1.0 Introduction

Vessels transiting within port limits from the Materials Offloading Facility (MOF) to the Barrow Island Pilot Boarding Ground (PBG) require an approved passage plan which can be shared between Pilots and vessel Masters. This work instruction has been compiled in accordance with documents *GOR-COP-0187 - Pilot Passage Plan Guideline* and approved according to *GOR-COP-0186 - Passage Plan Approval Procedure*.

1.1 Purpose

This Work Instruction is specific to Landing Craft, describing the navigation route between the MOF and the PBG. It provides Pilots, Masters and Bridge Navigation Teams sufficient information to conduct a vessel along the route in a safe and controlled manner, minimising risk to personnel, environment and property.

1.2 Scope

This Work Instruction begins when a vessel, specifically Landing Craft, departs a berth in the MOF and concludes when it reaches the PBG.

It encompasses two routes. One route transits the main MOF channel and the other transits out of the MOF via an alternative Northern Route.

Provided UKC requirements are satisfied, the Northern Route shall only be utilised when the tidal stream across the main MOF channel is outside the operating parameters stated in *ABU110700304 - Port of Barrow Island – Port Information Guide*.

The daily predicted tidal stream is promulgated via the *Port of Barrow Island – Daily Shipping Schedule and SIMOPS* document, which can be received by contacting the Barrow Island Marine Communications Operator at bwimco@chevron.com.

CAUTION:

This passage plan is tidally restricted for vessels with drafts greater than 4.5m when using the main MOF channel and 0.9m when using the Northern Route. All vessels must maintain a UKC of at least 1.0m or 15% of maximum draft (whichever is greater).

Caution must be taken when using buoys for navigation, particularly post severe storm/cyclone activity.

Vessels may not have the controlling draft and therefore the drafts of assist vessels must be considered.

1.3 Target Audience

This work instruction is primarily intended for use by ABU Marine Pilots, vessel Masters and vessel Bridge Navigation Teams.

1.4 Acronyms and Abbreviations

The below table defines the acronyms and abbreviations used in this document

Acronym/Abbreviation	Meaning
AMSA	Australian Maritime Safety Authority
BWI	Barrow Island
CBM	Conventional Buoy Mooring
CD	Clearing Distance
ECDIS	Electronic Chart Display and Information System
JHA	Job Hazard Analysis
kts	knots
m	metres
MOF	Materials Offloading Facility
MPX	Master Pilot Exchange
nm	Nautical miles
OOW	Officer of the Watch
PBG	Pilot Board Ground
Pilot	ABU Marine Pilot
PI	Parallel index
PPU	Portable Pilotage Unit
SOLAS	International Convention for Safety Of Life At Sea
UKC	Under Keel Clearance
XTE	Cross Track Error

2.0 Waypoint Bank

Waypoint	Reference	Latitude	Longitude
WP001	PBG	20°48.60'S	115°36.00'E
WP002	Outer Leads	20°48.00'S	115°30.25'E
WP003	Inner Leads	20°47.72'S	115°28.90'E
WP004	West Cardinal	20°47.20'S	115°29.67'E
WP005	Berth	Various	Various

3.0 Route Bank

Route	Waypoint Sequence
4.1 MOF to PBG – Main Channel	WP005, WP003, WP002, WP001
4.2 MOF to PBG – Northern Channel	WP005, WP003, WP004, WP002, WP001

4.0 Passage Plan - Materials Offloading Facility (MOF) to the PBG

4.1 MOF to PBG – Main Channel

Waypoint	WP005 (Berth)
Latitude	Various
Longitude	Various
Course	Various
Speed	<3kts (Also refer to Section 5.2 regarding reduced speed and closing distances)
Leg Distance	Various
Minimum Depth at CD	6.5m
Maximum Cross Track Error	N/A
Primary Fixing	Visual
Secondary Fixing	GPS/RADAR
Parallel Index	N/A

- Pilot will normally embark by Pilot Boat. The vessel is to follow any instruction from the Pilot Boat in regards to the rigging of the ladder. The pilot ladder will be rigged as per *SOLAS 2010 Chapter V Reg 23* as amended and secured to a height above the waterline as requested by the Pilot Boat.
- The Pilot will detail the manoeuvring of the vessel out of the berth, including un-mooring arrangements as part of the MPX.
- Pilot will brief the Master on contingency plans, No Go Zones and abort points as part of the MPX.
- Parallel indexing to be setup and utilised throughout passage.
- The Pilot will contact the Port of Barrow on VHF Ch10 for permission to vacate the berth and to obtain any traffic updates.
- Call Port of Barrow on VHF Ch10 with last line time and confirm the main MOF channel is clear for departure.
- Manoeuvring from the berth to the swing basin to be done at slow speed (less than 1 knot over the ground).
- The swing basin is 320m in diameter.
- Monitor rate of turn.
- Ensure adequate clearing distances between the vessel and any obstructions, such as other vessels, navigational marks and mooring dolphins.
- In the event of a failure, and depending on the situation, the vessel will continue to the swing basin, return to a safe berth or proceed to anchor, clearing any obstructions.
- Night operations may require additional or alternate position fixing due to backscatter and masking of lights due to shore lights.

Gorgon - Pilotage - Passage Plan - Landing Craft - Materials Offloading Facility (MOF) to PBG

Waypoint	WP003 (Inner Leads)	• Vessel should be steady and on the leads before exiting the swing basin. • MOF leading lights and sector lights can be utilised transiting the main MOF channel. • The Flood tide sets to the South. The Ebb tide sets to the North. • Effect of tide increases when departing the MOF basin. • When transiting the main MOF channel, the Flood tide is generally strongest in the vicinity of HB5 and the Ebb tide is generally strongest when close to the breakwater. Caution must be used in determining tidal flow due to variations. • When tide and vessel's draft permit, an emergency escape route to the North between MOF1/3 or to the South between MOF2/4 can be considered for the main channel. • Beware of traffic entering the MOF. • Call the Port of Barrow on VHF Ch10 when passing MOF1/2 outbound. • Beware of converging traffic from the North when exiting the main MOF channel. • At night, visual references ahead of the vessel are limited. As such, a greater reliance on radar fixing and PI methods may be required. • In the event of a failure, the vessel will (if possible) continue clear of the channel or proceed to anchor (clear of any obstructions).
Latitude	20°47.72'S	
Longitude	115°28.90'E	
Course	102°T	
Speed	~3 to 6kts	
Leg Distance	1.3nm	
Minimum Depth at CD	5.5m	
Maximum Cross Track Error	50m	
Primary Fixing	Visual	
Secondary Fixing	GPS/RADAR	
Parallel Index	Breakwater at 0.05nm	

Gorgon - Pilotage - Passage Plan - Landing Craft - Materials Offloading Facility (MOF) to PBG

Waypoint	WP002 (Outer Leads)
Latitude	20°48.00'S
Longitude	115°30.25'E
Course	096°T
Speed	~6 to 10kts
Leg Distance	5.4nm
Minimum Depth at CD	6.1m
Maximum Cross Track Error	100m
Primary Fixing	Visual
Secondary Fixing	GPS/RADAR
Parallel Index	South Cardinal at 0.2nm

- Beware of converging traffic and the CBM oil pipeline in the vicinity of the South Cardinal Mark.
- The CBM to the South of the track and the Lowendal Shoal to the North of the track are both No Go Zones.
- Call the Port of Barrow on VHF Ch10 when crossing port limits.
- Extra caution to be taken in vicinity of the PBG due to the potential for converging traffic.
- At the PBG, the Flood tide sets to the South West. The Ebb tide sets to the North East.
- In the event of any failure, the vessel will (if possible) continue to port limits or proceed to anchor (being aware of the oil pipeline and other obstructions).
- PBG: Lat 20°48.60'S, Long 115°36.00'E.
- Vessel and Pilot Boat are to discuss and agree on vessel speed and heading prior to Pilot transfer, ensuring a good lee is provided for disembarkation. The pilot ladder will be rigged as per *SOLAS 2010 Chapter V Reg 23* as amended and secured to a height above the waterline as requested by the Pilot Boat.

4.2 MOF to PBG – Northern Channel

Waypoint	WP005 (Berth)	• Pilot will normally embark by Pilot Boat. The vessel is to follow any instruction from the Pilot Boat in regards to the rigging of the ladder. The pilot ladder will be rigged as per *SOLAS 2010 Chapter V Reg 23* as amended and secured to a height above the waterline as requested by the Pilot Boat. • The Pilot will detail the manoeuvring of the vessel out of the berth, including un-mooring arrangements as part of the MPX. • Pilot will brief the Master on contingency plans, No Go Zones and abort points as part of the MPX. • Parallel indexing to be setup and utilised throughout passage. • The Pilot will contact the Port of Barrow on VHF Ch10 for permission to vacate the berth and to obtain any traffic updates. • Manoeuvring from the berth to the swing basin to be undertaken at slow speed (less than 1 knot over the ground). • Call Port of Barrow on VHF Ch10 with last line time and confirm the northern channel is clear for departure. • The swing basin is 320m in diameter. • Monitor rate of turn. • Ensure adequate clearing distances between the vessel and any obstructions, such as other vessels, navigational marks and mooring dolphins. • In the event of a failure, and depending on the situation, the vessel will continue to the swing basin, return to a safe berth or proceed to anchor, clearing any obstructions. • Night operations may require additional or alternate position fixing due to backscatter and masking of lights due to shore lights.
Latitude	Various	
Longitude	Various	
Course	Various	
Speed	<3kts (Also refer to Section 5.2 regarding reduced speed and closing distances)	
Leg Distance	Various	
Minimum Depth at CD	6.5m	
Maximum Cross Track Error	N/A	
Primary Fixing	Visual	
Secondary Fixing	GPS/RADAR	
Parallel Index	N/A	

Gorgon - Pilotage - Passage Plan - Landing Craft - Materials Offloading Facility (MOF) to PBG

Waypoint	WP003 (Inner Leads)	• Be aware of traffic entering the MOF. • The Flood tide sets to the South. The Ebb tide sets to the North. • Effect of tide increases when departing the MOF basin. • Be aware of the 1.9m patch near MOF5. • A No Go Zone exists to the West of HB3/MOF5. • When tide and vessel's draft permit, an emergency escape route to the East between HB4/MOF3 can be considered. • Be aware of the CBM oil pipeline in the vicinity of HB3/4. • Be aware of converging traffic near the West Cardinal Mark. • At night, visual references ahead of the vessel are limited. As such, a greater reliance on radar fixing and PI methods may be required. • In the event of a failure, the vessel will (if possible) continue clear of the shallows or proceed to anchor (clear of any obstructions).
Latitude	20°47.72'S	
Longitude	115°28.90'E	
Course	054°T	
Speed	~3 to 6kts	
Leg Distance	0.9nm	
Minimum Depth at CD	1.9m	
Maximum Cross Track Error	50m	
Primary Fixing	Visual	
Secondary Fixing	GPS/RADAR	
Parallel Index	MOF3 at 0.06nm	

Waypoint	WP004 (West Cardinal)
Latitude	20°47.20'S
Longitude	115°29.67'E
Course	146°T
Speed	~6 to 10kts
Leg Distance	1.0nm
Minimum Depth at CD	5.2m
Maximum Cross Track Error	50m
Primary Fixing	Visual
Secondary Fixing	GPS/RADAR
Parallel Index	West Cardinal at 0.3nm

- The Flood tide sets to the South. The Ebb tide sets to the North.
- Be aware of converging traffic in the vicinity of the West Cardinal Mark.
- Be aware of traffic entering the MOF.
- Be aware of the CBM oil pipeline in the vicinity of HB5.
- In the event of a failure, the vessel will (if possible) continue to port limits or proceed to anchor (being aware of the oil pipeline and other obstructions).

Waypoint	WP002 (Outer Leads)
Latitude	20°48.00'S
Longitude	115°30.25'E
Course	096°T
Speed	~6 to 10kts
Leg Distance	5.4nm
Minimum Depth at CD	6.1m
Maximum Cross Track Error	100m
Primary Fixing	Visual
Secondary Fixing	GPS/RADAR
Parallel Index	South Cardinal at 0.2nm

- Be aware of converging traffic and the CBM oil pipeline in the vicinity of the South Cardinal Mark.
- The CBM to the South of the track and the Lowendal Shoal to the North of the track are both No Go Zones.
- Call the Port of Barrow on VHF Ch10 when crossing port limits.
- Extra caution to be taken in vicinity of the PBG due to the potential for converging traffic.
- At the PBG, the Flood tide sets to the South West. The Ebb tide sets to the North East.
- In the event of a failure, the vessel will (if possible) continue to port limits or proceed to anchor (being aware of the oil pipeline and other obstructions).
- PBG: Lat 20°48.60'S, Long 115°36.00'E.
- Vessel and Pilot Boat are to discuss and agree on vessel speed and heading prior to Pilot transfer, ensuring a good lee is provided for disembarkation. The pilot ladder will be rigged as per *SOLAS 2010 Chapter V Reg 23* as amended and secured to a height above the waterline as requested by the Pilot Boat.

5.0 Execution of Passage Plan – Expectations

5.1 Notes for Master and Bridge Team

- Prior to departing the berth the Master is to review the passage plan and plot the plan onto the appropriate charts or ECDIS system, briefing his/her Bridge teams accordingly. Any concerns or questions are to be raised with the Pilot prior to departure.
- In accordance with AMSA regulations, all charts (paper and electronic) and navigational publications must be corrected to the latest edition of the Australian and Western Australian Notices to Mariners, including any applicable Temporary Notices to Mariners that may be in force. Additionally, the vessel it to have available and understand the BWI Marine Notices that are in force. BWI Marine Notices and other relevant port information are located on the Port of Barrow Island website.

  https://www.chevronaustralia.com/our-businesses/barrow-island/barrow-island-port
- Charts required for the passage are the latest editions of Australian Hydrographic charts AUS 62, AUS 65 and AUS 66.
- Any deficiencies that may affect the vessel's operating performance are to be reported to the Pilot at the first available opportunity prior to sailing.
- All bridge navigational equipment must be switched on and functioning correctly prior to the Pilot boarding. All navigation systems, including paper charts, are to be arranged and displayed so that the Pilot can quickly determine the vessel position, course and speed at any time during the passage.
- A MPX involving the Pilot, Master and Bridge team will be conducted after the Pilot has arrived on the bridge. The Pilot will take conduct of the vessel at the conclusion of the MPX.
- To ensure an appropriate level of BRM, Pilots utilise a "Closed Loop" system of communications for the relay of orders. The Master/OOW is to ensure the bridge is managed such that all orders can be clearly heard, understood and responded to. The Master/OOW is to monitor course, helm orders and engine settings to ensure compliance with the Pilot's directions.
- Pilotage is compulsory for the Port of BWI and the Pilot will have the conduct of the vessel at all times whilst manoeuvring within port limits. It is acknowledged however, that the Master always remains in overall command of his vessel. Adhering to good BRM principles, Pilots actively encourage a "Challenge and Response" environment. If at any time the Master/OOW is unsure of the actions being taken, they are to challenge the Pilot and vice versa.
- Ship's position, proximity to dangers and UKC should be continuously monitored by the Master/OOW and cross-referenced with the passage plan. If the Master leaves the bridge, the OOW must always seek clarification from the Pilot when in any doubt as to the Pilot's actions or intentions.
- It is important to keep formal records of all navigational activities and any incidents in the appropriate Bridge Movement Logbook. Information recorded should be of an appropriate standard so that the vessels progress out of the Port can be reconstructed at a later date.

5.2 Notes for the Pilot

- Conduct of the vessel will be assumed by the Pilot in an unambiguous manner.
- The Pilot will assist the Bridge team to ensure radar conspicuous points, parallel indexing and any clearing bearings/ranges are properly understood.
- For each leg of the passage the Pilot is to brief the Master on the required fixing interval and methods used to determine ship's position. In determining the most appropriate fixing method and interval the following will be taken into consideration:
  - The state of wind, sea and weather
  - Proximity to navigational dangers
  - Traffic density
  - Manoeuvring characteristics of the vessel
  - Navigational equipment available, and
  - How position data is displayed, i.e. ECDIS or paper charts
- The Pilot is to ensure all navigation hazards (e.g. No Go Zones) are clearly marked on the chartlet.
- The Pilot will ensure tug and communication protocols are explained fully.
- If for any reason prior to commencing the passage plan, there is a need to deviate from the standard passage plan, a revised passage plan will be formulated and agreed between the Pilot and Master; any additional hazards will be identified and any mitigations/controls shall be detailed in an appropriate JHA.
- When manoeuvring vessels such that they are closing to within 50 metres of a fixed jetty, wharf or other moored vessel, approach speeds are to be less than 1.0 knot in order that all way can be taken off the vessel quickly and in a controlled manner, preventing any unplanned close quarters contact with said shore facilities or vessels.

If there is a need to deviate from the passage plan for any reason, the Bridge team must be fully briefed as to the Pilot's intentions, and the Pilot should make every opportunity to return to the passage plan as soon as possible.

6.0 Document Control

6.1 Ownership

Document Author	Cameron Crampton	**Owner**	Brad Ryman
Reviewer List	Michael Birchall		

6.2 Revision History

Rev	Description	Date	Prepared By	Approved By
1.0	Approved for Use	28 April 2016	Cameron Crampton	Brad Ryman