JOINT MEDIA RELEASE
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Singapore Carries Out Ship-to-Ship Bunkering of Close to 1,340 Metric Tonnes of Blended Methanol

Singapore is one step closer to developing its full capability to deliver methanol bunkering at a commercial scale. Close to 1,340 metric tonnes (MT) of blended methanol was bunkered ship-to-ship on 24 May 2024 and there will be another operation for simultaneous methanol bunkering and cargo operations for a container vessel the following week. These operations will also test the use of mass flow meters (MFM) and digital bunkering.

2. The blended methanol, comprising 20% ISCC-certified[1] bio-methanol combined with conventional methanol, was supplied by Global Energy Trading Pte Ltd, a MPA-licensed bunker supplier, using MT *KARA*, a dedicated IMO type II chemical bunker tanker operated by Stellar Shipmanagement Services. The fuel was received by the newly christened 49,900 DWT IMO II MeMAX tanker, *Stena Prosperous*, commercially managed by Proman, a leading methanol producer. This operation, which was completed in 7 hours, follows from the world's first ship-to-containership methanol bunkering conducted earlier in Singapore in July 2023 for the *Laura Maersk* during which 300 MT of bio-methanol was bunkered.

3. The blended methanol was supplied by Proman's marketing arm, Valenz, and lifted at Vopak Penjuru Terminal, Singapore. The blended methanol is reported by Proman to deliver CO_2e saving of 31% on a tank-to-wake[2] basis compared to the same voyage operated on Very Low Sulphur Fuel Oil (VLSFO). The use of blended methanol provides a pathway fuel for ships to meet GHG emissions limits required by Fuel EU Maritime for ships trading in the European Union and European Economic Area. The lifecycle emissions accounting framework is currently being discussed at the International Maritime Organization. The Maritime and Port Authority of Singapore (MPA) expects the relevant metrics for maritime fuels, including well-to-wake, tank-to-wake, to be measurable, reportable and verifiable, and that these should be made available and updated as more information from these operations are reviewed.

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[1] The International Sustainability and Carbon Certification (ISCC) is a certification scheme that ensures compliance with international standards for sustainable feedstock, including biomass feedstocks and conversion processes, such as the production of bio-methanol.

[2] Tank-to-wake, also known as tank-to-propeller, refers to downstream emissions from the ship's fuel tank to the exhaust. Well-to-wake consists of (i) well-to-tank (emissions produced from fuel extraction and production, transport, refining, storage) and the (ii) tank-to-wake component for emissions for use within the vessel. The 31 % in tank-to-wake savings is achieved by combining an 11 % reduction from using methanol instead of VLSFO, and a 20 % reduction from using bio-methanol (using default values).

4. The MPA-licensed bunker tanker MT *Kara* meets the requirements under the IMO's International Bulk Chemical Code for the construction and equipping of ships carrying dangerous chemicals in bulk and complies with the Standards for Port Limit Bunker Tankers. The vessel is equipped with twin screw propulsion and a bow thruster for better manoeuvrability. *Kara* is also fitted with an onboard mass flow metering system, a flow boom capable of transferring bunkering hoses between vessels, and a vapour recovery line. In addition, for the safe handling of chemical cargoes such as methanol, the vessel is fitted with nitrogen bottles supplying nitrogen gas for the purging and blow through of the bunker hoses. Nitrogen, given its inert and stable properties, was used to fill up the remaining vapour space once the cargo is loaded, a process known as nitrogen padding, to reduce flammability risk. Finally, the vessel is equipped with Quick Connect Quick Disconnect (QCDC) and Dry Breakaway Couplings (DBC) for both liquid and vapour hose systems, to minimise leakages and enable the quick and simple disconnection of hoses in an emergency.

5. MPA will study further enhancements for such tankers as part of its ongoing work to develop the methanol bunkering licensing framework and Port Limit Bunker Tanker requirements for methanol bunkering. The Technical Reference[3] for methanol bunkering, currently being developed, will also include the framework to govern the use of MFM and digital bunkering for methanol bunkering, taking into consideration the data gathered during this and the following operation.

6. In preparation for the bunkering operation, the risk assessment, bunkering plan and checklists were jointly prepared by all the parties involved to ensure a common understanding of the safety measures and emergency protocols. Clear roles and responsibilities were also established for each agency to ensure that the operations, and emergency response, were coordinated. The Emergency Operations Centre (EOC) set up at MPA's Port Operations Control Centre monitored the operation, supported by a drone equipped with a volatile organic compound detector and an infrared camera to detect methanol leaks into the atmosphere and methanol flames in the event of an accidental leak. The methanol plume model, employed during the first methanol bunkering operation in July 2023, was updated to support the planning and incident response for this operation.

7. As part of the training and safety preparations for the bunkering, the crew from *Kara* attended the MPA-approved training course for the handling of methanol as a fuel, conducted by the Singapore Maritime Academy (SMA). The training course, one of the first in the Asia Pacific, was launched in April 2024 and covers the operational and safety aspects of methanol bunkering operations. The course curriculum was developed by SMA according to the standards and requirements set by MPA, taking onboard the lessons learnt and best practices from the first methanol bunkering operation conducted in Singapore in July 2023. This is part of the operationalisation of the Maritime Energy Training Facility Initiative announced at the 2024 Singapore Maritime Week.

8. Mr Teo Eng Dih, Chief Executive, MPA, said: "We continue to learn and enhance MaritimeSG's ecosystem capabilities from each bunkering operation involving new maritime

[3] A Technical Reference (TR) for methanol bunkering is currently being developed in consultation with MPA and the Standards Development Organisation at Singapore Chemical Industry Council (SDO@SCIC).

fuels, in terms of developing new supply chains, enhancing infrastructure support such as terminal facilities and bunker tankers, meeting seafarer training needs, setting standards for bunkering and testing our emergency response plans. We thank Proman, Global Energy Group and Stellar Shipmanagement for the successful ship-to-ship bunkering of close to 1,340 MT of blended methanol. Doing so safely and efficiently is an important step towards our support to the international maritime community and complements MPA's earlier call for expression of interest for proposals to supply methanol as a marine bunker fuel at scale in Singapore."

9. Mr David Cassidy, Chief Executive of Proman said: "The bunkering of this 20/80 green/conventional methanol blend on *Stena Prosperous* represents a further step forward for methanol as a marine fuel. Its cleaner burning properties, and lower greenhouse gas emissions, delivers immediate cleaner air benefits and underlines the value of using methanol blends as part of a pathway fuel strategy to a lower emission future, while helping the shipping industry to meet decarbonisation goals. We were delighted to undertake this bunkering operation in Singapore after the ship's official naming ceremony and would like to thank all parties involved for the successful collaboration."

10. Munee Chow, Group Business Manager of Global Energy Group said, "To all participating partners and personnel: Congratulations for achieving this milestone. Being a Singapore bunker supplier of more than 30 years, this marks a memorial moment for Global Energy on our efforts towards decarbonisation."

11. Kelvin Kang, General Manager, Stellar Shipmanagement, said, "With the successful execution of this large-scale methanol loading and bunkering supply operation, we have gained a deeper understanding of its operational characteristics. This valuable insight will enable us to further enhance the efficiency and safety of methanol handling in future operations."

12. The *Stena Prosperous* was officially named on 23 May 2024 at a christening ceremony held at the Marina Bay Cruise Centre, Singapore. On departing Singapore, the vessel will take its cargo to the United States of America.

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About Maritime and Port Authority of Singapore (MPA)

MPA was established on 2 February 1996 with the mission to develop Singapore as a premier global hub port and international maritime centre, and to advance and safeguard Singapore's strategic maritime interests. MPA is the driving force behind Singapore's port and maritime development, taking on the roles of port authority, maritime and port regulator and planner, international maritime centre champion, national maritime representative and a champion of digitalisation and decarbonisation efforts at regional and international fora such as at the International Maritime Organization. MPA partners industry, research community and other agencies to enhance safety, security and environmental protection in our waters, facilitate maritime and port operations and growth, expand the cluster of maritime ancillary services, and develops maritime digitalisation and decarbonisation policies and plans, R&D and manpower development. MPA is responsible for the overall development and growth of the maritime domain and Port of Singapore. In 2023, Singapore's annual vessel arrival tonnage

crossed 3 billion Gross Tonnage and remains the world's busiest transshipment hub, with a total container throughput of 39.0 million 20-foot equivalent units (TEUs).

For more information, please visit https://www.mpa.gov.sg

About Proman

Proman is an integrated industrial group and global leader in natural gas derived products and services. Headquartered in Switzerland, with assets in the United States, Trinidad and Oman, and ongoing expansion into Mexico, Canada and the United Arab Emirates (UAE), Proman is the world's second largest methanol producer and has extensive experience in petrochemical plant operations, petrochemical and power plant construction, product marketing and logistics, and project management. Proman is committed to developing low-carbon and green methanol and ammonia as cleaner alternatives to fossil fuels, offering a pathway to drastically cutting emissions in a range of sectors including transport and industry. www.proman.org

About Global Energy Group

Established in 1992, Global Energy Group is a leading marine service provider. We currently own and operate 25 tankers to support its marine fuel supply business in Singapore and Fujairah, and a regional oil transportation/logistics business. Global Energy Trading Pte Ltd and Stellar Shipmanagement Services Pte Ltd are wholly owned subsidiaries, operating the core businesses of the Group.

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