes. Course-keeping stability is secured with a special rudder and stern form.

The Nos. 2 through 4 of the five cargo holds are the box-shape type, and four 30t deck cranes are arranged together with wide hatch openings that facilitate loading and unloading. The vessel can transport various car-

goes including lumber, grains, coal, ores, steel products, etc. The ballast tanks are arranged based on an in-depth study to increase the loading volume of cargo lumber.

The main engine is a new model of the energy saving type. A large propeller and new bow shape that increases seaworthiness are employed for improved propulsion performance. Other additional energy saving devices that include the SSD (Super Stream Duct) and Surf-Bulb are used for economical ship operation.

Principal particulars

L (o.a.) x L (b.p.) x B x D x d:	183.00m x 177.00m x 30.60m x 14.50m x 10.00m
DWT/GT:	37,700t/23,753
Cargo hold capacity:	47,125.3m ³
Main engine:	HITACHI-MAN B&W 6S46MC-C8.3 diesel x 1 unit
D.M.C.O.:	6,695kW x 113.0min ⁻¹
D.C.S.O.:	5,690kW x 107.0min ⁻¹
Speed, service:	About 14.1kt
Complement:	25
Classification:	NK
Registry:	Panama
Completion:	July 17, 2014



First ore carrier equipped with MERS enters service

— 8% fuel cut achieved at sea trial —

Mitsubishi Heavy Industries Marine Machinery & Engine Co., Ltd. (MHI-MME), a group company of Mitsubishi Heavy Industries, Ltd., has installed a Mitsubishi Energy Recovery System (MERS) on a VLOC (Very Large Ore Carrier) for the first time.

The system significantly enhances power generation efficiency by maximizing recovery and utilization of exhaust gas waste energy from marine diesel engines and demonstrated significant fuel consumption improvement compared with existing ships during at-sea trials.

The MERS ability to reduce fuel consumption and impact on the environment has already been confirmed through installation and testing in container ships that consume large amounts of electricity, and the latest development confirms successful verification of MERS capability in other type of ships as well. In the current

instance, the MERS was installed on an ore carrier of Mitsui O.S.K. Lines, Ltd. (MOL), which was built by Namura Shipbuilding Co., Ltd.

The MERS optimally controls exhaust gas turbines^{*1} and steam turbines, enhancing fuel efficiency by recovering waste heat under a wide range of engine loads. The latest MERS enables even greater waste energy recovery by incorporating shaft motors^{*2} that delivers surplus power back to the main engine. As a result, the new MERS can reduce fuel consumption by approximately 8%.

MERS orders have progressively expanded since the system's development in 2010, mainly for systems installed on refrigerated container (reefer) carriers that

consume large amounts of electricity. The latest MERS at-sea trial confirms the MERS capacity to efficiently recover and utilize waste energy in smaller vessels as well. Leveraging these test results, MHI-MME intends to meet fuel efficiency needs in a wider range of seagoing vessels.

Notes:

1. Turbines driven by engine exhaust gas.
2. Motors to assist propeller shaft rotation.



GALAXY RIVER

Owner: Galaxy River Shipping S.A.
 Builder: Kawasaki Heavy Industries, Ltd.
 Hull No.: 1710
 Ship type: LPG carrier
 L (o.a.) x L (b.p) x B x D x d: 230.00m x 226.00m x 37.20 x 21.00m x 11.20m
 DWT/GT: 54,081t/46,885
 Cargo tank capacity: 82,391m³
 Main engine: Kawasaki-MAN B&W 7S60ME-C8.2 diesel x 1 unit
 Classification: NK
 Registry: Panama
 Delivery: June 27, 2014

***ANCASH QUEEN***

Owner: Ultramarine Ocean S.A.
 Builder: Imabari Shipbuilding Co., Ltd.
 Ship type: Bulk carrier
 L (o.a.) x B x D: 182.98m x 32.26m x 17.45m
 DWT/GT: 50,800t/30,700
 Main engine: Mitsui-MAN B&W 6S50ME-C8.2 diesel x 1 unit
 Speed, service: about 14.5kt
 Classification: NK
 Completion: June 17, 2014

***NSU PRIDE***

Owner: Hosei Shipping S.A.
 Builder: Namura Shipbuilding Co., Ltd.
 Hull No.: 345
 Ship type: Ore carrier (WOZMAX)
 L (o.a.) x B x D x d: 329.95m x 57.00m x 25.10m x 18.00m
 DWT/GT: 250,821t/132,868
 Main engine: MAN B&W 7S80MC-C (Mark 7) diesel x 1 unit
 Speed, service: about 15.0kt
 Complement: 25
 Classification: NK
 Completion: June 30, 2014

***ULTRA VILLARRICA***

Owner: Ultrabulk Shipholding (Singapore) Pte. Ltd.
 Builder: Oshima Shipbuilding Co., Ltd.
 Hull No.: 10741
 Ship type: Bulk carrier
 L (o.a.) x B x D x d (ext.): 179.99m x 30.00m x 14.63m x 10.329m
 DWT/GT: 37,429t/22,469
 Main engine: Kawasaki MAN B&W 5S50ME-C8.2 diesel x 1 unit
 Speed, service: 14.00kt
 Registration: Singapore
 Classification: NK
 Completion: June 5, 2014

***IKAN LEBAN***

Owner: ASL Shipping S.A.
 Builder: Onomichi Dockyard Co., Ltd.
 Hull No.: 668
 Ship type: Super box shaped bulker
 L (o.a.) x B x D x d (ext.): 177.85m x 28.60m x 15.00m x 10.85m
 DWT/GT: 37,059t/22,852
 Main engine: Mitsubishi 6UEC45LSE diesel x 1 unit
 Speed, service: 14.7kt
 Registry: Majuro
 Classification: ABS
 Completion: June 6, 2014

***ENERGY SUNRISE***

Builder: Tsuneishi Shipbuilding Co., Ltd.
 Hull No.: 1497
 Ship type: Bulk carrier
 L (o.a.) x B x D x d: 229m x 32.26m x 20.00m x 14.40m
 DWT/GT: 81,793t/43,024
 Main engine: MAN-B&W 6S60MC-C7 diesel x 1 unit
 Speed, service: 14.50kt
 Registry: Panama
 Classification: NK
 Completion: June 26, 2014

