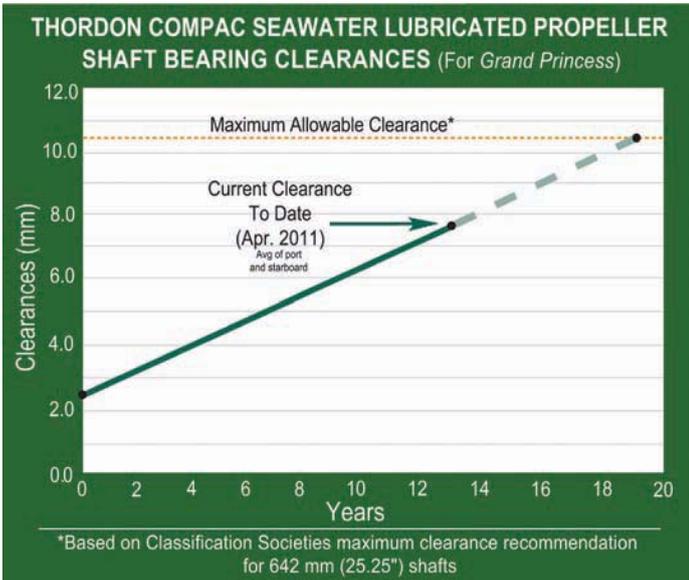


13 years of pollution free performance



ON MAY 26, 1998, the 109 000gt *Grand Princess*, then the largest cruise ship in the world, made her inaugural voyage from Barcelona to Istanbul. Unlike contemporary cruise vessels at the time, she was fitted with seawater lubricated propeller shaft bearings. Due to her size, risk studies carried out by the technical team at Princess Cruises/P&O, in conjunction with the shipbuilder, Fincantieri, indicated that few drydocks in the world could take a vessel of this size. Any

Chart showing how the bearing wear has been well within the design tolerances

unscheduled drydocking to repair a stern tube seal leaking oil could result in substantial financial losses, pollution risks and long transit to and from a suitably sized drydock. Accordingly the recommendation was to fit seawater lubricated propeller shaft bearings.

The prudence of that decision has been demonstrated over almost 13 years of service. *Grand Princess*, has not had



The port strut of *Grand Princess* with rope guard intact for easy bearing access

any unscheduled drydockings due to stern tube oil leakage - there is no aft seal to leak and the bearings are lubricated with seawater, not oil.

In April 2011, *Grand Princess*, completed a scheduled drydocking at Grand Bahamas Shipyard for extensive upgrades and modifications. Bearing clearances in the original Thordon COMPAC strut and stern tube bearings were checked and these indicated that the bearing wear

was well within acceptable limits (as can be seen in the chart). Also of financial importance, the bearing design allows for their removal, inspection and re-installation with the shaft still in place. In fact the two propeller shafts have never been withdrawn since their installation in 1998.

Owner Carnival Corp has continued with that 1998 decision and now has 14 of its cruise ships fitted with Thordon COMPAC seawater lubricated propeller shaft bearings and more COMPAC bearing systems on order for two future newbuilds.

CHINA'S JIANGSU Rongsheng Heavy Industries, which specialises in shipbuilding and offshore engineering, has acquired 100% of the equity interest of the Quanchai Group for RMB2148 870 000 (US\$330M). The transaction allows Rongsheng to position itself as a diversified heavy industry conglomerate. Leveraging on the Group's capability in producing low-speed diesel engine, the transaction enhances the Group's ability to enter production of high-speed diesel engines, which is the principal business con-

Rongsheng goes high speed

ducted by Quanchai Engine. It also enables the Group to secure a stable and reliable supply of engine parts, which in turn will aid the sustainable growth of the Group's engineering machinery segment.

Established in 1949, Anhui Quanchai Engine Co Ltd is principally engaged in the manufacture and sale of low power multi-cylinder and single cylinder high speed diesel engines with an



Rongsheng is particularly noted for its shipbuilding activities

output range of approximately 2kW up to 200kW. Annual production capacity is approximately 250 000 sets of multi-cylinder diesel engines and 500 000 sets of single-cylinder diesel engines. The engines are used as power units for electric power generators, transportation vehicles, tractors, water pumps, forklifts, agricultural machinery and construction machinery.