

# Z-peller tugs strengthen Singapore fleet

PSA Marine has taken delivery of two new ASD tugs constructed by Cheoy Lee. David Tinsley focuses on these vessels' features

Singapore's bustling port has this year seen the commissioning of two new azimuthing stern drive (ASD) tugs for ship-assist and coastal towing duties, and specially designed to operate in restricted water depths. The 32m *Resilient* and *Resolute* were delivered by Cheoy Lee Shipyards of Hong Kong into the fleet controlled by PSA Marine, which received the sister tug *Rubicon* from the same source in 2013.

The new series embodies the Ramparts 3200CL class developed by Vancouver, Canada-based naval architecture firm Robert Allan Limited for Cheoy Lee. The design is offered by the yard with different propulsion system options. While Niigata installations were nominated for *Resilient*, *Resolute* and *Rubicon*, Caterpillar engines and Schottel propulsion units were fitted to the quartet of 3200CL terminal tugs completed by Cheoy Lee in 2014 for PSA Marine Qalhat, PSA Marine's joint venture in Oman.

The Niigata system, installed aboard both *Resilient* and *Resolute*, comprises two 6L28HX medium-speed engines of 1,654kW apiece, driving 360deg steerable, Z-type fixed-pitch propulsors of a new type, the Z-peller ZP-31B. The total 3,308kW power concentration, combined with the nature of the hull lines and Z-peller design, results in a bollard pull performance of 60tonnes



Like her sister *Resilient*, *Resolute* (pictured) has a bollard pull performance of 60tonnes ahead

ahead and 55tonnes astern, and a free running speed of 12.5knots.

## Fender protection

Electrical power is derived from two Perkins 1006TWGM three-phase generators, each rated 112ekW. Two 1,500m<sup>3</sup> FFS fire pumps, driven by power take-off (PTO) from the respective main engines, feed two FFS dual-purpose foam/water monitors mounted aft of the wheelhouse.

The deck gear includes: a MacGregor split-drum tow winch and anchor windlass at the bow, affording a brake holding capacity of 150tonnes; a 20tonne-pull MacGregor single-drum tow winch aft; a 5tonne tugger winch; and a Palfinger knuckle-boom crane.

The bow area is protected by two rows of 800mm x 400mm cylindrical fenders, with 480mm x 300mm 'W' block-type fendering below. A single 300mm x 300mm hollow 'D' fender runs along each side of the hull at the main and forecandle deck sheer lines, while 'W' fendering is used at the stern.

Accommodation is provided for up to 10 personnel, with single-berth cabins for officers and double-berth cabins for other crew members.

A wholly owned subsidiary of PSA International (formerly the Port of Singapore Authority), PSA Marine's towage interests extend beyond Singapore to China, Hong Kong, Malaysia, India and Oman, with an overall fleet of more than 70 tugs. The most recent phase in the company's development was the start, in January this year, of the joint venture in Oman, entailing the allocation of four newly built 70tonnes bp Rampart 3200CL tugs to support LNG carrier handling.

Following the June 2015 handover of *Resolute*, as the final tug in the series of seven for PSA Marine in Singapore and Oman, Cheoy Lee stated that it had added a further eight 3200CL-class tugs to its workload on a speculative basis. Four were to be fitted with Niigata propulsion systems, and four with Caterpillar machinery, and anticipated bp capacities were up to 70tonnes. **SBI**

### TECHNICAL PARTICULARS

#### *Resilient / Resolute*

Length, oa.....	32m
Breadth, moulded (extreme).....	12.4m
Draught (summer load) .....	4.19m
Gross tonnage .....	493tonnes
Main engine power .....	2 x 1,654kW
Bollard pull.....	60tonnes (ahead) 55tonnes (astern)
Service speed .....	12.5knots
Classification society.....	Lloyd's Register