

# Australian steel reinforcing Australia's defence capability

## Defence SA shiplift

Leading Australian steel fabricator, RPG Australia, recently completed the fabrication, construction and installation of a shiplift at Techport Australia using 2,800 tonnes of XLERPLATE® steel. The shiplift is located within the Common User Facility (CUF) at Osborne in South Australia. It will be used to support commercial and defence shipbuilding and maintenance activities, including the construction and ongoing maintenance of the new Air Warfare Destroyers, a key element of Australia's national maritime security capabilities.

It has been, according to RPG's Contract Manager Peter Hall, "An extremely interesting project with many diverse and complex elements involved. These include plate profiling, machining, painting, assembly, hydraulics and operational and load testing of the equipment. All manufacture and

installation activities were undertaken by RPG, with the assistance of capable and approved sub-contractors."

The shiplift, as its name implies, is a mechanism that lifts ships (or submarines) out of the water for maintenance, repair and construction operations.

### MULTIPLE COMPANIES AND STRONG RELATIONSHIPS

The project was comprised of the complete design and construction of three key elements: a working platform, 40 'off' hoists to lift the platform and a transfer system to allow the ships to be moved on and off the platform, all designed and manufactured to the requirements of Lloyds Register. Lloyds is a third party inspection company which provides independent verification that the material is suitable for the standard to which it is made.

RPG manufactured and installed the first two elements under a sub-contract with Rolls Royce Australia Services Pty Ltd and the third element under a separate sub-contract with the Norwegian company TTS. The ultimate client for the whole project was Defence SA.

South Australia prides itself on being able to deliver some of the Royal Australian Navy's largest projects through the nation's premier naval industry hub, Techport Australia.

"The project commenced with an enquiry and order for the main element – the platform," said Peter. "During the fabrication of this order, we were also successful in securing contracts to provide the shiplift's 40 off hoists and then the complete transfer system, culminating in the site installation, load testing and setting to work of the entire system."



First platform fabrications delivered to site, set up for final consolidation prior to installation of timber decking and transfer into the basin

“RPG built the system after transporting all the manufactured key structural elements to the CUF site. We then assembled and welded these together to form completed platform modules (19 in total). This final consolidation had to be carried out onsite due to their physical size.

“There is very little of the mechanical aspect of the whole shiplift project RPG has not manufactured. It is rare for a fabricator to be commissioned to undertake all elements of a project: from manufacturing, to installation, to testing and final handover. As a result, this project has been a really satisfying experience for the whole team.”

**The shiplift is a mechanism that lifts ships (or submarines) in or out of the water for maintenance, repair and construction operations.**

Rolls Royce Australia Services Pty Ltd was RPG’s direct client for the entire scope of the supply and manufacture of the platform and hoists, as well as the onsite installation utilising Rolls Royce Naval Marine Inc. – based out of Annapolis, USA – for the technical design of the shiplift system. Rolls Royce is a global business providing integrated power systems for use on land, at sea and in the air.

TTS handling systems designed the transfer system and were RPG’s direct client for the manufacture of the trestles and trolleys which make up the transfer system. TTS is a global enterprise that designs, develops and supplies equipment for the marine, oil and gas industries.

### **PROJECT COMPONENTS AND HOW THEY WORK**

The platform, along with its positioned trestles, is lowered up to 18 metres into the water by the 40 hoists. The platform maintains its level through the control systems that synchronise all the hoists. The ship is then accurately positioned above the trestles and secured to the bollards and winches on the surrounding civil works. The



Platform and hoists near complete; transfer system trolleys and trestles preparing to drive onto platform for load testing

platform is then raised along with the ship, which is supported entirely by the trestles.

**2,800 tonnes of Grade 350 XLERPLATE® steel was used in the main transverse beams of the shiplift platform structure; the bedplate (frame) and drums of the hoists; and the trestles and trolleys on the transfer system.**

The transfer system is comprised of 42 hydraulically operated trolleys, 21 trestles and a power/control vehicle. The system, when coupled with all trestles/trolleys (in the desired position to suit the required lift), drives onto the platform. The trolleys lift all the trestles at the same time and place them on the platform. Following this:

- the trolleys are then driven off the platform
- the platform and trestles are lowered
- the ship is docked and secured on the trestles
- the platform is then raised and the trolleys returned to trestles, where the ship is supported before it is lifted clear of the platform.

The trolleys/trestles/ship are then driven off the platform to the ‘hard stand’. This driving takes place on rail tracks preset into the concrete hard stand. The ship is moved to its chosen ‘parking spot’ and then the trolleys lower the trestles and the ship is parked, allowing the trolleys and platform to be used for further incoming/outgoing ships.

The advantage of using this equipment, and applying this methodology, is that once one ship is moved into an appropriate position on the dry berths concrete hard stand area, the trolleys can lower the trestles with the ship on top allowing the trolleys to be removed and relocated to pick up another ship.

This is in contrast to working on ships in a typical dry dock scenario. Using the platform, hoists and transfer system that RPG has manufactured and installed, allows multiple vessels to be worked on at once. This has the potential to save time and money, whilst also facilitating the servicing of Australia’s defence capability.

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