

Naval ships

Test Article Vehicle Transfer System (TAVTS) - the innovative ship-to-ship transfer system



UNITED STATES NAVY

Background

In 2008 MacGregor was awarded the contract for the detail design, manufacturing, testing, installation and documentation of the 'Test Article Vehicle Transfer System' (TAVTS) for the US Navy.

MacGregor has a long history of successful deliveries for NAVSEA, PEO Ships, MSC and MARAD. MacGregor has the know-how, the resources, the experience and understanding of naval procedures to meet naval quality requirements.

Our long experience in turnkey supplies provides the essential reliability, cost efficiency and time savings in the most demanding projects.

Sea Basing strategy

The TAVTS prototype solution is part of the US Department of Defense Maritime Prepositioning Force's Sea Basing development, used to demonstrate the transfer of military vehicles between ships at sea.

The aim is to provide the US military with the capability for large scale logistic movements from sea to shore without depending on foreign ports, as part of the Sea Basing strategy.

The challenge: combining ramp and heave-compensation technologies

MacGregor began the design and the development work for TAVTS in 2008. MacGregor's ramp technology experts worked closely with its offshore specialists who contributed their extensive knowledge of heave compensation technologies. Rigorous harbour tests were conducted at MacGregor's facility in Norway prior to delivery. The delivery included a self-deploying ramp system and a self-deploying side port platform.



Personnel and vehicles, including a 70-tonne battle tank, were successfully transferred between the two ships while underway in high sea state 3 and low sea state 4. Laser sensors measure the spatial relationship between the ramp foot and the side port platform. Heave compensation mode is employed to maintain the correct tension in the hoisting wires.

Successful sea-trials

In 2009 the MacGregor TAVTS was delivered to the US Navy on time and on budget. In 2010 it successfully completed full-scale sea trials, carried out by the US Navy's Strategic and Theatre Sealift Programme Office (PMS 385) which is part of Programme Executive Office Ships (PEO Ships).

During the US Navy's sea trials, the self-deploying ramp was mounted on the float-on/float-off ship, *Mighty Servant 3*, and the side port platform system was fitted to the LMSR ship, *USNS Soderman*.

Installation of the ramp system on *Mighty Servant 3* simulated the basic configuration envisioned for the future Mobile Landing Platform (MLP).

The vessel was also fitted with a dynamic positioning system that allowed it to hold a specified position and orientation alongside the LMSR while underway, within a defined tolerance.

During system testing in high sea state 3 and low sea state 4, 111 vehicle roundtrips were carried out between the two ships; 27 roundtrips during the pier side phase and 84 at sea.

Ship-to-ship transfer

Deployment and retrieval of the power-operated ramp can be controlled by a single person.

In case of emergency ship separation, the system will safely continue to support the vertical and horizontal design loads and so allows for separation while carrying a vehicle weighing up to 72.5 tonnes (160,000 lb) anywhere along the length of the ramp.



Lloyd's Register Quality Assurance certifies that the Quality Management System for MacGregor is ISO 9001:2008 compliant.

MacGregor is the world's leading brand of engineering solutions and services for handling marine cargoes and offshore loads. MacGregor products serve the maritime transportation, offshore and naval logistics markets, in ports and terminals as well as on board ships. Our cargo flow solutions integrate cargo access, stowage, care and handling functions to suit a particular ship's cargo profile. This benefits its productivity, environmental impact and profitable service lifetime. www.macgregor-group.com

MacGregor is part of Cargotec. Cargotec's sales totalled EUR 3.3 billion in 2012 and it employs approximately 10,000 people. Cargotec's class B shares are quoted on NASDAQ OMX Helsinki under symbol CGCBV. www.cargotec.com

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MacGregor RoRo

tel. +46 31 85 07 00

fax. +46 31 42 88 25

rorosales@cargotec.com

roroconversion@cargotec.com

www.macgregor-group.com