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JX Nippon Mining & Metals Corporation

Installation of wind-assisted propulsion system on M/V KORYU
—Reducing GHG emissions in ocean transportation by the help of wind power—

Pan Pacific Copper Corporation (President: Kazuhiro Hori; "PPC"), a group company of JX Nippon Mining & Metals (President: Seiichi Murayama; "the Company"), has reached an agreement with the leading mining company BHP, and the global manufacturer of wind-assisted propulsion system for vessels Norsepower Oy Ltd ("Norsepower"), for a decarbonization opportunity in ocean transportation. The parties are conducting a technical assessment and plan to install a wind-assisted Rotor Sail system on M/V "KORYU", a combination vessel*¹ operated by Senko Group's Nippon Marine Corporation (share owned 60% by Senko and 40% by the Company), to reduce GHG emissions during the transportation of copper concentrates and sulphuric acids between BHP's Chilean mines and the Group's smelters in Japan. When this project is completed, the vessel is going to be the first ever Supramax vessel with Rotor Sail installed.

Norsepower's Rotor Sails are known for being approximately ten times more efficient than a conventional sail and require no reefing or crew attention when in operation. The system utilizes wind power to create the Magnus effect*², when wind conditions are favorable, which allows the main engines to be throttled back, saving fuel, and reducing emissions while reducing power needed to maintain speed and voyage time. Technical assessment is currently ongoing and the system is expected to be installed during the third quarter of 2023.

On August 3rd, the company released "[Sustainable Copper Vision](#)". This project is a part of the activities of "Reduce Copper's Carbon Foot Print (CFP)" that is one of the "Four Initiatives" committed to take. The Company's group has declared the target of net-zero CO₂ emissions by fiscal 2050 and is further accelerating its action to reduce CO₂ emissions of Scope 3 including raw material production and logistics throughout the entire supply chain.

*¹ A combination carrier of copper concentrates and sulphuric acid. Such type of the vessel is operated exclusively by the Company's group in the world. The vessel is considered achieving the most efficient voyages in the industry by the round trip between Chile and Japan, carrying about 150kt of copper concentrates as well as 100kt of sulphuric acid per year.

*² A phenomena that creates thrust when the wind hits a rotating object.

<The conceptual image of M/V KORYU with Rotor Sail installed>

