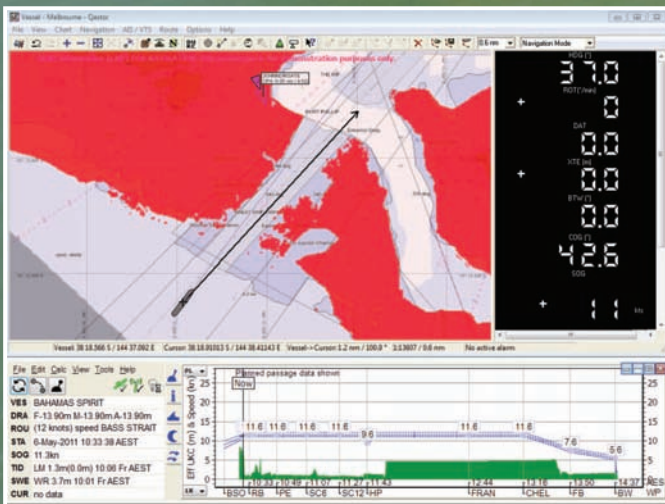


Perfectly managed

Upgraded navigation technology is helping meet the shortfall caused by BHP Billiton's decision to defer its \$20 billion outer harbour expansion project. By **John McIlwraith**



Upgraded navigation technology is increasing capacity at Port Hedland.



Port efficiency: DUKC navigation technology is increasing shipments.

New technology will increase the capacity of Port Hedland's inner harbour, to partly compensate for BHP Billiton's decision to defer its outer harbour expansion.

A system already in use that allows for more ships to leave on each tide is being enhanced.

Recently, a record was set when six vessels left on one tide, carrying more than a million tonnes of ore.

Further increases in exports will be possible when upgrades to the existing dynamic under keel clearance (DUKC) navigation technology, developed by Australian firm OMC, are completed.

BHP Biliton signalled in August that it would seek ways to increase shipments from the existing port to partly offset the deferment of the \$20 billion outer harbour project.

Chief executive Marius Kloppers said then that the Pilbara mines and railways could deliver more iron ore to Port Hedland than its port export allocation allowed.

The new outer harbour would have lifted exports to 350 million tonnes a year. Current allocations in the existing harbour authorised shipments of 250 million tonnes.

"I think that what we are saying is that our supply chain will deliver the tonnes and what we will do is maximise the throughput through the inner harbour to the maximum

that we can squeeze out of it." OMC's executive director Dr Terry O'Brien said a new five-year contract would equip Port Hedland with innovative tools to maximise the number of ships sailing on a tide.

"The port authority needs to manage increasing volumes through Port Hedland's inner harbour, further exacerbated by the recent postponement of the Port Hedland outer harbour development.

"The growth of the Western Australian iron ore ports and our east coast coal ports will put increasing pressure on the shipping regulators to use tides more efficiently as cargo volumes ramp up.

"There is also great potential for these new DUKC applications to bring significant benefits to not only other Australian ports, such as Dampier and Hay Point, but also to ports overseas such as the major bulk ports in Brazil."

The system allows scheduling of a number of ships on the one tide, subject to priorities, under keel clearance (UKC) constraints and tug and pilot availability.

It will give ship operators greater flexibility in the timing of port visits and also reduce the workload for schedulers.

Under this new agreement, the programme will be further developed to include inbound shipping as well as departing ships.

Since the original system was introduced some years ago, 250,000 tonne carriers can

negotiate a channel with only 25cm clearance to the seabed, although up to 90cm may be calculated in some conditions.

At Port Hedland, the average bulk carrier leaves with 9000 tonnes more ore than it used to.

Because of a greater knowledge of tides and other factors, between 2000 and 3000 hours per year have been saved in turnaround times.

Moored buoys and other equipment deliver real-time data on wave height and strength and tides to port monitoring centres, which calculate precise water depths, allowing for the effects of roll and pitch, which will be available below a ship's keel.

This includes a margin for wave movement; the "base" figure can be as low as 25cm, if a vessel is moving, as ships settle in the water when stationary, requiring greater depth.

There is so little space below the keel that there is often a trail of silt, stirred up by the turbulence from the ship's screws,

Squeezing another few centimetres out of the depth to which a ship can be loaded adds many tonnes of cargo, reducing unit freight costs.

The system is particularly valuable on the Pilbara coast, which has a tidal variation of up to 7.5m.

The accurate calculations greatly improve ship loading and movement.



editorial@miningmonthly.com