

# Sealift RoRo ramp modification further enhances ramp capabilities

Slewing stern ramp conversions on four of the US Military Sealift Command's large medium-speed roll-on/roll-off ships enable amphibious vehicles to be launched directly into the sea

Modifying the stern slewing ramp on *USNS Pililaau*, one of the Military Sealift Command (MSC)'s 'large medium-speed roll-on/roll-off' (LMSR) ships, enables amphibious vehicles to be deployed rapidly and safely in stream, as well as retaining the ramp's ability for normal RoRo operations in port or at sea to a roll-on/roll-off discharge facility. MacGregor USA's service department completed work on *USNS Pililaau*'s ramp in December at the BAE Shipyard in Mobile, Alabama.

*USNS Pililaau* is one of the original 20 ships in MSC's LMSR fleet. The former LMSR *USNS Soderman*, was converted in 2000 to a Maritime Prepositioning Force (Enhanced) ship and re-named *USNS Stockham*.

LMSR ships were built or converted by US shipyards to offset the shortage of militarily useful transport vessels available in the commercial sector. Five existing container carriers were converted to LMSR ships and handed over in 1996 and 1997. Two were completed by Newport News Shipbuilding and three by General Dynamics NASSCO. Fifteen LMSR newbuildings were delivered between 1998 and 2003: seven Bob Hope-class ships by Northrop Grumman's Avondale Shipyard in New Orleans, and eight Watson-class ships by NASSCO in San Diego. The two classes are similar, differing mainly in their propulsion plant.

Each of the vessels has a cargo deck capacity totalling more than 300,000 square feet (28,000m<sup>2</sup>). The LMSR's roll-on/roll-off design is configured to carry every type and size of military vehicle in the US inventory

from frontline A1M1 Abrams tanks and Bradley Fighting Vehicles to self-propelled artillery and trucks, high-mobility multipurpose wheeled vehicles, or Humvees, and even helicopters. The ships also had to be able to load and/or discharge these vehicles at virtually any port facility, from the most modern to the most austere – as well as at sea in SS3 conditions.

MacGregor was awarded a contract for Class Standard Equipment (CSE) in 1993. MacGregor's CSE for each ship included a large slewing stern ramp, a stern door, a moveable ramp which services two side ports, port and starboard side port platforms and weather tight side doors. Two pairs of 57-tonne SWL single-pedestal twin cranes make it possible to load and unload cargo where shore-side infrastructure is limited or non-existent. Each pair can be linked to lift 114 tonnes.

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Four LMSR ships have now had their ramps modified: the Bob Hope-class *USNS Seay* and *USNS Pililaau*, and the Watson-class *USNS Dahl* and *USNS Sisler*. "We had already gained useful experience from similar conversion work carried out on older RoRo ships, including the original *USNS Soderman* in 2000," says **Dave Drenon**, Service Operations Manager with MacGregor USA.

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– Dave Drenon

Design and key fittings for ramp conversion on *USNS Dahl* were ordered in 2009. The conversion work on *USNS Dahl* and *USNS Seay* was carried out at Detyens Shipyard in South Carolina. *USNS Sisler* and *USNS Pililaau* had their ramps converted in 2011 and 2012 at the BAE Systems shipyard in Mobile. The design and key components were supplied by MacGregor's Gothenburg-based RoRo conversion team in Sweden, and the conversions were performed by the shipyards under the supervision of the MacGregor USA service department throughout the installation and commissioning processes.

When considering the feasibility of rebuilding the ramps for amphibious use, the MacGregor RoRo conversion team's brief required that the reconstructed ramps should retain their original load bearing characteristics, defined as supporting two A1M1 Abrams battle tanks with a 1.22m separation between them when discharging to a pier or RoRo discharge facility. An A1M1 tank weighs over 60 tonnes.

"First we removed and dismantled the existing ramp, then added a 2.3m mid-body extension to the first section and a grating extension to the aft end of the ramp. We modified the second section to accept



*Modifying LMSR stern slewing ramps enables amphibious vehicles to be deployed rapidly and safely in stream, as well as retaining the ramp's ability for normal RoRo operations*

the new grating extension and fabricated a new ramp foot. The turn beam and turn frame structure were modified, and the ramp structure reinstalled. It was also necessary to modify the control system and we installed a new erasable programmable read only memory (EPROM) in the PLC.”

Looking at the wider picture, Mr Drenon says MacGregor has a long and successful record of supplying equipment to naval and naval logistics support vessels. “In addition to a wide range of internal and external ramps and doors, cranes and hatch covers, our specialists have developed the Test Article Vehicle Transfer system (TAVTS) for the transfer of vehicles at sea between two ships on a parallel course, even in challenging sea conditions.”

