

#### **TIANJIN BRIDGE CONTAINERSHIP STUDY**

#### Introduction

This analysis was carried out in January by Northport Ltd using their bridge simulator onsite at the port facility. The purpose of this study is to understand the potential pilotage limitations for a 294m Container Ship due to visit Northport on 16<sup>th</sup> January. For this study, the existing Channel was used with the present 2020 berth configuration.

### **Design Ship**

An existing model based on the MP the BeliChick at 11m draft was used. MP the Belichick is a Panamax 5000 TEU Containership which is very similar to the Tianjin Bridge.

The simulated design ship was tested in the Marsden simulation area (Marsden 1C) using the latest tidal data provided by Metocean.

### Tugs

Bream Bay/ Takahiwai / Marsden Bay

#### **Simulations**

Run Number	Maneuver	Tide HW	Wind	BT Used	Tug Power Max	Comment	Pilot
001	Departure PST	HW	SW15	Y	Full	Swung ok to stbd off berth but to the north due to remnants of the flood. Slow to turn using 3 tugs plus BT. To east when rounding corner so must be careful to not reduce ROT	RO
002	Departure PST	HW +0.5	SW 15/ Gust 20	Y	Full	Swung to stbd tighter off berth with a more realistic slight ebb. Rounding corner to the east due to slackening of ROT	RO
003	Arrival PST	HW -0.2	SW15 G20	Y	Full	No problems with the corner passing close to red buoys. Slowed effectively. No problem.	RO
004	Departure PST	HW + 1.5	SW20	Y	Full	Slow to swing to stbd. Needed three tugs. Cornered ok but felt this was a limit condition. Wind steady 20 knots from the SW with a spring ebb tide HW+1.5hrs.	TG
005	Mooring Lines	HW + 3  To  HW +3	SW50	NA	NA	Moored PST Stern at 555m Mark/ Lines 6 +2 . Maximum 2 lines per bollard. Managed ok stabilized 5m off berth.  Maximum windage 5300 m3	

Ref 2021001



006	Arrival SST	HW-1hr	SW15 G20	Y	Full	Arrived and swung to port to berth SST. Controlled ok using three tugs and BT	GW
007	Departure PST	HW-1hr	NE 15 G 20	Y	Full	Swung to port off berth controlled using three tugs and BT. Cornered relatively fast but ok	GW
800	Arrival PST	HW -0.6	S 15 G 20	Yes	3/4	Only used two tugs for arrival. All controlled ok	LW
009	Departure PST	HW -1 hr	NW15G 20	YEs	Full	Swung to port off berth. Three tugs but BB was lost due POD failures. Managed ok with Taka sent forrard. Controlled safely	GW
010	Arrival	HW-0.6	SW15 G20	Yes	NA	Simulation around corner for arrival. No problem	КВ
011	Arrival Berth SST	HW -0.3	SW15 G20	Yes	Full	Simulation started from RNZ. Swing to port and berth SST. Swung ok no problem	КВ
012	Arrival	HW-0.6	SW15 G20	Yes	NA	Simulation around corner for arrival. No problem starting at a slower approach speed.	КВ
013	Departure PST	HW + 5.5hrs	W 15 G20	Yes	Full	LW departure. Swing to stbd. 3tugs required Swung ok and departed around the corner no real problem	КВ



# **Deck Cargo Configuration**

Confirmed with latest Bay Plan. No significant differences.

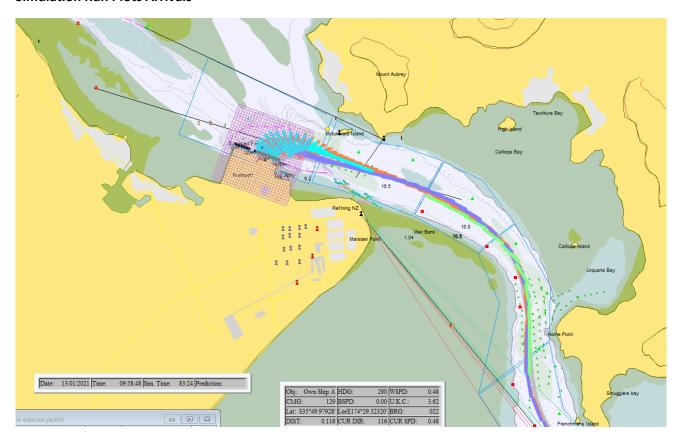


Name:	Time and Distar	nce to Sto	р			
MP the Belachick	Note: Using Engine	s Full Asterr	and with m	inimum apı	olication of ru	udder
Ship Type: Containership		Normal LO	Normal LOADED		ALLAST	Warning
Drafts : Full Load 11.0/11.0	Sea Speed	Time	Distance	Time	Distance	The response of the
Minimum Steering Speed	Full Sea Speed					vessel may be different
-	Full Speed	5m42s	0.99nms			if the following conditions
Normal Loaded Condition 5kns	Half Speed					are not met
	Slow Speed					
						Calm Sea
Maximum Available Rudder Angle	Engine Order/ F	RPM (Prop	ellor Pitc	h)/Speed	Table	No Current
Hard Starboard 35						Water depth twice the vessels draft
Hard Port 35			Loaded	Ballast		clean hull
	Engine Order	RPM	Speed	Speed		
Principal Particulars	Full Sea Speed	90	23.7			
LOA 294m LBP283 Bm 32	Full Ahead	65	18.4			
GRT 81488	Half Ahead	50	14.2			<b>~</b> \
Single Propellor RHFP Screw	Slow Ahead	35	9.8			
Engine Type Diesel 58000 KW	Dead Slow Ahead	24	6.9			Morthnort
Bowthruster 1800kW	Dead Slow Astern					Northport
ABS Rating	Slow Astern		Bridge_Bow	221m		
RTD 2 RTS 4 RT10 4	Half Astern		Windage: 5091	sqm		
TURNING CIRCLE DIAGRAMS	Full Astern		ZigZag 10ì10	3.5° First O	vershoot	
Loaded Condition				Ballast Co	ndition	
Full Speed	Half Ahead		Full Sea S	eed		Half Ahead
1259m Transfer	Transfer	-	Transfer 0	*	<del>-</del>	Transfer
1092m Advance Advance		Advance			Advance	

**Pilot Card** 

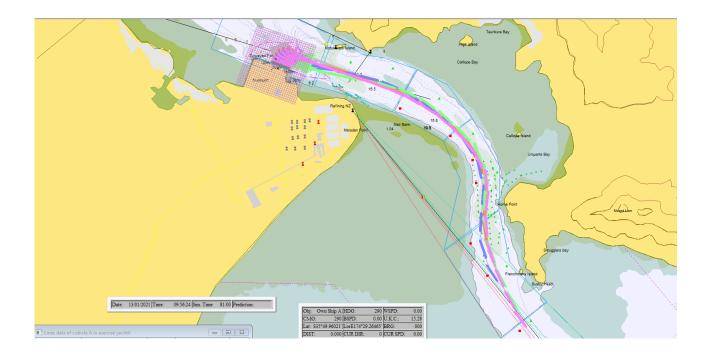


# **Simulation Run Plots Arrivals**



**Simulation Run Plots Departures** 





# References

- 1. ABS Vessel\_Maneuverability\_Guide\_e-Feb17.pdf
- $2. \hspace{0.5cm} \textbf{IMPA 2014 Conference Paper The-manoeuvrability-of-very-large-and-ultra-large-container-carrier panama-2014} \\$
- 3. Rapport Safe Handling ULCS version 2\_0
- 4. Maneuvering-committee Wuxi 2017