Jeppesen announced on 30th August a contract with the US Navy for a six-month trial evaluation of the Jeppesen Vessel and Voyage Optimization Solution (VVOS). Jeppesen’s VVOS technology combines ocean weather forecasts, advanced computer modelling of ship performance, and sophisticated, proprietary route optimization algorithms to potentially improve the efficiency of ship navigation by reducing fuel consumption and carbon emissions, improving ETAs and providing valuable data that can be used to help extend the life of a vessel, it is claimed. VVOS will be evaluated by Commander, Naval Meteorology and Oceanography Command – CNMOC – at the Naval Maritime Forecast Centers in Norfolk, Virginia and Pearl Harbor, Hawaii.

“Our VVOS optimization product has proven to deliver superior results over other weather routeing and optimization systems, and we look forward to proving ourselves again during this trial,” said Jeremy Langdon, Jeppesen Director and General Manager – Marine.

The commercial off-the-shelf version of VVOS includes proprietary high quality weather and wave forecasts of up to 15 days, updated twice daily. High resolution (1/32-degree) surface ocean currents, updated daily, are also provided and utilized in VVOS’s route optimization computations.

“Weather forecasts are not all equal”, said Dr. Henry Chen, Jeppesen’s Chief Naval Architect. He added, “Our forecasts differ from most by being quality-controlled manually by veteran meteorologists who specialize in ocean weather. We also have a 50-year hindcast ocean weather database against which forecasted trends can be compared.”

A key feature of Jeppesen VVOS is its ability to calculate an optimal passage solution against which actual passages can be objectively compared for relative efficiency. This patent-pending benchmarking methodology is based on the principle that for a given passage with specific ship loading conditions and departure and arrival times, there is a theoretical optimal passage that minimizes fuel consumption while meeting all safety requirements and other user-specified constraints. VVOS calculates this optimal route and speed profile it is claimed, first, by creating a grid of all possible solutions, and then searching for the most efficient solution using Jeppesen’s proprietary Dynamic Programming algorithm. Using this benchmarking methodology, the relative benefits of different
products can be meaningfully compared. For example, the relative efficiency of typical weather routeing products, in which a user’s route is planned using a set of generic speed reduction curves to dead-reckon the ship’s position to avoid storms, can be compared to more advanced route-speed management technologies such as VVOS Route.

Dr. Phil Ballou, Jeppesen’s head of marine engineering, added, “The benefits of VVOS in terms of improved operating efficiency should not be measured only in reduced annual fuel consumption and greenhouse gas emissions and improved on-time arrival. Users will also benefit by improved operating safety of crew, cargo, and ship. When combined with Jeppesen’s Fleet Manager software to track and optimize fleet deployment efficiency, the potential overall savings are substantial.”

Jeppesen is a provider of vessel operations services, meteorological information, transmission technologies and digital navigation solutions, based on worldwide vector chart data type approved to ISO19879. The company offers a wide range of navigation and operations products and services to both light and commercial marine markets ranging from inland and coastal towboats to SOLAS class vessels. Jeppesen is a subsidiary of Boeing Commercial Aviation Services, a unit of Boeing Commercial Airplanes.