PACIFIC COAST TERMINALS CO. LTD.

Visiting Ship Guidelines

July 25, 2019

TABLE OF CONTENTS

1. Definitions 1
2. General Information 2
2.1. Location 2
2.2. Facility Description 2
2.2.1. Berth No. 1 2
2.2.2. Berth No. 2 2
2.3. Water Depths and Air Draft 3
2.3.1. Water Depth 3
2.3.2. Air Draft 3
2.4. Services at the Berth 4
2.5. Security 4
2.6. Access to Shore 4
2.6.1. Gangways 4
2.6.2. Pedestrian and Vehicle Access 5
2.7. Weather 5
2.8. Tidal Swing and Current 5
2.9. Website Reference Information 5
3. Communications 7
3.1. Estimated Time of Arrival (ETA) 7
3.2. Useful Local Numbers 7
4. Berthing and Mooring 9
4.1. Vessel Size Restrictions 9
4.2. Berthing 10
4.3. Mooring 12
4.4. Tug Requirements 13
4.5. Linesperson 13
4.6. Environmental Limits 13
5. Rules and Regulations 15
5.1. General Federal Government Requirements 15
5.2. Port of Vancouver and Transport Canada Regulations 15
5.3. PCT Regulations and Safety Procedures 15
5.3.1. Safety Check List 16
5.3.2. Vessel Tank Entry 16
5.3.3. Pedestrian Traffic 16
5.3.4. Radar 16
5.3.5. Vessel Hatch and Tank Cleaning 16
5.3.6. Bunkering 17
5.3.7. Cutting and Welding or Other Repairs 18
5.3.8. Vessels Decks 18
5.3.9. Engine Readiness 18
5.3.10. Staffing 18
5.3.11. Noise 19
5.3.12. Emergency Procedures 19
5.3.13. Emergency Stops - Berth No. 1 19

5.3.14. Movements of Refueling Vessels, Garbage Barge, Tugs, Workboats and Other Craft 19
5.3.15. Emergency Escape 20
5.3.16. Conditions Requiring Immediate Action 20
5.3.17. Avoidance of Spill Pollution 20
5.3.18. List 21
6. Cargo Transfer 22
6.1. Cargo Transfer Communications 22
6.1.1. Radio Communications - Berth No. 1 22
6.2. Conditions to be Observed Onboard Vessels During Transfer Operations 22
6.3. Berth No. 1 – Liquid Bulk Loading 23
6.3.1. Glycol Marine Loading 23
6.3.2. Canola Oil Marine Loading 26
6.4. Berth No. 2 – Dry Bulk Solids Loading 27
6.4.1. Loading System Specifications 28
6.5. Dry Bulk Solids Loading Procedures 28
7. Emergency Response to Fires, Spills, Leaks 29
7.1. General 29
7.2. Fires 29
7.3. Spills or Leaks 29
7.3.1. Terminal Spills or Leaks 29
7.3.2. Vessel Spill or Leaks 29
7.4. Restarting Transfer Operations after a Marine Pollution Incident 30

APPENDICES

APPENDIX A Berth General Arrangement
APPENDIX B Berth Soundings
APPENDIX C Approach Channel General Arrangement
APPENDIX D Approach Channel and Turning Basin Soundings
APPENDIX E Port of Vancouver: TCZ-2 Procedures
APPENDIX F Ballast Water Control and Management Regulations
APPENDIX G PCT Pre-Start Ship/Shore Safety Checklist
APPENDIX H Muster Location Map
APPENDIX I Loading Arm Reach General Arrangement
APPENDIX J Safety Data Sheets for Commodities Handled

1. Definitions

BS:	British Standard.
CHS:	Canadian Hydrographic Service with reference to chart datum
CM:	Centre of manifold.
CSA:	Canada Shipping Act.
IGS:	Inert gas system.
ILO:	International Labour Organization.
IMO:	International Maritime Organization.
L/Min.:	Litres per minute.
Loading Foreman:	The person appointed by the Terminal Operator as supervisor of the transfer operation for the facility.
Operator:	The person on duty during the transfer operation.
PCT:	Pacific Coast Terminals Co. Ltd.
POV:	Port of Vancouver.
TCZ-2:	Second Narrows Bridge marine traffic control zone.
Tonnage:	The total weight of the vessel, its stores and its cargo.
Vessel Supervisor:	The certified person in charge of the cargo transfer operation on the vessel.
VFPA:	Vancouver Fraser Port Authority, the federally mandated organization responsible for the administration of the Port of Vancouver and the Fraser Port.

2. General Information

2.1. Location

Pacific Coast Terminals is located in Port Moody, British Columbia and is shown on Canadian Hydrographic Service Chart No. 3495, Vancouver Harbour, Eastern Portion. Its position is: 49° 17.4' N, 122° 52.1' W.

Its location requires vessels to transit through Vancouver Harbour and the Second Narrows Bridge which is a Traffic Control Zone as defined by the Vancouver Fraser Port Authority (VFPA). Procedures for vessels transiting the Second Narrows, referred to as TCZ-2, are published in the Port of Vancouver "Port Information Guide" and the TCZ-2 excerpt is included in these guidelines, ***Appendix E***. Masters must operate their vessels in compliance with the TCZ-2 procedures.

2.2. Facility Description

Pacific Coast Terminals has two separate berths along a continuous dock structure. The face of the dock lies along a bearing of approximately 140° - 320° true, and is well to the south of the centre of the navigational approach channel. Refer to ***Appendices A and C*** showing the berth, turning basin and approach channel general arrangement.

2.2.1. Berth No. 1

Berth No. 1 is the liquids loading facility. It is used for transferring Ethylene Glycol and Canola Oil from the terminal onto tankers.

Berth No. 1 is the western portion of the dock structure extending from dolphin 0 to the west and to dolphin 6 to the east over a distance of approximately 254 m.

2.2.2. Berth No. 2

Berth No. 2 is the bulk solids loading facility. It is used for transferring sulphur and potash from the terminal onto dry bulk carrying vessels.

Berth No. 2 is the eastern portion of the dock structure extending from dolphin 6 to the west and to dolphin 19 to the east over a distance of approximately 300 m.

2.3. Water Depth, Air Draft, Approach Channel and Turning Basin

2.3.1. Water Depth

Water depth at berth is presented in a hydrographic survey dated February 2019, ***Appendix B***. The shallowest defining depths tide and chart from the survey are:

- Berth 1: 12.5 m;
- Berth 2: 12.3 m.

The Second Narrows TCZ-2 establishes maximum drafts for vessels that are linked to minimum tidal transit heights, ***Appendix E.***

The defining depth of the turning basin and the navigation channel is 12.7m chart datum, soundings are presented in ***Appendix D.***

2.3.2. Air Draft

Vessels must pass under two bridges and three overhead cables on route to the facility. The maximum air draft allowed is 42 m above higher high water.

There is no limiting air draft alongside the berths.

2.3.3. Approach Channel and Turning Basin

The dredged approach channel from the deeper water of Burrard Inlet to the ship turning basin at Pacific Coast Terminals has parameters noted in ***Table 1.***

Table 1: Approach Channel and Turning Basin Parameters

Parameter	Value
Channel Length	Approximately 1700 m
Channel Width	104 m straight, 124 m at bends
Channel Depth (CHS datum)	12.7 m
Channel Side Slopes	Varies 3H:1V to 5H:1V
Channel Bend	20.2° west, 19.8° east
Turning Basin Diameter	320 m
Turning Basin Depth (CHS datum)	12.7 m

Refer to ***Appendix D*** for soundings of the approach channel and turning basin. Visiting ships are advised that on the eastern margin of the turning basin the bottom shoals

rapidly at 2.5H:1V to a depth of 4.5 m at an underwater berm, construction completed in January 2019. Vessel navigation systems not updated may not show this bottom feature.

2.4. Services at the Berth

Minimal services are available at Pacific Coast Terminals berth. Potable water is available, for a charge, at both berths.

The ship's crew shall ensure that no garbage, dunnage, wood utilized for pallets or crating are left at the terminal.

Services such as garbage scows are available within Vancouver Harbour at commercial rates.

2.5. Security

There is strict 24-hour security at this fenced facility. A guarded gate controls road access.

Crews are required to use PCT security shuttle, or a pre-authorized transportation service when shuttling between the security gate and the berths. There shall be no pedestrian traffic.

No crew members shall consume, sell, purchase, distribute, or be under the influence of drugs and/or alcohol on the terminal premises.

2.6. Access to Shore

2.6.1. Gangways

Vessel Provided:

Vessels must provide safe gangway access for their crew and PCT personnel. Gangways must have adequate length to reach the dock elevation which is 7.3 m above Chart Datum. Only aft gangways are accepted at Berth 2.

Gangways shall be fitted with nets on both sides of an access ladder for a distance of 1.8 m and be draped under the gangway from the side of the ship and attached to the dock below. Gangway nets shall be kept taught at all times and shall have hand lines all the way along the gangway.

or

Where a fully railed ladder or gangway is provided, the safety net shall extend from the top rail under the ladder or gangway.

Terminal Provided:

A gangway is available for rent from PCT. Twenty-four hour notice is required for gangway rental.

2.6.2. Pedestrian and Vehicle Access

The walkways to the docks and connecting Berth No. 1 and Berth No. 2 are narrow and suitable for pedestrian traffic only.

Limited access for light vehicles, such as delivery vans, is available to each berth via the East Pier and West Pier. The load limit for the West Pier is 7,750 kg/axle and load limit for the East Pier is 8,000 kg/axle. These limits are based on a 6m minimum axle spacing. Any vehicular traffic onto the terminal site must be approved by PCT.

2.7. Weather

Continuous marine forecasts and local weather reports are available from the Canadian Coast Guard on VHF Channels 21B and WX1, WX2, WX3.

2.8. Tides and Currents

At Port Moody tidal level can range about 5.0 m on a large tide and 3.3 m on a mean tide. Due to PCT location near the end of Port Moody Arm, tidal currents off the dock are low with maximum currents approximately 1 to 2 knots.

2.9. Website Reference Information

PCT's website at URL: www.pct.ca/our-operations/vessel-information/ presents the following reference information:

- Vessel Guidelines
- Ballast Water Control & Management Regulations (or ***Appendix F***)

- Port Information Guide
- Berth General Arrangement and Soundings (or ***Appendices A and B***)
- Gangway Rental Agreement
- Ship Shore Safety Checklist (or ***Appendix G***)
- Bulk Terminal Tariff
- Tariff Berthage Gangway and Water
- Tariff Lines

3. Communications

3.1. Estimated Time of Arrival (ETA)

Masters, or their agents, are required to coordinate their arrival in accordance with the terms of the charter party (deep-sea vessels), and local agreements (tug and barge) and to advise the terminal as follows:

Deep-Sea Vessels:	72 hours prior to arrival; 48 hours update; 24 hours update; 12 hours update; 3 hours prior to arrival.
n.b.:	Masters should take into account the impact of the requirements of the TCZ-2TCZ on the vessel's ETA at the berth.

3.2. Pre-Arrival Information

In addition to ETA, Masters, or their agents, are required to provide all relevant vessel information prior to arriving at PCT. This includes, but is not limited to:

- Ship particulars
- Security Information, including expected visitors/deliveries
- Detailed loading plan, including initial displacement and expected sailing draught
- Details of any other cargo on board, including relevant documentation (eg. MSDS)
- Mooring requirements
- Bunkering requirements
- Gangway requirements
- Any other information relating to the safe loading at the terminal, per accepted BLU Code and ISGOTT standards

3.3.

- PCT Port Moody Operations: 604-939-7371
  Fax: 604-936-6850

- PCT Port Moody Security and 24 hour Contact: 24 Hours: 604-931-9211
  (Afterhours - Security can connect with the on duty Operations Manager.) Cell: 604-868-4879

• PCT Port Moody Bulk Solids Loading Foreman:	Cell:	604-868-1695
• PCT Port Moody Bulk Liquids Loading Foreman:		604-931-9212
	Cell:	604-868-4567
• Vancouver Harbour Master:	24 Hours:	604-665-9086
	Office Hours:	604-665-9000
	Fax:	1-866-284-4271
• Pacific Pilotage Authority:		604-666-6771
	Fax:	604-666-1647
• Western Canada Marine Response Corporation:		604-294-6001
	Fax:	604-294-6003
• Police, Fire and Ambulance:		911
• Canadian Coast Guard (Oil Spills, Fire/Emergencies):		604-666-6011
• Canada Customs:		604-666-0272
• Saam Smit Canada: (Tug support - berthing and emergencies)	24 Hours:	604-253-8881
• Seaspan: (Tug support - berthing and emergencies)	24 Hours:	604-990-3300
• Seaforth Marine Group (Canola Boom Deployment):		604-808-3740

4. Berthing and Mooring

4.1. Vessel Size Restrictions

Canola

Berth No. 1 is designed to accommodate Canola liquid carrying vessels (tankers) ranging in size from 9,000 dwt to 70,000 dwt and within the constraint of the loading arm reach.

- Maximum Length 240 m.
- Minimum Length 133 m.
- Beam 18 m to 33.5 m.

Glycol

Berth No. 1 is designed to accommodate Glycol liquid carrying vessels (tankers) ranging in size from 9,000 dwt to 70,000 dwt and within the constraint of the loading arm reach.

- Maximum Length 240 m.
- Minimum Length 133 m.
- Beam 18 m to 33.5 m.

Sulphur

Berth No. 2 is designed to accommodate Sulphur bulk carrying vessels ranging in size from 12,000 dwt to 70,000 dwt.

- Maximum Length 240 m.
- Minimum Length 142 m.
- Beam 18 m to 33.5 m.
- Larger vessels may be warped if a vessel in Berth No. 1 does not impede movement.

Potash

Berth No. 2 is designed to accommodate Potash bulk carrying vessels ranging in size from 12,000 dwt to 70,000 dwt.

- Maximum Length 240 m.
- Minimum Length 142 m.
- Beam 18 m to 33.5 m.
- Larger vessels may be warped if a vessel in Berth No. 1 does not impede movement.

Draft (See Section 2.3.1 and ***Appendix B***) and dolphin range of main pull criteria (See the table in Section 3.3 below) shall be met for all vessels. It has been assumed that tanker manifolds are located at the midpoint of fore and aft. Should this not be the case the maximum manifold to stern length shall be 120m.

The vessel size parameters identified above for each commodity may be relaxed for an individual vessel subject to a review of the special circumstances of the relaxation request and written approval by PCT Management.

4.2. Berthing

Vessels are berthed port side to the dock. The vessel is turned around on approach the berth. This is done to eliminate turning loaded vessels on departure and to facilitate gangway placement on the wider portions of the dock structure.

The dock is well situated for a routine approach with way taken off the vessel as it nears position and the tugs assisting to achieve near parallel berthing on the dolphins. The forward spring is normally the first line run to shore. The maximum tidal current at the dock is 1 to 2 knots.

The fendering systems for both Berth No. 1 and 2 have the performance criteria in ***Table 2***:

Table 2: Fender System Performance Criteria

Vessel Type	Max. Displacement	Max. Approach Angle	Max. Approach Velocity
Bulk Carrier	70,000 tonnes	3 degrees	0.1 m/sec

The dock structure consists of discreet dolphins fitted with fender panels supported on rubber buckling cell fenders. The master must ensure that assist tugs are secured to the vessel and care must be taken to avoid the vessel's bow or stern falling inside the line of the face of the dock, approach angles steeper than 3 degrees could result in insufficient setback clearance between the vessel hull and infrastructure behind the berth line. Water depths decrease rapidly inshore of the berth line and the dock structure between the dolphins is vulnerable to damage on contact with a vessel.

The mooring position is communicated via the on board pilot. PCT's mooring positions are as follows:

Berth No.1: There is light on each loading arm; a green light on will indicate the loading arm to be attached to the vessel manifold. The vessel

is positioned such that the vessel's manifold is in line with the indicated loading arm. The area is marked by checkered flag.

Berth No.2: The position of the vessel's loading hatches depends on the vessel size as follows:

- 5 Hatch vessels align with the centre hatch aligned with the sign located at the centre of the quadrant beam, ***Photo 1***.

Photo 1: 5 hatch vessel spotting sign at centre of quadrant beam

- 7 Hatch vessels align with the end of the last hatch with the sign located on the East Pier, ***photo 2.***

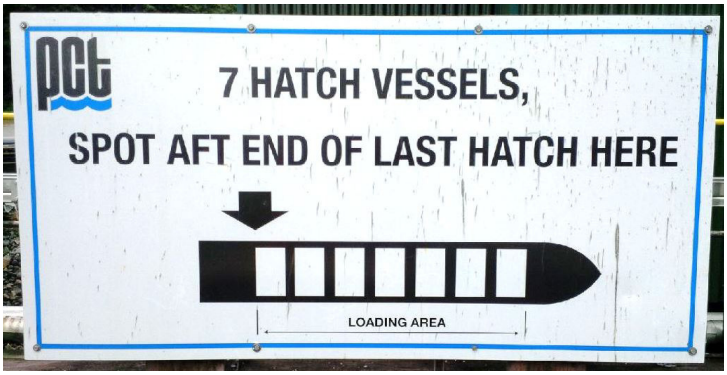


Photo 2: 7 hatch vessel spotting sign at East Pier area

There is a red/green light that indicates if the berth is clear for berthing. A red light indicates the berth is closed and a green light indicates the berth is clear to berth.

4.3. Mooring

The facility is generally well protected from the weather and the berths do not have a history of mooring problems.

The mooring bollards have been designed for the following criteria, ***Table 3***:

Table 3: PCT Dolphin and Bollard Ratings

Dolphin Designation	Load (Tonnes) Unfactored	Range of Main Pull (Degrees both CW and CCW from perpendicular)
0	74.8	33
1B	74.8	33
1A	74.8	33
2A	74.8	33
3A	45.4	33
4A	74.8	33
3	Decommissioned	-
4	Decommissioned	-
6A	74.8	33
6	Decommissioned	-
8A	74.8	33
8	Decommissioned	-
9	Decommissioned	-
10A	74.8	33
11A	74.8	33
13A	74.8	33
14A	74.8	33
16	No bollard	-
17	Decommissioned	-
19A	99.8	33

Vessels must remain well secured at their moorings. Movement of the ship should be prevented by keeping the lines taut. Vessel personnel must frequently monitor and carefully tend the vessels moorings to ensure that the vessel is safely secured having regard to the weather, tide, and current conditions. Mooring lines in the same service (e.g., spring lines), should be of the same material and similar in length.

Masters should ensure that, to the maximum extent possible, breast lines are deployed at right angles to the longitudinal axis of the vessel and spring lines are deployed parallel to the longitudinal axis of the vessel.

Vessels using steel lines must notify the agent, prior to arrival.

4.4. Tug Requirements

Tug requirements are established by the TCZ-2 for the transit of Second Narrows.

The safe handling of the vessel is the responsibility of the Master and his/her Pilot. PCT does expect that effective use of tug assist will be utilized by vessel Masters in certain circumstances. The objective of tug assist is to generally aid in the safe berthing and unberthing of the vessel and in particular to minimize the risk of a hard contact with the berth.

When tugs are required to be utilized, they shall be secured to the vessel by suitable means.

4.5. Linesperson

An adequate number of shore linespersons must be provided to take ship mooring lines and perform dock mooring duties. Linepersons are to be arranged with the vessel agent.

4.6. Environmental Limits

Wind Limits - Berthing

- At the discretion of the pilot authority vessels may not be permitted to berth when wind speeds are 35 knots or greater.

Wind Limits - While Alongside

- Loading operations will be stopped when wind speeds reach 40 mph or 35 knots.

Fog Limits - Berthing

- Berthing may be restricted at Pilot's discretion due to limited visibility.

5. Rules and Regulations

5.1. General Federal Government Requirements

Masters are required to operate their vessels in compliance with Canadian legislation and regulations while in Canadian waters. Many of Canada's marine requirements are based on IMO and ILO standards. Certain requirements are, however, unique to Canada and Masters of non-Canadian vessels should ensure that their vessel's agent informs them of distinct Canadian requirements.

5.2. Vancouver Fraser Port Authority & Transport Canada Regulations

The latest editions of VFPA's *"Operating Regulations"* and *"TCZ-2"* can be obtained from the Harbour Master. Refer to ***Appendix E*** for a copy of TCZ-2 procedures as of the date of these guidelines.

Included among the operating regulations and the TCZ-2 procedures are requirements affecting deep-sea vessels that include pollution control; prior approval for entry to the port; navigation within the port; mandatory use of tug services; engine readiness; gangways and safety nets; incident reporting; dangerous goods permits; fire prevention and emergency response.

Masters of all vessels should ensure that they are provided with a copy of these regulations and Procedures prior to arrival at the VFPA. Masters of any vessel visiting PCT's Port Moody terminal should be familiar with the VFPA's procedures and operating regulations and comply fully with their requirements. Masters are cautioned that this extract covers only part of the operations regulations applicable to deep-sea vessels.

Per the *Ballast Water Control and Management Regulations*, Transport Canada requires deep-sea vessels to carry out a mid-ocean ballast water exchange prior to arriving in Canadian waters. *The Ballast Water Control and Management Regulations* are shown in ***Appendix F***.

5.3. PCT Regulations and Safety Procedures

PCT is committed to safe operations and protection of the environment at its Port Moody terminal. Vessel staff are requested to immediately bring any unsafe condition or pollution risk to the attention of terminal staff and to take appropriate action to remedy the situation, including the suspension of cargo transfer activity.

The following safety regulations have been developed in an effort to reduce the possibility of an incident involving injury, fire, spills or other hazard. Nothing in these rules and procedures will relieve Masters and/or vessel supervisors of their responsibilities in observing normal safety, fire prevention, pollution prevention and security precautions. Terminal staff are authorized to advise and request Masters and/or a vessel supervisor to take additional measures to ensure safe operations should circumstances so require. Terminal staff is also authorized to suspend transfer operations in the event of an infringement of terminal rules and procedures or if any other hazardous situation is encountered.

All vessel incidents alongside PCT berths are to be reported to the PCT on duty manager.

5.3.1. Safety Check List

Berth No. 1, Bulk Liquid Operations: On completion of berthing and prior to the commencement of cargo transfer, the *Pre-Start Ship/Shore Safety Checklist*, ***Appendix G***, must be completed following a joint inspection by the terminal operator and a responsible vessel supervisor.

Berth No. 2, Bulk Solids Operations: A ship/shore checklist is to be completed and returned to PCT prior to the commencement of loading, ***Appendix G***.

5.3.2. Vessel Tank Entry

Berth No. 1: Vessel tank entry is strictly prohibited once the loading arm is connected to the vessel's manifold.

5.3.3. Pedestrian Traffic

Ship personnel exiting or accessing the PCT site must use taxicabs or pre-arranged vehicle transport only. PCT has many hazardous operations that prohibit pedestrian traffic.

5.3.4. Radar

Operation of ship's radar is prohibited while at berth.

5.3.5. Vessel Hatch and Tank Cleaning

Cleaning of vessel's tank or hatches while at berth is not permitted without the express permission of PCT and must be approved prior to vessel arrival.

5.3.6. Bunkering

Berth #1

Bunkering may be performed while at Berth 1, per the following:

- Prior to the ships arrival the Duty Manager for the Terminal must be notified that the bunkering is planned during loading operations.
- The VFPA Oil Transfer Procedures must be followed.
- The VFPA Oil Transfer Checklist must be completed and a copy of the completed checklist must be returned to Pacific Coast Terminals before bunkering commences.
- The vessel must ensure there are adequate crew assigned to each of the two operations.
- Bunkering is not permitted when the containment boom is around the vessel. Seaforth Marine Group shall install and remove the boom.
- Bunkering outside of operations must be with approval of PCT management.
- Notification of bunkering requirement must be received prior to the vessel's arrival vessel must ensure there are adequate crew assigned to each of the two operations.

Failure to meet any of the items listed above will result in the bunkering operation to cease immediately and no further bunkering will be allowed until all requirements are met. Dry bulk solid loading operations take priority over any bunkering operation.

Berth #2

Bunkering may be performed while at Berth 2, per the following:

- Prior to the ships arrival the Duty Manager for the Terminal must be notified that the bunkering is planned during loading operations.
- The VFPA Oil Transfer Procedures must be followed.
- The VFPA Oil Transfer Checklist must be completed and a copy of the completed checklist must be returned to Pacific Coast Terminals before bunkering commences.

- The vessel must ensure there are adequate crew assigned to each of the two operations.
- Bunkering cannot proceed when the Shiploader is in the hatch adjacent to the loading arm for bunkering.
- All non-loading hatches must remain closed during bunkering. The next loading hatch may be opened 30 minutes prior to loading in that hatch.
- Bunkering outside of operations must be with approval of PCT management.

Failure to meet any of the items listed above will result in the bunkering operation to cease immediately and no further bunkering will be allowed until all requirements are met. Dry bulk solid loading operations take priority over any bunkering operation.

5.3.7. Cutting and Welding or Other Repairs

Because of the nature of the products handled by PCT, Hot Work is not permitted without the express permission of PCT. Hot Work is defined as welding, burning, or any use of an open flame on the vessel that could that could cause a fire hazard.

Any repairs - including chipping, scraping, welding, etc. are not permitted without the expressed permission of PCT and must be approved prior to vessel arrival.

5.3.8. Vessels Decks

Walkways required for accessing cargo systems, deck machinery and emergency equipment shall be kept clear of obstructions and, especially in winter, be kept in safe condition for pedestrians.

5.3.9. Engine Readiness

The vessels main engines, steering machinery and other equipment essential for maneuvering shall be maintained in a state of readiness for vacating the berth under full engine power at short notice.

5.3.10. Staffing

Sufficient qualified crew members shall be provided for safe handling of cargo, for the tending of moorings, for effective firefighting and for moving the vessel in the event of an emergency on the vessel or the dock.

5.3.11. Noise

The City of Port Moody sound level bylaw BL-1399C specifies sound levels not to be exceeded at the point of reception (typically the place where noise is heard and a report originated) as follows for daytime and nighttime operations in activity zones which include PCT's facility, ***Table 4***:

Table 4: Port Moody Sound Bylaw Levels for Activity Zones

Time Period	Continual Sound	Non-Continual Sound
Daytime (07:00 to 22:00 hrs)	65 dB(A)	80 dB(A)
Nighttime (22:00 to 07:00 hrs)	60 dB(A)	75 dB(A)

5.3.12. Emergency Procedures

As required by the Vessel/Terminal Safety Check List, the Supervisor for the vessel and the Supervisor for the terminal should discuss and agree upon the action to be taken in the event of an emergency onboard either the vessel or the terminal. This should include means of communication and emergency procedures.

In the event of an emergency all personnel at the terminal, including those on the docks, are to muster at the mustering points. See ***Appendix H*** for the primary and secondary muster point locations.

5.3.13. Emergency Stops - Berth No. 1

The terminal will provide to the vessel an emergency stop button. The stop button is to be located as close to the manifold area as possible.

An emergency stop may also be requested via the shore provided radio (Channel 2).

5.3.14. Over-the-Tide Operations

Any over-the-tide operational requirements must be discussed prior the commencement of loading. All special circumstances and procedures relating to such situations must be understood and agreed to by the Terminal Representative (Foreman), and properly represented in the agreed upon Loading Plan.

5.3.15. Movement of Refueling Vessels, Garbage Barge, Tugs, Workboats, Other Craft

During transfer operations no craft shall be allowed alongside the vessel unless approval has been given by the terminal supervisor and agreed to by the Master of the vessel.

No garbage or refuse of any kind shall be dumped overboard from any vessel moored at the facility.

5.3.16. Emergency Escape

Means for emergency escape shall be provided on the offshore side of the vessel. For security reasons, such means is to be stowed at deck level in such a manner as to be ready for expeditious use in an emergency. Such means shall be of adequate length to reach the water at all times. In the event that emergency escape towards land is necessary, egress can be made to the South or North as safety conditions dictate.

5.3.17. Conditions Requiring Immediate Action

Cargo transfer operations shall not be started, or if started, shall be discontinued by either the responsible officer of the vessel or the dock operator when any of the following conditions is noted:

- On the approach of and during periods of high winds.
- If a fire occurs on the terminal, the vessel or any craft in close proximity.
- If there are insufficient competent personnel aboard the vessel to safely handle the operation in progress, and to handle any emergency situation.
- If a spill or leak occurs aboard the vessel or at the terminal.
- If any other emergency situation arises which, in the opinion of the vessel's responsible officer or the dock operator constitutes a potential hazard to either the ship or the terminal.

5.3.18. Avoidance of Spill Pollution

During transfer operations all scuppers shall be effectively plugged, fixed or portable manifold containment shall be in place, and no leakage or spillage of chemical or water, shall be allowed to escape overboard. Manifold containment should be drained before transfer operations commence. Any leakage or spillage must be reported immediately to the dock operator.

No hazardous material shall be thrown overboard, nor shall any other objectionable material, either solid or fluid, be thrown overboard from the vessel.

Vehicle access to Berth 1 is prohibited past the gate when the loading arm is in use.

5.3.19. Vessel List

Excessive listing of the vessel must be avoided. Vessel loading may be stopped at PCT discretion.

6. Cargo Transfer

6.1. Cargo Transfer Communications

Pacific Coast Terminals will appoint a Shiploading Foreman to oversee the cargo transfer operation.

Communication between the terminal and vessel will be through PCT's representative. The vessel's responsible officer and the terminal representative shall confirm with each other that the communication system and signals for controlling the operations are understood by all personnel involved prior to the commencement of the cargo transfer.

In the event of a breakdown of communication between the terminal and the vessel during cargo transfer operations, these operations shall be immediately suspended and not resumed until satisfactory communications are reestablished.

6.1.1. Radio Communications - Berth No. 1

The PCT representative will provide an intrinsically safe radio for the purposes of vessel/shore communication during bulk liquids loading. The radio is set to Channel 2. In addition, a PCT operator is located in the dock office or tank farm, monitoring operations for the duration that the loading arm is connected.

6.2. Conditions to be Observed Onboard Vessels During Transfer Operations

- A qualified vessel's officer, able to communicate effectively with terminal staff, is required to be on deck or in the control room at all times. A continuous deck watch is to be maintained to ensure moorings are carefully tended and cargo transfer operations are under observation at all times.

- Any requirement for movement of Cranes and ships gear must be communicated to the Shiploading Foreman. All Cranes and Ship's gear should otherwise be properly secured.

- Opening and closing of active hatches will not be performed during loading.

- All doors, portholes and openings leading from or overlooking the main deck to accommodation, machinery spaces (excluding pump room) and forecastle shall be kept closed. Cargo control room doors opening on to or above the main deck may be opened momentarily for access.

- The venting of the vessel's tanks shall take place only through the vessels fixed venting system.

- All cargo, ballast and bunker tank lids and tank washing openings shall be securely closed.

- Sighting and ullage ports when not in use shall be kept closed.

- All unused cargo and bunker connections shall be properly blanked, fitted with a gasket and bolted with at a bolt in every hole at the manifold. Stern cargo pipelines (if fitted) shall be isolated forward of the aft accommodation by blanking.

- Any part of a slop transfer system that extends into machinery spaces shall be securely blanked and isolated on the tank deck.

- The person in charge of the transfer operation on the vessel shall conduct inspections of adjacent water areas around the vessel frequently and at least once each hour to ensure that nothing has spilled or leaked into the water.

6.3. Berth No. 1 – Liquid Bulk Loading

6.3.1. Glycol Marine Loading

Berth No. 1 is used to load Ethylene Glycol onto bulk liquids carrying vessels (tankers). Transfer takes place by way of a counter-weighted loading arm. Reach is limited and Master's should take this into account when planning mooring arrangement. (***Appendix I***).

Loading System Specifications

- Loading Arm Connection: 10 in., 4-jawed Manual Coupler
- Loading Arm Length: 50 ft.

Pumping Specifications

- Minimum Pumping Rate: 250 MT per hour
- Maximum Pumping Rate: 1,000 MT per hour
- Pumps: Four total - two main and two booster (Booster pumps provide the maximum pumping rate)
- Maximum Shore Pressure: 190 psi or 1310 kPa or 13.1 Bar
- Maximum Operating Pressure: 90 psi or 620 kPa or 6.2 Bar
- Maximum Nitrogen Pressure: 125 psi or 860 kPa or 8.6 Bar

Wall Wash Tests

Wall wash tests, when required, are performed by the surveyor prior to the ship's arrival at the PCT Berth No. 1. No shore labour is ordered until after the wall wash tests have passed.

Wall wash tests are performed at the discretion of the customer.

Ship Pipeline Inspection

The purpose of the inspection procedure is to reduce the risk of foot failure, during glycol loading, by reducing the chance of liquid contamination being left in the ship's lines after cleaning.

Normally the inspection is completed alongside Berth No. 1, prior to shift start.

- Ship's crew, using ship's air, is to pressure up their loading line from the manifold to the last tank valves. Pressures achieved approximately 50-60 psi.
- The surveyor opens the low point bleed valve closest to each tank liquid drop line, allowing the pressure to escape, and inspects for any liquid.
- If liquid is found the surveyor stops and notifies the ship's chief officer that the lines are unacceptable for cargo operations.

Glycol Loading Preparation

Vessel Tank Entry is strictly prohibited after the loading arm is connected.

Against a closed ship's manifold, the terminal will pressure test the ship/shore connection using nitrogen.

The terminal has nitrogen available if a brief purge of ship's tanks or lines is required prior to loading.

Ship Line Sampling and Testing Procedure

Line sampling of ship's deck lines is required for all first time carriers of glycol loaded ex PCT. Line sampling may also be performed at the ship's or surveyor's request if line cleanliness is uncertain.

The sampling and testing is completed prior to the loading of first foots.

The ship opens their manifold valve and ensures that all of the drop line valves, to the individual cargo tanks, are closed.

The ship confirms with the shore that they are ready to receive cargo for line testing.

The shore will pressure the ship's lines to the minimum flow pressure.

At the first low point bleed the ship's crew flushes cargo through the sampling point into a drum.

Once sufficient cargo is flushed through the sample point, approximately a quarter to a half drum, the surveyor will collect a sample and return it to the lab for testing.

Each low point bleed is similarly flushed and tested.

After all line samples are passed the loading of first foots will commence.

First Foots

Loading commences with the pumping of one foot of product to each ship tank.

The ship is to notify the terminal whether they require one or two pumps for the loading of foots.

The ship is to notify the terminal if they require the pumps stopped during loading of foots or if they require a running foot (no pump stop).

After sufficient tanks have passed the first foot test, to allow for maximum pumping rate, the ship may request the starting of the remaining pumps (booster pumps).

Glycol Loading

PCT shall be in charge of loading operations at all times.

The ship is to notify the terminal if they require a reduction in the loading rate.

The terminal will use nitrogen to clear the Loading Arm and deck piping of glycol to the ship.

The terminal will supply the nitrogen for the purpose of blanketing the ship's tanks.

Cargo surveyors will monitor the oxygen levels and deem when a sufficient blanket is achieved.

The nitrogen is supplied via the cargo Loading Arm.

Shore nitrogen pressure is set at 125 psi (860 kPa), caution should be exercised if adding N2 to tanks over 95% full.

DO NOT under any circumstances close valves on manifold. No valves shall be closed without authorization from PCT.

6.3.2. Canola Oil Marine Loading

Berth No. 1 is used to load Canola Oil onto bulk liquids carrying vessels (tankers). Transfer takes place by way of a counter-weighted loading arm. Reach is limited and Master's should take this into account when planning mooring arrangement. (see ***Appendix I***)

Loading System Specifications

- Loading Arm Connection: 10 in., 4-jawed Manual Coupler
- Loading Arm Length: 50 ft.

Pumping Specifications

- Minimum Pumping Rate: 250 MT per hour
- Maximum Pumping Rate: 1,100 MT per hour
- Pumps: Four total - two main and two booster (Booster pumps provide the maximum pumping rate)
- Maximum Shore Pressure: 190 psi or 1310 kPa or 13.1 Bar
- Maximum Operating Pressure: 72 psi or 500 kPa or 5.0 Bar
- Maximum Nitrogen Pressure: 90 psi or 620 kPa or 6.2 Bar

Canola Oil Loading Procedures

Containment boom must be in place before loading operations begin.

Vessel Tank Entry is strictly prohibited after the loading arm is connected.

Against a closed ship's manifold, the terminal will pressure test the ship/shore connection using nitrogen.

The terminal has nitrogen available if a brief purge of ship's tanks or lines is required prior to loading.

The ship is to notify the terminal if they require a reduction in the loading rate.

The terminal will use nitrogen to clear the Loading Arm and deck piping of canola oil to the ship.

6.4. Berth No. 2 – Dry Bulk Solids Loading

Berth No. 2 is used to load sulphur and Potash onto dry bulk carrying vessels. The transfer takes place by a single quadrant shiploader. The shiploader is proportioned to provide full hatch loading coverage for a typical Panamax design bulk carrier provided that the vessel is moored in the correct position. Vessels exceeding these dimensions may require warping along the dock for full coverage loading.

6.4.1. Loading System Specifications

- Design Loading Rate: 5,000 tonnes/hr
- Boom Conveyor Size: 1.8 m
- Range of Shiploader Motion: 44 m foreword carriage travel

  88 degrees slew about pivot

  -10 to +15 degrees from horizontal vertical boom lift (working)

  +35 degrees (maximum)

6.5. Dry Bulk Solids Loading Procedures

The Loading Foreman will board the vessel and request the following:

- Inspection certificates stating hold acceptability.
- Loading plan with hatch rotation and tonnage per run.
- Stowage for hatches - peak, flat or crown.
- Ship to Shore Safety Checklist

7. Emergency Response to Fires, Spills, Leaks

7.1. General

No emergency drills shall be permitted while the vessel is in berth without prior authorization from PCT.

7.2. Fires

CALL 911 FOR ALL FIRE EMERGENCIES.

In the event of a fire onboard a vessel at berth or at the terminal itself, all transfer operations will be stopped. Vessels are required to have onboard adequate equipment for fighting onboard fires and personnel trained to use the equipment.

7.3. Spills or Leaks

NOTIFY SUPERVISING LOADING FOREMAN OF ALL LEAKS AND SPILLS.

7.3.1. Terminal Spills or Leaks

In the event of a spill from the terminal or a leak from the shore cargo piping:

- The transfer operation is to be stopped immediately.
- The terminals spill response plan is to be implemented as appropriate. This will include informing the proper authorities and initiating containment, recovery and clean up procedures.
- The cause of the spill must be determined and rectified.

7.3.2. Vessel Spill or Leaks

In the event of a spill or leak from the vessel or vessel's cargo piping:

- The transfer operation is to be stopped immediately.
- The vessel spill response plan is to be implemented as appropriate. This will include informing the proper authorities and initiating containment, recovery, and clean up procedures.

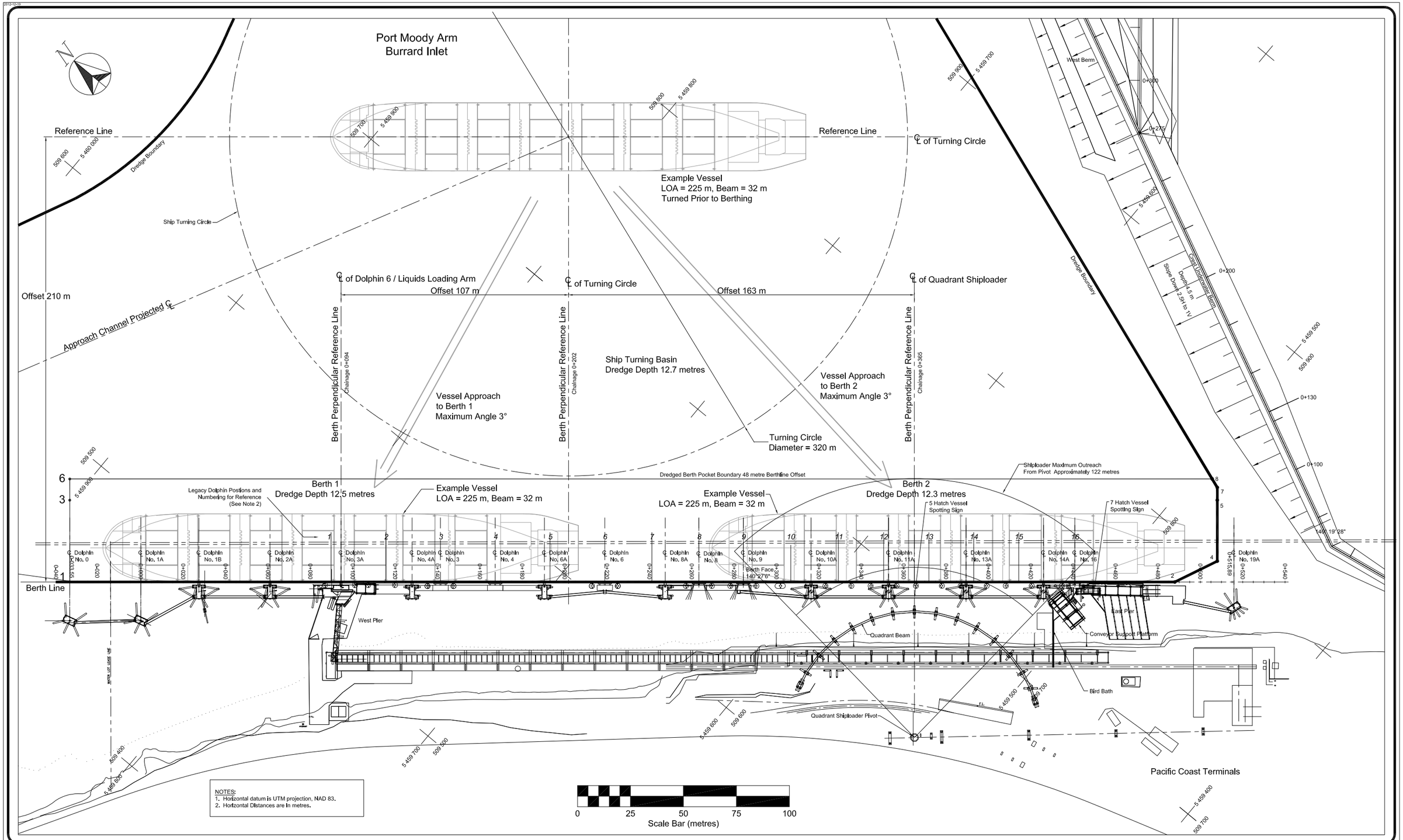
- The cause of the spill must be determined and rectified.
- In the event of a spill or leak PCT is to be notified.

7.4. Restarting Transfer Operations after a Marine Pollution Incident

Transfer operations may only resume once the cause of the spill has been determined and remedied and after it has been clearly determined that restarting transfer operations will not interfere with the immediate, effective and sustained response to the marine pollution incident, and after both the terminal supervisor and the vessel supervisor have authorized a resumption of the transfer operation.

APPENDIX A

Berth General Arrangement



NOTES:
1. Horizontal datum is UTM projection, NAD 83.
2. Horizontal Distances are in metres.

revision	description	date	by	checked	number	Drawing Number	Reference Drawings
A	Issued for Report	2019-07-03	D.L.P.				

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approved		
checked		
drawn	D.L.P.	2019-07-03
designed		

engineering review

customer: PACIFIC COAST TERMINALS CO. LTD.

project: Visiting Ship Guidelines

SEABULK INC.

title: Pacific Coast Terminals Maritime Facilities Base Plan

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client approval

customer number:

date: 2019-07-03

job number: SI-896-19

scale: 1:750

size: D

drawing number: SI - 896-C-001

revision: A

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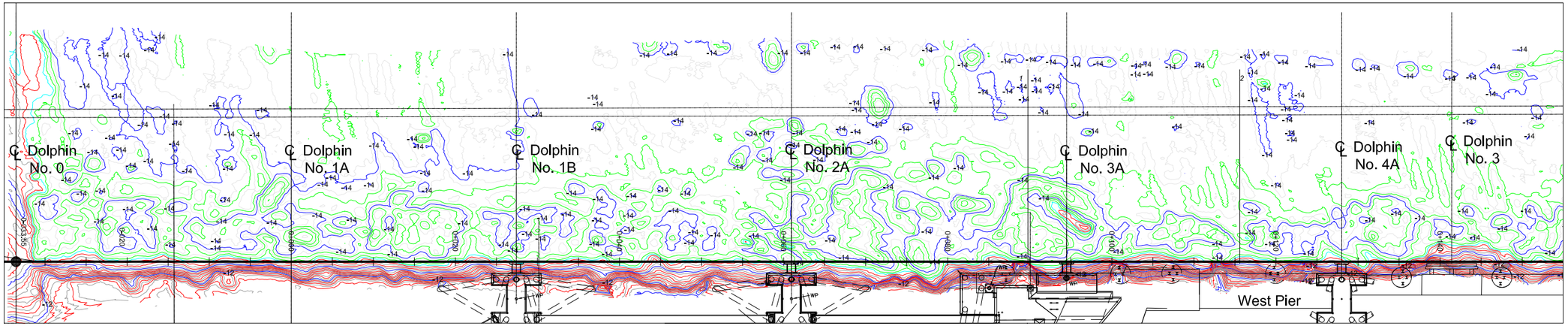
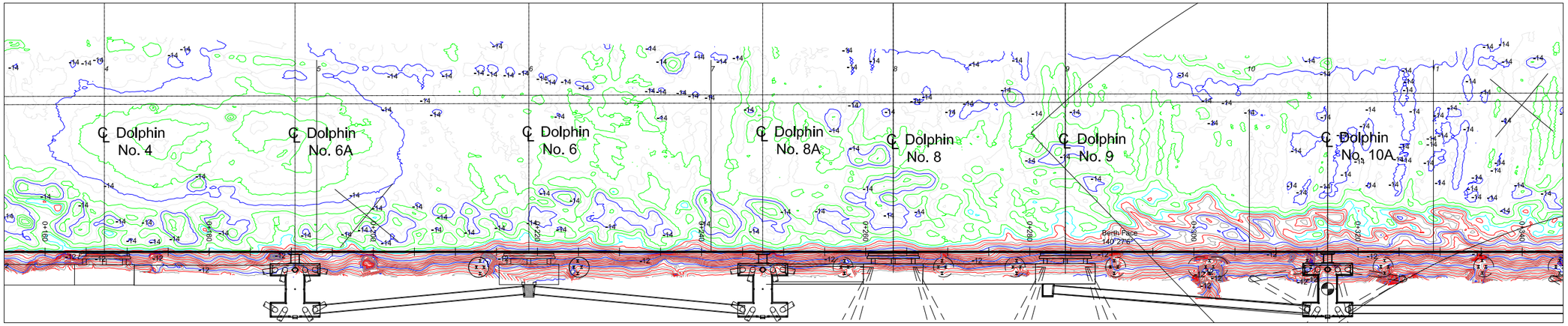
APPENDIX B

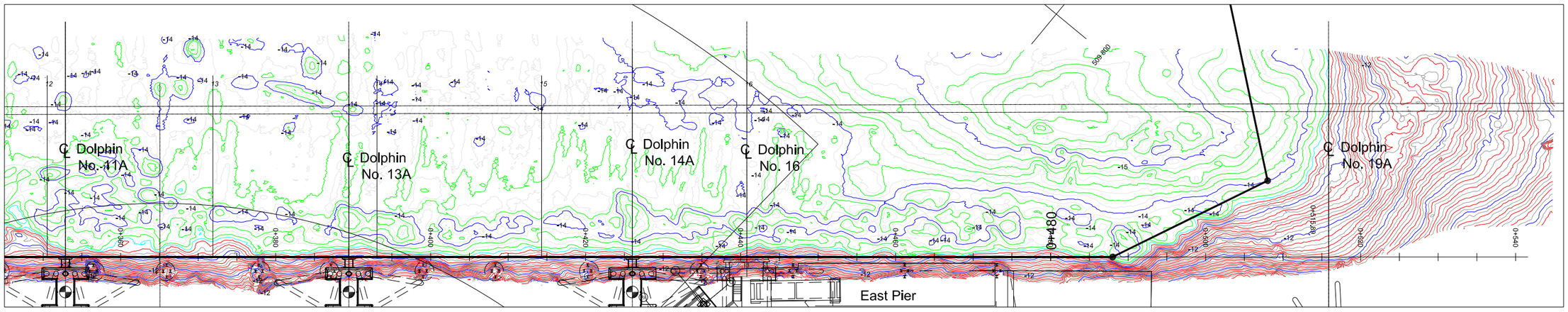
Berth Soundings



Plan View
0+040 to 0+155



Plan View
0+155 to 0+345



Plan View
0+345 to 0+545

revision	description	date	by	checked	number	Drawing Number	Reference Drawings
A	Issued for Report	2019-07-03	D.L.P.				

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approved		
checked		
drawn	D.L.P.	2019-07-03
designed		
engineering review		

customer: PACIFIC COAST TERMINALS CO. LTD.

project: **Visiting Ship Guidelines**

SEABULK INC.

title: **Pacific Coast Terminals**
PCT Berths 1 and 2
25-JAN-2019 Survey

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client approval	customer number:	date:	job number:	scale:	size:	drawing number:	revision:
		2019-07-03	SI-896-19	1:250	D	SI - 896-A-002	A

APPENDIX C

Approach Channel General Arrangement

2012-10-19

IOCO

N

PORT MOODY ARM

BURRARD INLET

281
83
Straight
Bend
200
Transition
665
Straight
200
Transition
277
Bend
Approximate Range Line
See Note 2
20.2°
20.2°
124
124
104
Radius of Curvature R800
Dredge Depth 12.7 metres
Width = 124 metres
Width 124 to 104 metres
Width = 104 metres
Width 104 to 124 metres
Width = 124 metres
Log Breakwater
Reed Point Marina
20.2°
19.8°
19.8°
124
Radius of Curvature R800
Centre of Turning Basin
Berth 1
Berth Perpendicular Line
Turning Circle Diameter 2320
Pacific Coast Terminals
Berth 2

PORT MOODY

Notes:

1. Distance in metres
2. Range line position estimated using coordinates for range markers to the west obtained from Google Earth

0 100 200 300 400

Scale 1:2500
metres

revision	description	date	by	checked	number	Drawing Number	Reference Drawings
A	Issued for Report	2019-07-03	D.L.P.				

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approved		
checked		
drawn	D.L.P.	2019-07-03
designed		

engineering review

customer: PACIFIC COAST TERMINALS CO. LTD.

project: Visiting Ship Guidelines

SEABULK INC.

title: Pacific Coast Terminals Approach Channel General Arrangement

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client approval

customer number:

date: 2019-07-03

job number: SI-896-19

scale: 1:2500

size: D

drawing number: SI - 896-A-003

revision: A

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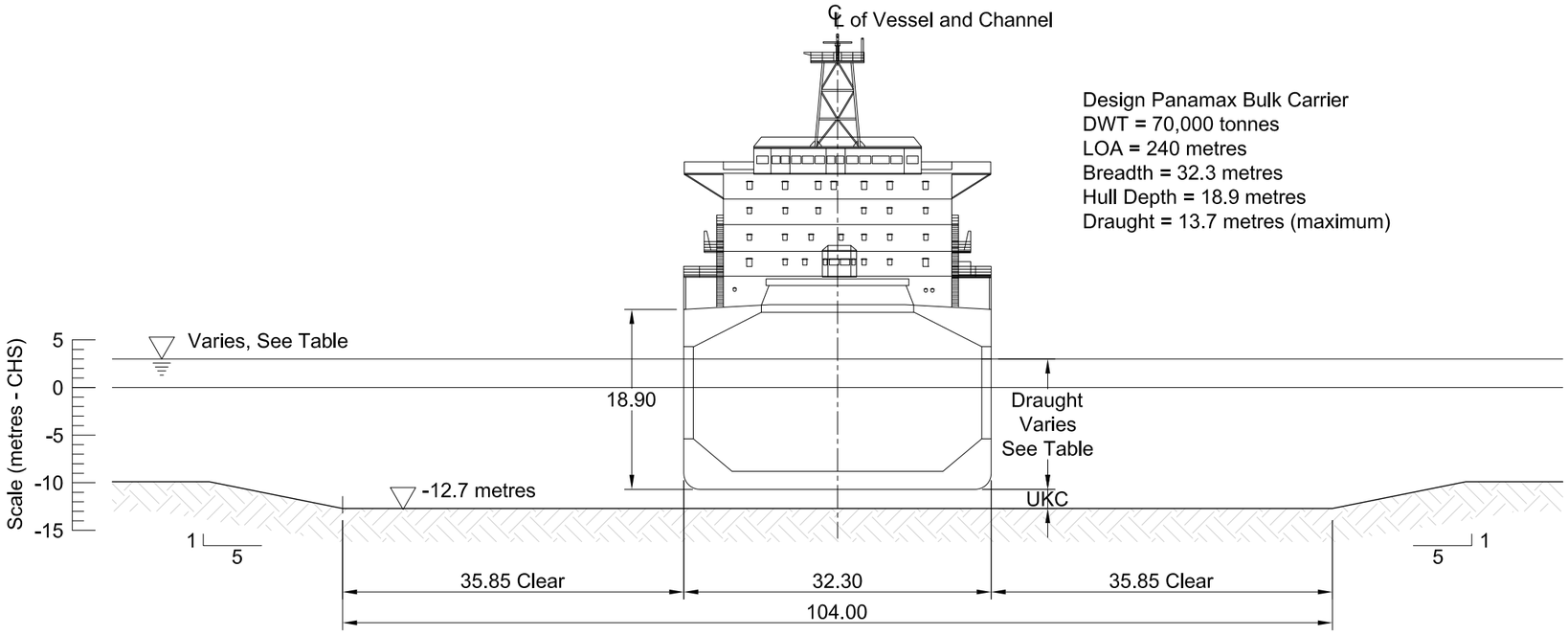

PORT MOODY ARM
NAVIGATION CHANNEL PERFORMANCE

Channel Depth: 12.7 m
UKC: 10 %

Draught (m)	Draught + UKC (m)	Minimum Tide (m-CHS)	Exceedance[1]
13.70	15.1	2.4	79%
13.60	15.0	2.3	81%
13.50	14.9	2.2	83%
13.40	14.7	2.0	85%
13.30	14.6	1.9	87%
13.20	14.5	1.8	89%
13.10	14.4	1.7	91%
13.00	14.3	1.6	92%
12.90	14.2	1.5	93%
12.80	14.1	1.4	95%
12.70	14.0	1.3	96%
12.60	13.9	1.2	97%
12.50	13.8	1.1	98%
12.40	13.6	0.9	98%
12.30	13.5	0.8	99%

1. Annual 2017 water level measured at Port Moody Tidal Station 7755

revision	description	date
A	Issued for Report	2019-07-03

approved		
checked		
drawn	D.L.P.	2019-07-03
designed		

engineering review

customer: PACIFIC COAST TERMINALS CO. LTD.

project: **Visiting Ship Guidelines**

title: **Channel Performance**

SEABULK INC.

customer number:

job number: SI-896-19

size: B

scale: 1:600

date: 2019-07-03

drawing number: **SI-896-A-004**

revision: **A**

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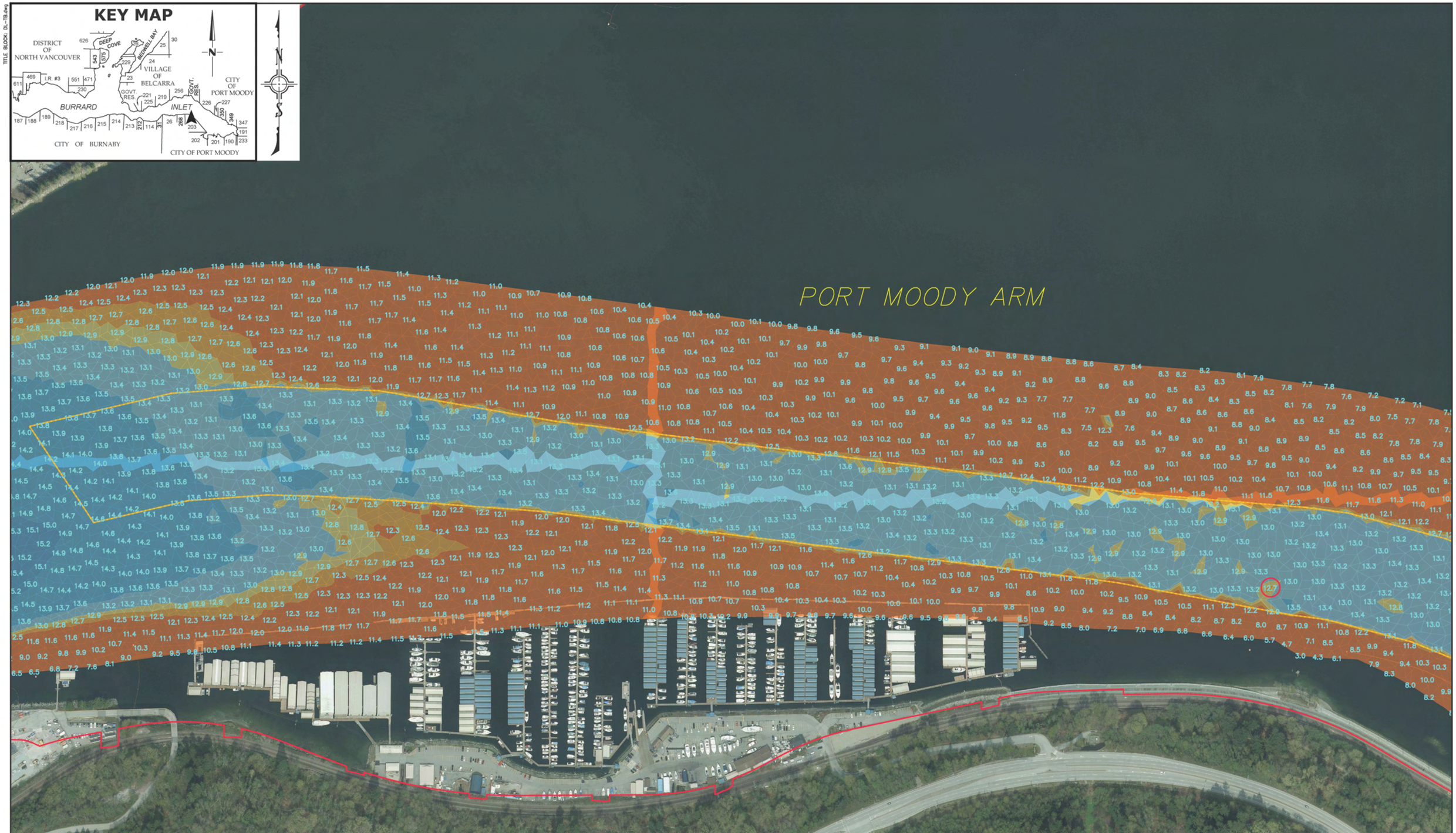
APPENDIX D

Approach Channel and Turning Basin Soundings



TITLE BLOCK: DL-TB.dwg

NOTES:
Depths are reduced to CHS Chart Datum
Soundings are in metres and positioned by DGPS
Soundings performed by PWGSC on April 14, 2019
VFPA 2018 Orthophotos

LEGEND:
Navigation Channel
Shore Line
2019 Soundings PWGSC
Shoalest Depth

Ref.No.	REFERENCE

No.	Date	REVISION	Dr'n	Ch'd

PORT of vancouver

VANCOUVER FRASER PORT AUTHORITY
ENGINEERING DEPARTMENT

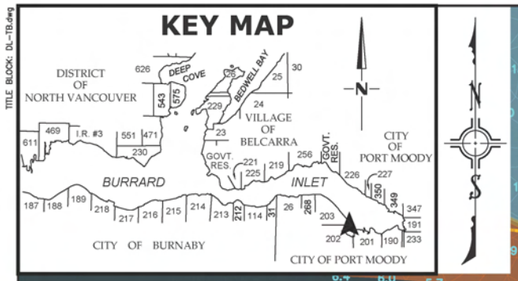
DESIGN BY	
DRAWN BY	DKL
APPROVED	
DATE	13-MAY-2019
SCALE	1:2500
VFPA SITE	PTM110

PORT MOODY CHANNEL
CONTROL DEPTHS & CHANNEL CONDITION
OVERVIEW
CITY OF PORT MOODY

SIZE D | DWG. HYDROGRAPHIC PLAN No. H2019-007 | SHEET 1 of 2 | REV.

TITLE BLOCK: DL-TB.dwg

KEY MAP



PORT MOODY ARM

SEE VFPA PLAN H2019-000S15

NOTES:
- Depths are reduced to CHS Chart Datum
- Soundings are in metres and positioned by DGPS
- Soundings performed by PWGSC on April 14, 2019
- VFPA 2018 Orthophotos

LEGEND:
- Navigation Channel
- Shore Line
- 14.7 2019 Soundings PWGSC
- Shoalest Depth

Ref.No.	REFERENCE

No.	Date	REVISION	Dr'n	Ch'd

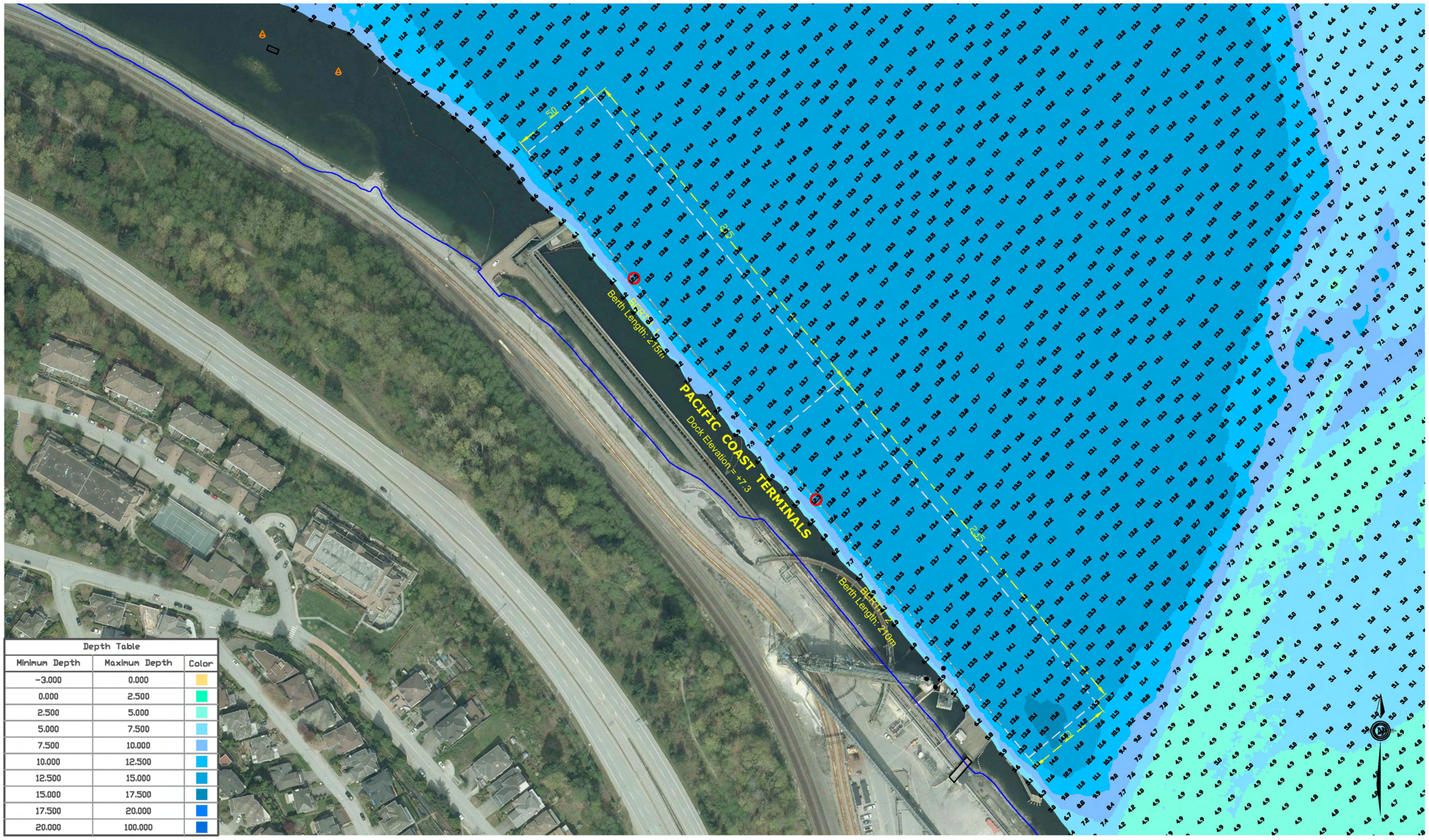
PORT of vancouver

VANCOUVER FRASER PORT AUTHORITY
ENGINEERING DEPARTMENT

DESIGN BY	
DRAWN BY	DKL
APPROVED	
DATE	13-MAY-2019
SCALE	1:1500
VFPA SITE	PTM110

PORT MOODY CHANNEL
CONTROL DEPTHS & CHANNEL CONDITION
OVERVIEW
CITY OF PORT MOODY

SIZE	DWG	SHEET	REV.
D	HYDROGRAPHIC PLAN No. H2019-007	2 of 2	



Depth Table		
Minimum Depth	Maximum Depth	Color
-3.000	0.000	
0.000	2.500	
2.500	5.000	
5.000	7.500	
7.500	10.000	
10.000	12.500	
12.500	15.000	
15.000	17.500	
17.500	20.000	
20.000	100.000	

NOTES:

Depths are reduced to CHS Chart Datum

Soundings are in metres and positioned by DGPS

VFPA 2018 Orthophotos

Dockface Features

Fenders, Ladder, Bollard, Camel with Fenders

Berth Line, Shore Line

Buoy, Piling, Mooring Dolphin, Shoalest Depth

2019 Soundings PWGSC

PROJECTION: Universal Transverse Mercator		NEWEST DATA SURVEYED BY:	PWGSC Apr. 14, 2019
		DRAWN BY:	DKL Sept. 1, 2017
CM: 123° West	ZONE: 10	CHECKED BY:	
SCALE: 1:2000	DATUM: NAD 83	UPDATED BY:	DKL May 13, 2019

0 20 40 60 80 100 metres

PORT of vancouver
HARBOUR MASTER'S OFFICE
100 The Pointe
999 Canada Place
Vancouver, B.C., Canada
V6C 3T4
(604)665-9086
(604)666-6012 (Afterhours)

SOUNDINGS BOOK - BURRARD INLET

PACIFIC COAST TERMINALS

VFPA Plan No. H2019-000

APPENDIX E

Port of Vancouver: TCZ-2 Procedures

TCZ-2 procedures as of the date of these guidelines are provided in this appendix.

Amendments to the traffic control zone procedures may be made from time to time so refer to the latest “Port Information Guide” online for the latest information available, URL:

http://www.portvancouver.com/marine-operations/port-information-guide/

8.14 SECOND NARROWS TCZ PROCEDURES (TCZ-2)

GUIDE TO CONTENT

TCZ-2 Introduction

TCZ-2 Application

TCZ-2 Navigation Envelope (Clearances)

a) Vertical Clearances

b) Horizontal Clearances

c) Under keel Clearances (UKC)

TCZ-2 Communications

a) Marine Communications and Traffic Services (MCTS)

b) Second Narrows Rail Bridge Communications

TCZ-2 Restrictions

a) Transit Windows

b) Transit Restrictions

c) Clear Narrows Restrictions

d) Speed Restrictions

e) Visibility Restrictions

f) Wind Restrictions

TCZ-2 Vessel Traffic Procedures

a) Order of Transit

b) Overtaking and Safe Distance Between Vessels Regulations

c) Tier 2 Vessel Regulations Including Pleasure Craft

d) Towing Regulations

TCZ-2 Pilotage Requirements

Tier 1 Vessel Assist Tug Requirements

Table 1: Second Narrows TCZ (TCZ-2) transit procedures deep sea vessels - Summary matrix

Table 2: Second Narrows TCZ (TCZ-2) deep sea vessels - Tug and bollard pull requirements matrix

Table 3: Second Narrows TCZ (TCZ-2) tugs and barges including ATBs when not piloted - Summary matrix

TCZ-2 INTRODUCTION

The Second Narrows Traffic Control Zone (TCZ-2) comprises an area enclosed:

- To the West by a line drawn north from the Terminal Dock light (one mile west of the Second Narrows Iron Workers Memorial Bridge on the south shore of Burrard Inlet) to the North Vancouver shoreline at Neptune terminal on the north shore of Burrard Inlet.
- To the East by a line drawn north from Berry Point Light (approximately 1.5 miles east of the Second Narrows Railway Bridge on the south shore of the inlet) and the intersection of a line drawn from the south east corner of the “Canexus” (Chemtrade Electrochem Terminal) dock to the “West Nexun” Navigational marker through the “LL410” navigational marker.

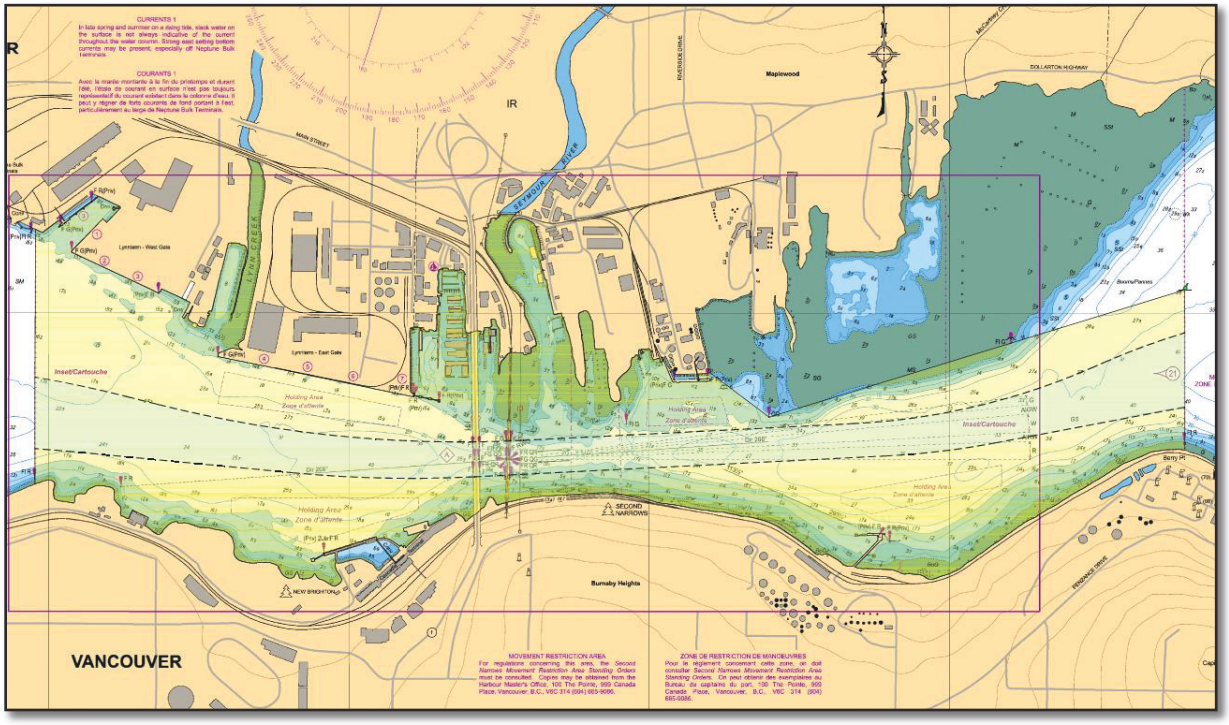


Image: TCZ-2 Boundaries

For enhanced vessel safety, a single lane navigation channel is in effect within TCZ-2 (highlighted in green above between the dashed black lines).

The Vancouver Fraser Port Authority (port authority) has established TCZ-2 and has developed these associated procedures in consultation with the Pacific Pilotage Authority (PPA), the BC Coast Pilots (BCCP) and the broader marine industry. The purpose of the TCZ-2 procedures is to facilitate the safe navigation and efficient movement of vessels in this area of the port, and they form an integral part of the port authority regulations outlined in this Port Information Guide.

TCZ-2 APPLICATION

The TCZ-2 Procedures apply to all marine traffic in TCZ-2, except designated port authority patrol vessels and vessels that are engaged in law enforcement and security, search and rescue or other emergency response vessels.

The TCZ-2 Procedures do not relieve the Master from compliance with the *Canada Shipping Act 2001* or other regulations, requirements or standards in respect of vessels operating in Canadian ports.

Further, these procedures do not lessen in any way the responsibility of the Master for the safe navigation, prudent maneuvering of the vessel and preparation for unforeseen circumstances affecting the normal operation of the Second Narrows Rail Bridge.

These procedures may be varied by the port authority in the event of an emergency which causes (or is likely to cause) loss of life, personal injury, serious environmental pollution or contributes to unsafe navigation in the port.

The Harbour Master, as designated by the port authority, has overall authority in interpreting and overseeing the implementation of these procedures. In doing so, the Harbour Master consults on issues of safety with a number of stakeholders including pilots, other statutory agencies and industry experts, as required.

The TCZ-2 Procedures supersede the *Department of Fisheries and Oceans Canada* Pacific Fishery Management Regulations in the area of Sub-Area 28-11 which overlaps the TCZ-2 area.

TCZ-2 NAVIGATION ENVELOPE (CLEARANCES)

The pilot in conjunction with the master should evaluate all clearance conditions mentioned in this section prior to the transit of TCZ-2 in conjunction with the port authority matrix *"Second Narrows - Minimum channel depths and maximum vessel air drafts based on TCZ-2 moulded breadth factor for channel width"* found in Appendix B.

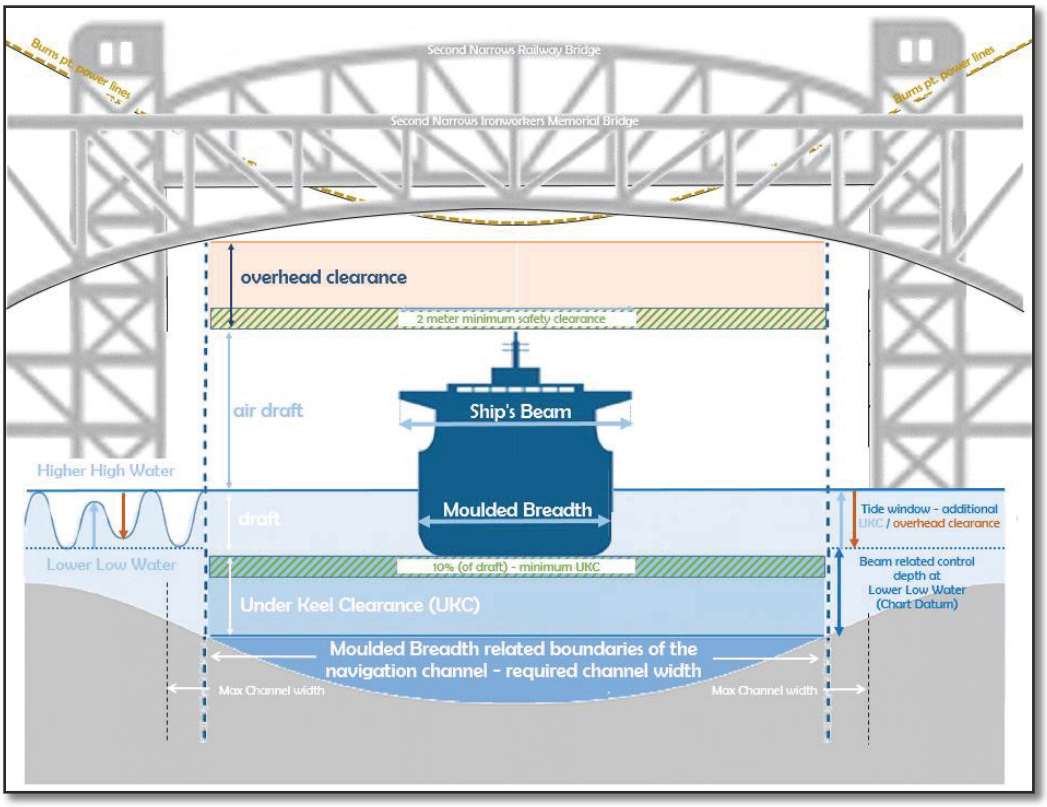


Image: TCZ-2 Navigation Envelope

f) Vertical Clearances

Vertical clearances are given as distances measured from higher high water, large tide datum (5.0 m) to the lowest point of the power lines or the lowest member of the bridge structure, in way of the navigation channel.

Due to the curvature of the Second Narrows Ironworkers Memorial Bridge, the maximum air draft for transit of TCZ-2 is subject to the moulded breadth of the vessel, actual tidal height and the requirement for a minimum safe overhead clearance of 2m. Refer to Appendix B.

- Vessels with a moulded breadth of 27m and less have a maximum unrestricted air draft of 42.7m.
- Vessels with a moulded breadth of 27.1m – 36m have a maximum unrestricted air draft of 42.38m.
- Vessels with a moulded breadth of 36.1m – 45m have a maximum unrestricted air draft of 41.82m.
- Vessels with a moulded breadth of 45.1m – 48m have a maximum unrestricted air draft of 40.95m.

NOTE: If the transit continues into Port Moody Arm past a line drawn due north from Gosse Point to Admiralty Point (East of Barnet Marine Park), the maximum air draft allowed for transiting TCZ-2 without port authority approval is 42.0m at a maximum vessel moulded breadth of 36m and is based on the height (44m) of the Burns Point Power lines above the navigation channel.

Vessels that exceed the maximum vessel air draft at higher high water may be able to transit subject to tidal windows. Lower tides will increase the maximum allowable air draft but will correspondingly decrease the available depth. The maximum tidal range is 5.0 m.

Vessels with an air draft in excess of the maximum air draft allowed for transiting TCZ-2, which require tidal windows as listed above, must obtain port authority and PPA approvals to transit TCZ-2. The maximum air draft of the ship or floating equipment needs to be reported at least 24 hours in advance of transit to the port authority Operations Centre (harbour_master@portvancouver.com) and PPA (marineops@ppa.gc.ca).

The air draft must be verified by a qualified and independent local survey company within port authority jurisdiction prior to transit. The detailed results of this air draft survey must be provided to both the port authority and PPA. Thereafter, the verified vessel's draft/air draft must be maintained until completion of the transit.

Upon receipt by the port authority of the air draft survey, the port authority will review the transit request and determine if the vessel is approved to transit the TCZ-2 with tide restriction.

Upon receipt of the air draft survey by PPA, PPA will liaise with the BCCP to verify actual transit times based on current windows, tide height, vessel draft, air draft and other planned TCZ-2 vessel traffic. PPA/BCCP will validate the transit request and indicate to the dispatched pilot that the air draft has been verified.

Transit windows are calculated using the static air draft i.e. the air draft of the vessel when not moving through the water.

For air draft consideration, the center of the overhead obstruction (bridge or power lines) is also the center of the navigation channel.

The vertical span clearances of the Second Narrows Rail Bridge are:

- Lift span fully raised (open position) 46m above Higher High Water.
- Lift span at lowest level (closed position) 10.8m above Higher High Water.
- First fixed span immediately south of the south tower 10.8m above Higher High Water.

g) Horizontal Clearances

The width of the navigable channel is 137m which is based on the distance between the Second Narrows Railway Bridge piers on the north and south side of the channel.

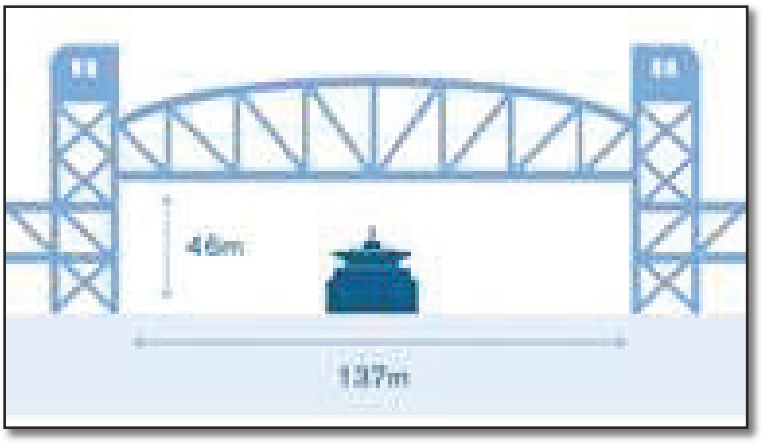


Image: Second Narrows Railway Bridge maximum channel width and maximum vertical clearance.

The minimum channel width required for transiting TCZ-2 with tug assist is 2.85 times the vessel moulded breadth. The maximum allowable moulded breadth with the navigation channel design is therefore 48.1m.

Image: Example of the horizontal channel boundary for a 42m moulded breadth vessel.

h) Under Keel Clearances

The control depth of the navigation channel at chart datum (0.0m tide) depends on the moulded breadth of the vessel and the required width of the navigation channel. Reference should be made to Appendix B Second Narrows – Minimum channel depths and maximum vessel air drafts based on TCZ-2 moulded breadth factor for channel width.

A minimum UKC of 10% of the static draft is required across the profile of, and up to the boundaries of, the navigation channel.

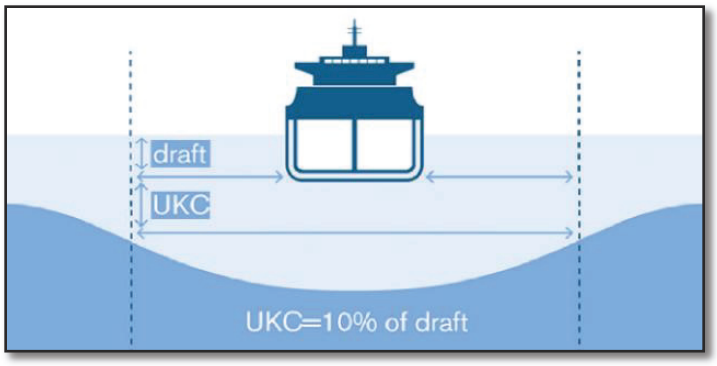


Image: Example of Under-Keel Clearance (UKC) requirement.

The draft available for transiting TCZ-2 is limited by the underwater contour of the Navigation Channel between the Second Narrows Railway Bridge and Berry Point.

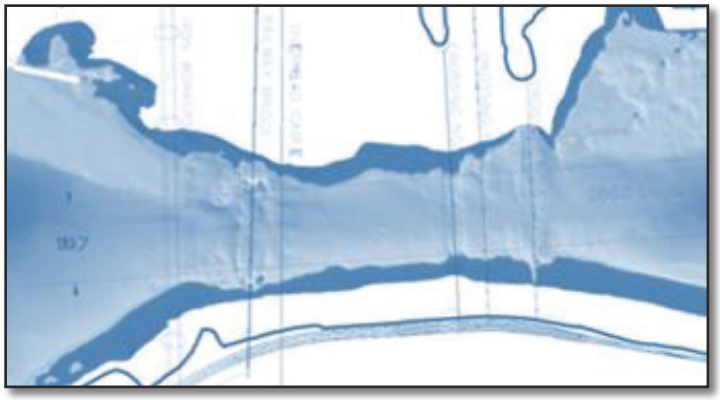


Image: Plan view of the horizontal channel boundary for a 42m moulded breadth vessel.

The maximum moulded breadth allowed for transiting TCZ-2 is 48.1m, which corresponds to a channel width of 137m. The maximum depth of a 137m wide channel through TCZ-2 is 8.7m, which at 10% UKC equals a maximum vessel draft of 7.9m at chart datum (Lower Low Water).

Vessels with a draft in excess of the maximum established in Appendix B may transit subject to tidal windows. Tidal assist will increase the maximum allowable draft but will correspondingly decrease the available air draft.

Transit windows are calculated using the static draft, i.e. the draft of the vessel when it is not moving through the water,

For loaded tankers, the maximum allowable draft is currently 13.5m.

TCZ-2 COMMUNICATIONS

a) Marine Communications and Traffic Services (MCTS)

Communication with vessels transiting, intending to transit or manoeuvring within TCZ-2 is provided, on behalf of the port authority, by the Canadian Coast Guard Marine Communications and Traffic Services (MCTS).

MCTS provides clearance to enter, move within or depart from TCZ-2 subject to conditions specified in these procedures.

When a clearance is given to a vessel to transit TCZ-2, MCTS will provide a vessel with information on all known traffic intending to transit TCZ-2 on the same slack water period at least 20 minutes prior to the vessel entering TCZ-2, or before the vessel departs an inner harbor terminal or anchorage. MCTS will also, at this time, advise of any specific orders regarding the transit, which may have been issued by the port authority.

Where vessels are required to wait pending the transit of another vessel, they will, whenever possible, be so advised by MCTS prior to leaving berth, weighing anchor, or entering TCZ-2 from either direction.

In the event of an interruption to communications between a TCZ-2 vessel and MCTS whereby MCTS has not provided the vessel with formal clearance to undertake a TCZ-2 transit, pilots will assess the movement of other traffic having the potential to impede such transit in making a determination as to whether it is safe to continue. A decision on such determination will also be conveyed to the port authority patrol boat on station or directly to the port authority Operations Centre.

Tier 2 vessels designed to carry 12 or more passengers for commercial purposes (i.e. ferry, charter or tour vessel), must be in receipt of clearance from Marine Communications and Traffic Services (MCTS) at least 15 minutes prior to entering TCZ-2.

b) Second Narrows Rail Bridge Communications

The duty Second Narrows Rail Bridge operator, on receipt of a TCZ-2 vessel's ETA, when possible, will make the Rail Bridge available with the lift span elevated 30 minutes prior to the ETA.

All TCZ-2 vessels requiring the Second Narrows Rail Bridge lift span be raised, when possible, will establish communication on VHF Channel 12 with the Rail Bridge operator, at least 1.5 hours prior to the TCZ-2 scheduled transit time indicating their intention to request for the lift span to be raised. Same must be reconfirmed 30 minutes prior to transit.

Tugs and barges making local harbor moves involving a TCZ-2 transit, when possible, will provide at least 30 minutes notice to the Rail Bridge operator if such a move requires the lift span to be raised. Vessels so designed, when possible, will lower their mast for a TCZ-2 transit where such action will eliminate the need for the lift span to be raised.

Communication between TCZ-2 vessels and the Second Narrows Rail Bridge operator will include:

- A statement of intentions, prior to departing from a Vancouver Harbour location or upon entering English Bay, when underway
- ETA at the Second Narrows Rail Bridge

- Confirmation of such ETA upon reaching the boundary of the Second Narrows TCZ

When the vessel's request has been received, the Second Narrows Rail Bridge operator will be required to:

- Verbally confirm understanding on VHF Channel 12
- Display one flashing red light on that side of the lift span facing the approaching vessel which indicates that the lift span is in the process of being raised to the fully raised position for every piloted vessel unless advised otherwise.
- Display one flashing green light on that side of the lift span facing the approaching vessel which indicates that the lift span has been raised to the requested height.
- Display a sector light for westbound TCZ vessels that require the lift span in the fully raised position.

Vessels must not approach the Second Narrows Rail Bridge when the following signals are displayed:

- Two flashing red lights on that side of the lift span facing the approaching vessel which indicates that the vessel is to stop at once or, if necessary, go astern; or
- A vertical row of four fixed white lights on the center of the main lift span which indicates that another vessel is approaching from the opposite direction.

TCZ-2 RESTRICTIONS

For the purposes of the TCZ-2 regulations, the following definitions apply:

Tier 1 vessel: Means any of the following vessels:

- All piloted vessels and tug and barge combinations when piloted, regardless of tonnage.
- All non-piloted tug and barge combinations with a barge of 10,000 tonnes or more carrying capacity.
- All non-piloted vessels including barges and articulated tugs and barges (ATBs) when in product.

Tier 2 vessel*:* Means all other vessel traffic operating in the TCZ-2 boundaries.

a) Transit Windows

A TCZ-2 transit: *is defined as a movement within TCZ-2 that includes passing under the Second Narrows Iron Workers Memorial Bridge and the Second Narrows Railway Bridge.*

Transit windows are established on either side of high and low water slack tides and are based on predicted slack water or stemming a predicted limiting current of one or two knots. Reference should be made to *Table 1: Second Narrows TCZ (TCZ-2) transit procedures deep sea vessels – Summary matrix*.

All Tier 1 vessels are subject to observing TCZ-2 transit windows during their transit and when manoeuvring within TCZ-2.

Predicted transit windows for vessels restricted by air draft can be provided by VPFA on request to port authority Operations Centre well in advance of the actual transit.

For planning purposes only, agents can use the Coast Tidal Windows on-line tool available on the PPA's website.

All available navigational information, including that gained from Portable Pilotage Units along with real time tide and current information, should be used in conjunction with predicted transit windows to improve the safety and efficiency of TCZ-2 operations.

b) Transit Restrictions

Reference should be made to the section "TCZ-2 Navigation Envelope (Clearances)" with respect to the maximum size of vessel that may transit TCZ-2 without the prior approval of port authority.

Tier 2 vessels must transit or move within TCZ-2 only when safe to do so and must take into account all factors influencing safety of navigation including traffic, tides, tidal current, weather conditions and their knowledge of TCZ-2.

All piloted vessels are required to remain at a safe distance from the Second Narrows Rail Bridge until the lift span is in a fully raised position. Non-piloted vessels must also wait for the flashing green light signal before proceeding.

The following specific transit restrictions and requirements apply:

- Vessels with length overall (LOA) of 250m and above and/or a moulded breadth or 45m and above are restricted from transiting TCZ-2 without the prior approval of the port authority.
- Vessels with Length Overall (LOA) of 230m and above and/or a moulded breadth of 35m and above are subject to daylight passage of TCZ-2.
- Tankers greater than LOA 185m and/or 40,000 Summer Deadweight (SDWT) and above are restricted to daylight transit of TCZ-2 when in product.
- The maximum air draft allowed for transiting TCZ-2 without port authority approval is based on a minimum safe overhead clearance of 2m.
- Should the predicted air draft at the time of a TCZ-2 transit exceed the maximum listed in Appendix B for the vessel moulded breadth, the authority may approve the transit based on calculation of an overhead clearance of minimum 2m or require verification of the air draft by a competent local surveyor and conducted within the port authority jurisdiction, prior to transit. Reference in all cases should be made to Appendix B *Second Narrows – Minimum channel depths and maximum vessel air drafts based on TCZ-2 moulded breadth factor for channel width*.

- Tug and barge combinations specifically designed for pushing and tractor tugs towing alongside with a barge of 15,000 tonnes or more carrying capacity are restricted from TCZ-2 without the prior approval of the port authority.
- Tug and barge combinations specifically designed for pushing and tractor tugs towing alongside with a barge of 10,000 tonnes or more carrying capacity are subject to TCZ-2 transit windows.
- Tug and barge combinations designed for pushing and tractor tugs towing alongside, may transit with a barge of less than 10,000 tonnes carrying capacity, regardless of current direction, when not employing a pilot. However, such vessels are required to source local (Canadian Hydrographic Service or the port authority) tidal data to ensure accuracy and comply with the requirements set out in Table 3 *Second Narrow TCZ (TCZ-2) tugs and barges including ATBs when not piloted – Summary Matrix.*

Loaded tankers must be trimmed to an even keel or by the stern and must not be trimmed by the head.

Vessels found by the BC Coast Pilots to have unacceptable maneuvering characteristics may be refused permission to transit TCZ-2 or be subject to special restrictions.

A vessel having a defect in the hull, main propulsion machinery, steering system or other communication or navigation system that is detrimental to safe navigation, requires the prior approval of both Transport Canada and the port authority to transit TCZ-2.

c) Clear Narrows Restrictions

The term “Clear Narrows” is defined as the transit of a vessel through TCZ-2 unimpeded by any other vessel

MCTS will declare a “Clear Narrows” on VHF Channels 12 and 16 by means of a Securité call to ensure unimpeded transit of restricted vessels, examples being but not limited to:

- A vessel with LOA 230m and above and/or a moulded breadth of 35m or above.
- A Tier 1 vessel (tanker) in product.
- A vessel with an air draft greater than specified for the vessel moulded breadth in Appendix B, and which has received the port authority approval to transit TCZ-2.
- Other vessels with special transit requirements that require the approval of the port authority.
- A vessel, which for safety considerations requires a clear passage through TCZ-2 upon request of the Master or pilot.

MCTS may direct other vessels to a suitable holding area until conditions are such that a transit of the TCZ-2 can be safely executed.

Light tugs and other highly maneuverable small vessels may, on request, be granted a compliance exemption by MCTS, provided a ship-to-ship agreement has been reached with vessel for which a clear narrows has been declared.

All other vessels must observe the Clear Narrows declaration for TCZ-2 and must not interfere in any way with the passage of a vessel for which a Clear Narrows has been declared.

Vessels delayed in transit due to other traffic must remain clear of TCZ-2 until conditions are such that a transit can be safely executed.

Second Narrows TCZ Holding Areas: *are defined as designated areas to which Tier 1 vessels subject to transit windows may be directed by MCTS or in which Tier 2 vessels, including non-piloted tugs and barges, in agreement with MCTS can hold themselves in readiness until conditions are such that a safe transit of TCZ-2 can be executed.*

d) Speed Restrictions

Tier 1 vessels must transit or manoeuvre within TCZ-2 at a safe speed not to exceed six knots through the water, except when safety of navigation requires otherwise.

Tier 2 vessels within TCZ-2 must proceed at a safe speed which will allow them to properly respond to the prevailing circumstances and conditions.

e) Visibility Restrictions

Reduced visibility limits the ability to see aids to navigation and other vessels or landmarks. These procedures outline safety requirements to be followed when transiting TCZ-2 during periods of reduced visibility.

The following vessels are subject to visibility restrictions:

- All piloted vessels and tug and barge combinations when piloted, regardless of tonnage.
- All non-piloted tug and barge combinations specifically designed for pushing and tractor tugs towing alongside with a barge of 10,000 tonnes or more carrying capacity.
- All non-piloted vessels including barges and articulated tugs and barges (ATBs) when in product.

When intending to transit TCZ-2, the above vessels and tug and barge combinations must observe the bridges clearly before reaching Terminal Dock when eastbound and before reaching Berry Point when westbound. The same requirement applies prior to departure from a terminal within TCZ-2 to make a TCZ-2 transit.

Pusher tug-barge combinations or tractor tugs towing alongside of less than 10,000 tonnes carrying capacity, whether in product or in ballast, may only transit during conditions of restricted visibility subject to the following conditions:

- An additional tug is employed to assist with the transit.
- Each tug’s shipboard navigation equipment includes a type approved and fully operational electronic chart display and radar.

- The transit is restricted to a reduced TCZ-2 transit window limited to one knot current in either direction.

The vessel operator must provide to the port authority in advance the relevant documentation, which demonstrates to the satisfaction of the port authority that adequate internal safety management systems are in place for a safe transit of TCZ-2 and the degree of local knowledge.

Nothing in this section should be construed to require the master of a vessel to execute a transit in reduced visibility.

Refer to Table 3: *Second Narrows TCZ (TCZ-2) Tugs and barges including ATBs when not piloted – Summary matrix.*

f) Wind Restrictions

There are no standing wind restrictions for TCZ-2. However, when wind warnings are in effect, the master and/or pilot must take into consideration such factors as light vessel draft and/or high freeboard, when planning the transit.

TCZ-2 VESSEL TRAFFIC PROCEDURES

a) Order of Transit

For operational reasons, the order of transit may be amended with the mutual agreement of all vessels transiting, berthing or departing a berth within TCZ-2. Such amendment must be advised to MCTS.

Tier 1 vessels have priority over Tier 2 vessels within TCZ-2. In principle, taking into account of both safety and efficiency, the following order of priority applies to vessels transiting TCZ-2:

- First priority is a loaded tanker of LOA 230m and above and/or a moulded breadth of 35m and above;
- Second priority is a vessel whose window is closing which will have priority over a vessel transiting in the other direction;
- Third priority is deeper draft vessels over other transits in the same direction.

Priority consideration may also be given to an inbound vessel having labor standing by but subject to the overall efficiency of traffic movement.

A vessel proceeding to, departing from or shifting alongside berths within TCZ-2 must give way to, and not interfere with, the movement of Tier 1 vessels in transit.

b) Overtaking and Safe Distance between Vessels Regulations

A Tier 2 vessel may overtake another Tier 2 vessel that is proceeding at a speed of less than six knots within the geographical boundary of TCZ-2 provided that a safe speed is not exceeded in

doing so. Such overtaking must not occur within two cables of either side of the Second Narrows bridges.

Tier 2 vessels must not overtake TCZ-2 vessels within the geographical boundary of the Second Narrows TCZ.

A Tier 1 vessel must not commence its transit until a Tier 1 vessel transiting in the opposite direction has completed its transit.

Tier 1 vessels transiting in the same direction must maintain a safe separation of three cables (0.3 nautical miles) or more distance between them.

c) Tier 2 Vessel Regulations including Pleasure Craft

All Tier 2 vessels including pleasure craft and sailing vessels when transiting TCZ-2 must be under adequate mechanical power.

Tier 2 vessels must not cross ahead of or otherwise impede TCZ-2 vessels within TCZ-2 and must stay to the side of the navigation channel to give TCZ-2 vessels as unobstructed a passage as is practicable, consistent with good seamanship.

For the safety reasons, vessels engaged in fishing, personal watercraft such as jet skis, row boats, canoes and vessels sailing or proceeding without mechanical power are not permitted within TCZ-2. Fishing, sailing and other non-powered recreational activity is permitted only in designated areas outside of the boundaries of TCZ-2 east of Second Narrows Rail Bridge.

For MCTS reporting requirements for Tier 2 vessels, see TCZ-2 Communications, Marine Communications and Traffic Services (MCTS).

d) Towing Regulations

- A vessel engaged in towing operations within TCZ-2, must limit the length of her towline, measured from the stern of the towing vessel to the nearest portion of the vessel being towed, to not more than 60m. Such towline may not be lengthened until both vessels are completely clear of the bridge piers.
- Tugs engaged in towing or pushing barges, whether in ballast or in product, must be of adequate power and comply with the assist tug requirements set out in *Table 3: Second Narrows TCZ (TCZ-2) Tugs and barges including ATBs when not piloted – Summary matrix.*
- For the purposes of TCZ-2, piloted ATB's are subject to the requirements of a tanker of equal size.
- The overall width of log booms within TCZ-2 must not exceed two boom sections (maximum 40m) wide, and the overall length of log booms within TCZ-2 must not exceed 20 boom sections (maximum 400m) long.

When transiting TCZ-2 with more than 10 boom sections overall length (maximum 200m), the master or person in charge of a log boom must engage, in addition to tugs required in the towing operation, one or more tugs of adequate power in order to:

- Remain close inshore off the main channel;
- Be able to maintain such boom sections in the designated holding areas located on both sides of the Second Narrows bridges as shown on Canadian chart # 4964.

TCZ-2 PILOTAGE REQUIREMENTS

Pilotage requirements within the port authority jurisdiction are governed by the Pacific Pilotage Authority Regulations, Section 9 (Ships Subject to Compulsory Pilotage) and 10 (Waiver of Compulsory Pilotage). In addition to the pilotage requirements established under Section 9 and Section 10 of the *Pacific Pilotage Regulations*, the following pilotage requirements apply to vessels operating in TCZ-2:

- Tankers of 40,000 summer deadweight tonnage (SDWT) and above in product require two pilots for a TCZ-2 transit. Both pilots must remain on the bridge throughout the transit. Two new pilots will replace the two shifting pilots in English Bay or other agreed location;
- Vessels with LOA 230m and above and/or a moulded breadth of 35m and above require two pilots for a TCZ-2 transit;
- All other piloted vessels, including vessels shifting to or from a berth or anchorage east of the Second Narrows Iron Workers Memorial Bridge, require one pilot;
- The vessel or agent is required to supply the Mooring and Towing Arrangement of the vessel with the Safe Working Load (SWL) of the fairleads to PPA dispatch when ordering a pilot.

Refer to Pacific Pilotage Authority pilot ordering requirements.

TCZ-2 VESSEL ASSIST TUG REQUIREMENTS

TCZ-2 vessels when transiting TCZ-2, must comply with the standards for tug requirements included in Table 1 or Table 2 as appropriate, which detail the number of tugs and bollard pull requirements, reasonably spread between tug hulls. In addition:

- All vessel assist tugs employed on piloted TCZ-2 vessels transiting TCZ-2 must be tethered tractor/ASD tugs;
- Vessel assist tugs capable of generating more than 40 tonnes of bollard pull must have an operational tension meter that the tug operator can easily read from the conning position;
- All vessels which require tethered tugs for a TCZ-2 transit must have them tethered prior to entering TCZ-2 and must remain tethered until clear of the Second Narrows Bridges unless, for operational reasons, they are required to remain tethered beyond TCZ-2;

- Tankers of LOA of 185m and above in product and/or 40,000 tonnes SDWT and above in product require a minimum of two tugs that, when inbound must be tethered prior to transiting TCZ-1 and when outbound must remain tethered until clear (west) of TCZ-1. An interrupted passage between Second Narrows and First Narrows bridges, for whatever reason, does not reduce the minimum escort tug requirements for the transit.

Highly maneuverable craft may be exempted from these requirements at the discretion of the port authority in consultation with the Pacific Pilotage Authority and BC Coast Pilots.

For escort and tethered tug requirements related to tankers of 40,000 SDWT and above in product outside of the port authority jurisdiction, reference should also be made to the relevant Pacific Pilotage Authority Notices to Industry.

TABLE 1: SECOND NARROWS TCZ (TCZ-2) TRANSIT PROCEDURES DEEP SEA VESSELS - SUMMARY MATRIX

Tankers in product

Vessel type	Night time allowed	Tidal current opposing	Tidal current following	Tugs	Pilots	Tugs First Narrows
Tankers LOA <185m and/or < 40,000 SDWT	Yes	<1.0k	<0.5k	T	1	-
Tankers LOA > 185m	No	<1.0k	<0.5	T	1	-
Tankers > 40,000 SDWT	No	<1.0k	<0.5k	T	2	T

Tankers not in product and all other deep sea vessels

Vessel type	Night time allowed	Tidal current opposing	Tidal current following	Tugs	Pilots	Tugs First Narrows
LOA <230m and moulded breadth < 35m	Yes	<2.0k	<0.5k	T	1	-
LOA >230m or moulded breadth >35m	No	<1.0k	<0.5k	T	2	-

T = tethered tug required, see Table 2 below for further detail on requirements.

For escort and tethered tug requirements related to tankers of 40,000 SDWT in product outside of port authority jurisdiction, reference should be made to the relevant Pacific Pilotage Authority Notices to Industry.

TABLE 2: SECOND NARROWS TCZ (TCZ-2) DEEP SEA VESSEL - TUG AND BOLLARD PULL REQUIREMENTS MATRIX

LOA less than 200m and moulded breadth less than 35m

Vessel draft	No. of tugs	Bollard pull tonnes	No. of tugs	Bollard pull tonnes
	Bow		Stern	
<8m	1	20	1	30

>8m <10m	1	30	1	40
>10m	1	30	1	50

LOA 200m – 229.9m and moulded breadth less than 35m

Vessel draft	No. of tugs	Bollard pull tonnes	No. of tugs	Bollard pull tonnes
	Bow		Stern	
<8m	1	30	1	50
>8m <10m	1	60	1 or 2	65
>10m <12m	1 or 2	60	1 or 2	80
>12m	1 or 2	60	2	110

LOA 230m – 250m and moulded breadth less than 45m

Vessel draft	No. of tugs	Bollard pull tonnes	No. of tugs	Bollard pull tonnes
	Bow		Stern	
<10m	1 or 2	60	1 or 2	65
>10m <12m	1 or 2	60	1 or 2	80
>12m	1 or 2	60	2	110

- Vessels over LOA 250m and/or moulded breadth 45m require approval for transit from the Harbour Master in consultation with the Pacific Pilotage Authority and BC Coast pilots.
- The maximum allowable moulded breadth for a TCZ-2 transit is 48m due to the width of the channel at the Second Narrows Rail Bridge.
- A TCZ-2 transit of tankers with a LOA 250m and draught greater than 13.5m is subject to tug requirements and other aids to navigation system enhancement presently not in place at the Second Narrows TCZ-2.

TABLE 3: SECOND NARROW TCZ (TCZ-2) TUGS AND BARGES INCLUDING ATB'S WHEN NOT PILOTED – SUMMARY MATRIX

Barge capacity tonnes	**Night time allowed**	**Tidal current opposing*1**	**Tidal current following*1**	**Visibility restricted* 2**	**No. of assist tugs**	**Bollard pull (tonnes)**
<6,000	Yes	-	-	conditional	-	-
6,000> <10,000 not in product *3	Yes	-	-	conditional	1	20
6,000> <10,000 *3	Yes	<2.0k	<2.0k	conditional	1	20
10,000> <15,000	Yes	<2.0k	<2.0k	restricted	1 or 2	40

*1 - Tugs and barges including ATBs when piloted are subject to the transit rules at set out in Table 1.

*2 - Reference should be made to: TCZ-2 *Restrictions – e) Visibility Restrictions* for detailed requirements.

*3 - For the purposes of this table, barges carrying cargoes other than liquid bulk will be subject to the requirements for "in product" when loaded, and subject to the requirements for "not in product" when light.

Note: One pilot is required for any tug/barge combination if under pilotage and subject to transit windows.

APPENDIX F

Ballast Water Control and Management Regulations

CANADA

CONSOLIDATION

CODIFICATION

Ballast Water Control and Management Regulations

Règlement sur le contrôle et la gestion de l'eau de ballast

SOR/2006-129

DORS/2006-129

Current to August 27, 2009

À jour au 27 août 2009

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Publié par le ministre de la Justice à l'adresse suivante :
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OFFICIAL STATUS OF CONSOLIDATIONS

Subsections 31(1) and (3) of the *Legislation Revision and Consolidation Act*, in force on June 1, 2009, provide as follows:

Published consolidation is evidence

31. (1) Every copy of a consolidated statute or consolidated regulation published by the Minister under this Act in either print or electronic form is evidence of that statute or regulation and of its contents and every copy purporting to be published by the Minister is deemed to be so published, unless the contrary is shown.

...

Inconsistencies in regulations

(3) In the event of an inconsistency between a consolidated regulation published by the Minister under this Act and the original regulation or a subsequent amendment as registered by the Clerk of the Privy Council under the *Statutory Instruments Act*, the original regulation or amendment prevails to the extent of the inconsistency.

CARACTÈRE OFFICIEL DES CODIFICATIONS

Les paragraphes 31(1) et (3) de la *Loi sur la révision et la codification des textes législatifs*, en vigueur le 1er juin 2009, prévoient ce qui suit :

Codifications comme élément de preuve

31. (1) Tout exemplaire d'une loi codifiée ou d'un règlement codifié, publié par le ministre en vertu de la présente loi sur support papier ou sur support électronique, fait foi de cette loi ou de ce règlement et de son contenu. Tout exemplaire donné comme publié par le ministre est réputé avoir été ainsi publié, sauf preuve contraire.

[...]

Incompatibilité — règlements

(3) Les dispositions du règlement d'origine avec ses modifications subséquentes enregistrées par le greffier du Conseil privé en vertu de la *Loi sur les textes réglementaires* l'emportent sur les dispositions incompatibles du règlement codifié publié par le ministre en vertu de la présente loi.

Registration
SOR/2006-129 June 8, 2006

CANADA SHIPPING ACT, 2001

Ballast Water Control and Management Regulations

P.C. 2006-495 June 8, 2006

Her Excellency the Governor General in Council, on the recommendation of the Minister of Transport, Infrastructure and Communities, pursuant to section 657.1[a] of the *Canada Shipping Act*, hereby makes the annexed *Ballast Water Control and Management Regulations*.

Enregistrement
DORS/2006-129 Le 8 juin 2006

LOI DE 2001 SUR LA MARINE MARCHANDE DU CANADA

Règlement sur le contrôle et la gestion de l'eau de ballast

C.P. 2006-495 Le 8 juin 2006

Sur recommandation du ministre des Transports, de l'Infrastructure et des Collectivités et en vertu de l'article 657.1a de la *Loi sur la marine marchande du Canada*, Son Excellence la Gouverneure générale en conseil prend le *Règlement sur le contrôle et la gestion de l'eau de ballast*, ci-après.

[a] S.C. 1998, c. 16, s. 18

BALLAST WATER CONTROL AND MANAGEMENT REGULATIONS

INTERPRETATION

1. The following definitions apply in these Regulations.

"ballast water" means water with its suspended matter taken on board a ship to control the trim, list, draught, stability and stresses of the ship, and includes the sediment settled out of the ballast water within a ship. (*eau de ballast*)

"ballast water capacity" means the total volumetric capacity of the tanks, spaces or compartments on a ship used for carrying, loading or discharging ballast water, including any multi-use tank, space or compartment designed to allow the carriage of ballast water. (*capacité en eau de ballast*)

"ballast water system" means the tanks, spaces or compartments on a ship used for carrying, loading or discharging ballast water, including any multi-use tank, space or compartment designed to allow the carriage of ballast water, as well as the piping and pumps. (*système d'eau de ballast*)

"Great Lakes Basin" means the waters of the Great Lakes, their connecting and tributary waters and the St. Lawrence River as far as the lower exit of the St. Lambert Lock at Montréal in the Province of Quebec. (*bassin des Grands Lacs*)

"harmful aquatic organisms or pathogens" means aquatic organisms or pathogens that, if introduced into the sea, including estuaries, or into fresh water courses, could create hazards to human health, harm organisms, damage amenities, impair biological diversity or interfere with legitimate uses of the waters. (*agents pathogènes ou organismes aquatiques nuisibles*)

"reception facility" means a facility that is capable of receiving, storing, processing or transhipping ballast water or sediment in a manner that reduces the likelihood of

RÈGLEMENT SUR LE CONTRÔLE ET LA GESTION DE L'EAU DE BALLAST

DÉFINITIONS

1. Les définitions qui suivent s'appliquent au présent règlement.

« agents pathogènes ou organismes aquatiques nuisibles » Agents pathogènes ou organismes aquatiques qui, s'ils sont introduits dans la mer, y compris les estuaires, ou dans les cours d'eau douce, pourraient mettre en danger la santé humaine, nuire aux ressources biologiques, porter atteinte à l'agrément des sites, nuire à la diversité biologique ou gêner toute utilisation légitime de ces eaux. (*harmful aquatic organisms or pathogens*)

« bassin des Grands Lacs » Les eaux des Grands Lacs, leurs eaux tributaires et communicantes, ainsi que les eaux du fleuve Saint-Laurent jusqu'à la sortie inférieure de l'écluse de Saint-Lambert à Montréal, dans la province de Québec. (*Great Lakes Basin*)

« capacité en eau de ballast » La capacité volumétrique totale des citernes, des espaces ou des compartiments à bord d'un navire qui sont utilisés pour transporter, charger ou décharger l'eau de ballast, y compris, le cas échéant, des citernes, des espaces ou des compartiments polyvalents conçus pour permettre le transport de l'eau de ballast. (*ballast water capacity*)

« eau de ballast » L'eau et ses matières en suspension prises à bord d'un navire pour en contrôler l'assiette, la gîte, le tirant d'eau, la stabilité et les contraintes. La présente définition comprend les sédiments provenant de l'eau de ballast qui se sont déposés dans un navire. (*ballast water*)

« eaux de compétence canadienne » Les eaux canadiennes et les eaux de la zone économique exclusive du Canada, y compris une zone de contrôle de la sécurité de la navigation désignée en vertu de la *Loi sur la prévention de la pollution des eaux*

harmful aquatic organisms or pathogens being introduced into waters under Canadian jurisdiction. (*installation de réception*)

"TP 13617" means the document entitled *A Guide to Canada's Ballast Water Control and Management Regulations*, published by the Department of Transport in May, 2006, as amended from time to time. (*TP 13617*)

"waters under Canadian jurisdiction" means Canadian waters and waters in the exclusive economic zone of Canada, including a shipping safety control zone prescribed under the *Arctic Waters Pollution Prevention Act*. (*eaux de compétence canadienne*)

« installation de réception » Installation pouvant recevoir, entreposer, traiter ou transborder de l'eau de ballast ou des sédiments de manière à réduire la probabilité que des agents pathogènes ou organismes aquatiques nuisibles soient introduits dans les eaux de compétence canadienne. (*reception facility*)

« système d'eau de ballast » Les citernes, les espaces ou les compartiments à bord d'un navire qui sont utilisés pour transporter, charger ou décharger l'eau de ballast, y compris, le cas échéant, les citernes, les espaces ou les compartiments polyvalents conçus pour permettre le transport d'eau de ballast, ainsi que la tuyauterie et les pompes. (*ballast water system*)

« TP 13617 » Le document intitulé *Guide d'application du Règlement sur le contrôle et la gestion de l'eau de ballast du Canada*, publié en mai 2006 par le ministère des Transports, avec ses modifications successives. (*TP 13617*)

APPLICATION

2. (1) These Regulations apply to every ship in waters under Canadian jurisdiction that is designed or constructed to carry ballast water, unless

(*a*) the ship operates exclusively in waters under Canadian jurisdiction; or

(*b*) the ship operates in the United States waters of the Great Lakes Basin or the French waters of the islands of Saint Pierre and Miquelon when it operates in waters outside Canadian jurisdiction.

(2) These Regulations do not apply to

(*a*) ships used for search and rescue operations or pleasure craft that are less than 50 m in overall length and that have a maximum ballast water capacity of 8 m^3;

APPLICATION

2. (1) Le présent règlement s'applique à tout navire qui se trouve dans les eaux de compétence canadienne et qui est conçu ou construit pour transporter de l'eau de ballast, sauf aux navires suivants :

a) ceux qui sont exploités exclusivement dans les eaux de compétence canadienne;

b) ceux qui sont exploités dans les eaux américaines du bassin des Grands Lacs ou les eaux françaises des îles Saint-Pierre-et-Miquelon lorsqu'ils le sont à l'extérieur des eaux de compétence canadienne.

(2) Le présent règlement ne s'applique pas :

a) aux embarcations de plaisance ni aux navires qui effectuent des opérations de recherche et sauvetage, s'ils ont une longueur hors tout inférieure à 50 m et une

(*b*) ships that carry permanent ballast water in sealed tanks such that it is not subject to discharge; or

(*c*) ships that are owned or operated by a state and used in government non-commercial service.

capacité en eau de ballast maximale de 8 m^3;

b) aux navires qui transportent dans des citernes scellées de l'eau de ballast permanente de sorte qu'elle ne fait pas l'objet d'un rejet;

c) aux navires appartenant à un État ou exploités par un État et utilisés celui-ci à des fins gouvernementales et non commerciales.

COMPLIANCE

3. The owner of a ship and the master of a ship shall ensure that the requirements set out in sections 4 to 10 and 13 are met.

CONFORMITÉ

3. Le propriétaire d'un navire et le capitaine d'un navire veillent à ce que les exigences prévues aux articles 4 à 10 et 13 soient respectées.

BALLAST WATER MANAGEMENT

4. (1) For the purposes of this section, a ship manages ballast water if it employs, either separately or in combination, the following management processes:

(*a*) the exchange of ballast water;

(*b*) the treatment of ballast water;

(*c*) the discharge of ballast water to a reception facility; and

(*d*) the retention of ballast water on board the ship.

(2) A ship carrying ballast water taken on board the ship outside waters under Canadian jurisdiction shall manage the ballast water in accordance with these Regulations in order to

(*a*) minimize both the uptake of harmful aquatic organisms or pathogens within the ballast water and their discharge with the ballast water into waters under Canadian jurisdiction; or

(*b*) remove or render harmless harmful aquatic organisms or pathogens within the ballast water.

(3) A ship shall manage ballast water taken on board the ship in waters under Canadian jurisdiction, in the United States waters of the Great Lakes Basin or in the

GESTION DE L'EAU DE BALLAST

4. (1) Pour l'application du présent article, le navire gère de l'eau de ballast s'il utilise, isolément ou en combinaison, les processus de gestion suivants :

a) le renouvellement de l'eau de ballast;

b) le traitement de l'eau de ballast;

c) le rejet de l'eau de ballast dans une installation de réception;

d) la conservation de l'eau de ballast à bord du navire.

(2) Le navire qui transporte de l'eau de ballast puisée à l'extérieur des eaux de compétence canadienne la gère en conformité avec le présent règlement afin de réaliser l'un des objectifs suivants :

a) réduire au minimum l'introduction d'agents pathogènes ou d'organismes aquatiques nuisibles dans l'eau de ballast et leur rejet avec elle dans les eaux de compétence canadienne;

b) éliminer ou rendre inoffensifs les agents pathogènes ou les organismes aquatiques nuisibles présents dans l'eau de ballast.

(3) Le navire est tenu de gérer l'eau de ballast puisée dans les eaux de compétence canadienne, dans les eaux américaines du bassin des Grands Lacs ou dans les eaux

French waters of the islands of Saint Pierre and Miquelon if the ballast water is mixed with other ballast water that was taken on board the ship outside waters under Canadian jurisdiction and that was not previously subjected to a management process set out in paragraph (1)(*a*) or (*b*).

(4) It is not necessary to manage ballast water if the ship operates exclusively

(*a*) between ports, offshore terminals or anchorage areas situated on the west coast of North America north of Cape Blanco; or

(*b*) between ports, offshore terminals or anchorage areas situated on the east coast of North America north of Cape Cod and ports, offshore terminals or anchorage areas situated

(i) in the Bay of Fundy,

(ii) on the east coast of Nova Scotia, or

(iii) on the south or east coast of the island of Newfoundland.

(5) It is not necessary to manage ballast water if one of the following emergency situations occurs:

(*a*) the discharge or uptake of ballast water is necessary for the purpose of ensuring the safety of the ship in emergency situations or saving life at sea;

(*b*) the discharge or uptake of ballast water is necessary for the purpose of avoiding or minimizing the discharge of a pollutant from the ship; or

(*c*) the accidental ingress or discharge of ballast water results from damage to the ship or its equipment that was not caused by a wilful or reckless act of the owner or officer in charge and all reasonable precautions are taken before and after the occurrence of the damage or discovery of the damage for the purpose of preventing or minimizing the ingress or discharge.

françaises des îles Saint-Pierre-et-Miquelon si elle est mélangée à de l'eau de ballast puisée à l'extérieur des eaux de compétence canadienne qui n'a pas été antérieurement assujettie à un processus de gestion prévu aux alinéas (1)*a*) ou *b*).

(4) Il n'est pas nécessaire de gérer l'eau de ballast si le navire est exploité exclusivement :

a) entre des ports, des terminaux au large ou des mouillages situés sur la côte ouest de l'Amérique du Nord au nord du cap Blanco;

b) entre des ports, des terminaux au large ou des mouillages situés sur la côte est de l'Amérique du Nord au nord de Cape Cod et des ports, des terminaux au large ou des mouillages situés, selon le cas :

(i) dans la baie de Fundy,

(ii) sur la côte est de la Nouvelle-Écosse,

(iii) sur les côtes sud ou est de l'île de Terre-Neuve.

(5) Il n'est pas nécessaire de gérer l'eau de ballast lorsque se produit l'une des situations d'urgence suivantes :

a) la prise ou le rejet d'eau de ballast est nécessaire pour garantir la sécurité du navire en cas d'urgence ou pour sauver des vies humaines en mer;

b) la prise ou le rejet d'eau de ballast est nécessaire pour prévenir ou réduire au minimum le rejet d'un polluant par le navire;

c) l'entrée ou le rejet accidentel d'eau de ballast résulte d'une avarie qu'a subie le navire ou son équipement et qui n'est pas causée par un acte délibéré ou téméraire du propriétaire ou de l'officier ayant la charge du navire et toutes les précautions raisonnables sont prises avant et après l'occurrence de l'avarie ou sa découverte pour prévenir ou réduire au mi-

5. (1) A ship on a voyage to the Great Lakes Basin that carries only residual amounts of ballast water that were taken on board the ship outside waters under Canadian jurisdiction and were not previously subjected to a management process set out in paragraph 4(1)(*a*) or (*b*) is not required to comply with subsection 4(3) if the ship

(*a*) complies with sections 1, 2, 6 and 7 of the *Code of Best Practices for Ballast Water Management*, published by the Shipping Federation of Canada on September 28, 2000, while the ship operates in waters under Canadian jurisdiction in the Great Lakes Basin; or

(*b*) conducts a saltwater flushing of ballast water tanks that contain the residual amounts of ballast water in an area at least 200 nautical miles from shore before entering waters under Canadian jurisdiction.

(2) For the purposes of paragraph (1)(*b*), a saltwater flushing means the addition of mid-ocean water to ballast water tanks that contain the residual amounts of ballast water, the mixing of the flush water with the residual water and sediment in the tanks through the motion of the ship and the discharge of the mixed water so that the salinity of the resulting residual ballast water in the tanks exceeds 30 parts per thousand or is as close to 30 parts per thousand as possible.

(3) A ship that complies with the requirements of subsection (1) shall carry on board the ship for at least 24 months a record that demonstrates compliance with those requirements.

BALLAST WATER EXCHANGE — TRANSOCEANIC NAVIGATION

6. (1) This section applies in respect of a ship that exchanges ballast water and,

nimum l'entrée ou le rejet d'eau de ballast.

5. (1) Le navire qui effectue un voyage vers le bassin des Grands Lacs et qui ne transporte que des quantités résiduelles d'eau de ballast qui ont été puisées à l'extérieur des eaux de compétence canadienne et qui n'ont pas été antérieurement assujetties à un processus de gestion prévu aux alinéas 4(1)*a*) ou *b*) n'est pas tenu conforme au paragraphe 4(3) si selon le cas :

a) il se conforme aux articles 1, 2, 6 et 7 du *Code des meilleures pratiques de gestion des eaux de ballast*, publié par la Fédération maritime du Canada le 12 avril 2006 lorsqu'il navigue les eaux de compétence canadienne du bassin des Grands Lacs;

b) avant d'entrer dans les eaux de compétence canadienne, il effectue dans une zone située à au moins 200 milles marins du rivage, le rinçage à l'eau salée des citernes d'eau de ballast qui contiennent les quantités résiduelles d'eau de ballast.

(2) Pour l'application de l'alinéa (1)*b*), « un le rinçage à l'eau salée » s'entend de l'ajout de l'eau médio-océanique aux citernes d'eau de ballast qui contiennent les quantités résiduelles d'eau de ballast, du mélange de l'eau de rinçage avec l'eau résiduelle et les sédiments dans les citernes par le mouvement du navire et du rejet de l'eau mélangée pour que la salinité de l'eau de ballast résiduelle des citernes qui en résulte dépasse 30 parties par mille ou s'en approche le plus possible.

(3) Le navire qui se conforme aux exigences du paragraphe (1) doit conserver à bord pendant au moins 24 mois un registre démontrant la conformité avec ces exigences.

RENOUVELLEMENT DE L'EAU DE BALLAST — NAVIGATION TRANSOCÉANIQUE

6. (1) Le présent article s'applique au navire qui procède au renouvellement de

during the course of its voyage, navigates more than 200 nautical miles from shore where the water depth is at least 2000 m.

(2) The ship shall not discharge ballast water that is taken on board the ship outside of waters under Canadian jurisdiction in waters under Canadian jurisdiction unless the ship conducts an exchange before entering Canadian waters in an area situated at least 200 nautical miles from shore where the water depth is at least 2000 m.

(3) If the ship is on a voyage to a port, offshore terminal or anchorage area in the Great Lakes Basin, St. Lawrence River or Gulf of St. Lawrence and cannot comply with subsection (2) because it would compromise the stability of the ship or the safety of the ship or of persons on board, the ship shall notify the Minister of Transport as soon as possible. After doing so, the ship may, beginning on December 1 and ending on May 1, conduct an exchange in the Laurentian Channel east of 63° west longitude where the water depth is at least 300 m.

(4) If the ship cannot comply with subsection (2) because it would be impractical or would compromise the stability of the ship or the safety of the ship or of persons on board, the ship may conduct an exchange in the following areas in waters under Canadian jurisdiction:

(*a*) in respect of a voyage to a port, offshore terminal or anchorage area on the east coast of Canada, an area south of 43°30′ north latitude where the water depth is at least 1000 m;

(*b*) in respect of a voyage to a port, offshore terminal or anchorage area on the west coast of Canada, an area at least 50 nautical miles west of Vancouver Island and the Queen Charlotte Islands and at least 50 nautical miles west of a line ex-

l'eau de ballast et qui, au cours de son voyage, navigue dans une zone qui est située à une distance de plus de 200 milles marins du rivage et où l'eau atteint une profondeur d'au moins 2 000 m.

(2) Il est interdit au navire de rejeter dans les eaux de compétence canadienne de l'eau de ballast puisée à l'extérieur de celles-ci sauf s'il a procédé au renouvellement, avant d'entrer dans les eaux de compétence canadienne, dans une zone qui est située à une distance d'au moins 200 milles marins du rivage et où l'eau atteint une profondeur d'au moins 2 000 m.

(3) Le navire qui effectue un voyage vers un port, un terminal situé au large ou un mouillage dans le bassin des Grands Lacs, du fleuve Saint-Laurent ou du golfe Saint-Laurent et qui ne peut se conformer au paragraphe (2) parce que cela compromettrait sa stabilité ou sa sécurité ou celle de personnes à bord avise le ministre des Transports dès que possible. Après avoir donné l'avis, le navire peut, durant la période commençant le 1er décembre et se terminant le 1er mai, procéder au renouvellement dans une zone du chenal Laurentien qui est située à l'est du méridien par 63° de longitude ouest et où l'eau atteint une profondeur d'au moins 300 m.

(4) Le navire qui ne peut se conformer au paragraphe (2) parce que cela ne serait pas pratique ou compromettrait sa stabilité ou sa sécurité ou celle des personnes à bord peut procéder au renouvellement dans les zones ci-après des eaux de compétence canadienne :

a) pour un voyage vers un port, un terminal au large ou un mouillage situé sur la côte est du Canada, une zone qui est située au sud du parallèle par 43°30′ de latitude nord et où l'eau atteint une profondeur d'au moins 1 000 m;

b) pour un voyage vers un port, un terminal au large ou un mouillage situé sur la côte ouest du Canada, une zone qui est située à une distance d'au moins 50 milles marins à l'ouest de l'île de Van-

tending from Cape Scott to Cape St. James where the water depth is at least 500 m, with the exception of waters within 50 nautical miles of the Bowie Seamount (53°18′ north latitude and 135°40′ west longitude);

(*c*) in respect of a voyage to a port, offshore terminal or anchorage area in Hudson Bay, an area in Hudson Strait east of 70° west longitude where the water depth is at least 300 m; and

(*d*) in respect of a voyage to a port, offshore terminal or anchorage area in the Higher Arctic, an area in Lancaster Sound east of 80° west longitude where the water depth is at least 300 m.

(5) If the ship is on a voyage to a port, offshore terminal or anchorage area on the west coast of Canada and cannot comply with paragraph (4)(*b*) because it would be impractical or would compromise the stability of the ship or the safety of the ship or of persons on board, the ship may conduct an exchange in an area at least 45 nautical miles west of Vancouver Island and the Queen Charlotte Islands and at least 45 nautical miles west of a line extending from Cape Scott to Cape St. James where the water depth is at least 500 m, with the exception of waters within 50 nautical miles of the Bowie Seamount (53°18′ north latitude and 135°40′ west longitude).

BALLAST WATER EXCHANGE — NON-TRANSOCEANIC NAVIGATION

7. (1) This section applies in respect of a ship that exchanges ballast water and does not, during the course of its voyage, navigate more than 200 nautical miles from

couver et des îles de la Reine-Charlotte et d'au moins 50 milles marins à l'ouest d'une ligne tirée du cap Scott au cap St. James, et où l'eau atteint une profondeur d'au moins 500 m, à l'exception des eaux situées dans un rayon de 50 milles marins du mont sous-marin Bowie (53°18′ de latitude nord et 135°40′ de longitude ouest);

c) pour un voyage vers un port, un terminal au large ou un mouillage situé dans la baie d'Hudson, une zone du détroit d'Hudson qui est située à l'est du méridien par 70° de longitude ouest et où l'eau atteint une profondeur d'au moins 300 m;

d) pour un voyage vers un port, un terminal au large ou un mouillage situé dans l'Extrême-Arctique, une zone du détroit de Lancaster qui est située à l'est du méridien par 80° de longitude ouest et où l'eau atteint une profondeur d'au moins 300 m.

(5) Le navire qui effectue un voyage vers un port, un terminal au large ou un mouillage situé sur la côte ouest du Canada et qui ne peut se conformer à l'alinéa (4)*b*) parce que cela ne serait pas pratique ou compromettrait sa stabilité ou sa sécurité ou celle des personnes à bord peut procéder au renouvellement dans une zone qui est située à une distance d'au moins 45 milles marins à l'ouest de l'île de Vancouver et des îles de la Reine-Charlotte et d'au moins 45 milles marins à l'ouest d'une ligne tirée du cap Scott au cap St. James, et où l'eau atteint une profondeur d'au moins 500 m, à l'exception des eaux situées dans un rayon de 50 milles marins du mont sous-marin Bowie (53°18′ de latitude nord et 135°40′ de longitude ouest).

RENOUVELLEMENT DE L'EAU DE BALLAST — AUTRE NAVIGATION

7. (1) Le présent article s'applique au navire qui procède au renouvellement de l'eau de ballast et qui, au cours de son voyage, ne navigue pas dans une zone qui est située à une distance de plus de 200

shore where the water depth is at least 2000 m.

(2) The ship shall not discharge ballast water that is taken on board the ship outside of waters under Canadian jurisdiction in waters under Canadian jurisdiction unless the ship conducts an exchange before entering Canadian waters in an area situated at least 50 nautical miles from shore where the water depth is at least 500 m.

(3) If the ship cannot comply with subsection (2) because it would be impractical or would compromise the stability of the ship or the safety of the ship or of persons on board, the ship may conduct an exchange in the following areas in waters under Canadian jurisdiction:

(*a*) in respect of a voyage along the east coast of North America, an area south of 43°30′ north latitude where the water depth is at least 1000 m;

(*b*) in respect of a voyage along the west coast of North America, an area situated at least 50 nautical miles west of Vancouver Island and the Queen Charlotte Islands and at least 50 nautical miles west of a line extending from Cape Scott to Cape St. James where the water depth is at least 500 m, with the exception of waters within 50 nautical miles of the Bowie Seamount (53°18′ north latitude and 135°40′ west longitude);

(*c*) in respect of a voyage to a port, offshore terminal or anchorage area in Hudson Bay, an area in Hudson Strait east of 70° west longitude where the water depth is at least 300 m; and

(*d*) in respect of a voyage to a port, offshore terminal or anchorage area in the Higher Arctic, an area in Lancaster Sound east of 80° west longitude where the water depth is at least 300 m.

milles marins du rivage et où l'eau atteint une profondeur d'au moins 2 000 m.

(2) Il est interdit au navire de rejeter dans les eaux de compétence canadienne de l'eau de ballast puisée à l'extérieur de celles-ci sauf s'il a procédé au renouvellement, avant d'entrer dans les eaux de compétence canadienne, dans une zone qui est située à une distance d'au moins 50 milles marins du rivage et où l'eau atteint une profondeur d'au moins 500 m.

(3) Le navire qui ne peut se conformer au paragraphe (2) parce que cela ne serait pas pratique ou compromettrait sa stabilité ou sa sécurité ou celle de personnes à bord peut procéder au renouvellement dans les zones ci-après des eaux de compétence canadienne :

a) pour un voyage le long de la côte est de l'Amérique du Nord, une zone qui est située au sud du parallèle par 43°30′ de latitude nord et où l'eau atteint une profondeur d'au moins 1 000 m;

b) pour un voyage le long de la côte ouest de l'Amérique du Nord, une zone qui est située à une distance d'au moins 50 milles marins à l'ouest de l'île de Vancouver et des îles de la Reine-Charlotte et d'au moins 50 milles marins à l'ouest d'une ligne tirée du cap Scott au cap St. James, et où l'eau atteint une profondeur d'au moins 500 m, à l'exception des eaux situées dans un rayon de 50 milles marins du mont sous-marin Bowie (53°18′ de latitude nord et 135°40′ de longitude ouest);

c) pour un voyage vers un port, un terminal au large ou un mouillage situé dans la baie d'Hudson, une zone du détroit d'Hudson qui située à l'est du méridien par 70° de longitude ouest et où l'eau atteint une profondeur d'au moins 300 m;

d) pour un voyage vers un port, un terminal au large ou un mouillage situé dans l'Extrême-Arctique, une zone du détroit de Lancaster qui est située à l'est du méridien par 80° de longitude ouest

BALLAST WATER EXCHANGE STANDARD

8. (1) A measurement of volumetric exchange or ballast water salinity does not include the sediment that has settled out of ballast water within a ship.

(2) A ship that exchanges ballast water shall attain

(*a*) an efficiency of at least 95 per cent volumetric exchange; and

(*b*) a ballast water salinity of at least 30 parts per thousand, if the exchange of ballast water is conducted in an area not less than 50 nautical miles from shore.

(3) In the case of a ship that exchanges ballast water through flow-through exchange, pumping through three times the volume of each ballast tank shall constitute 95 per cent volumetric exchange, unless the ship provides evidence in its ballast water management plan that pumping through less than three times that volume achieves 95 per cent volumetric exchange.

BALLAST WATER TREATMENT STANDARD

9. A ship that treats ballast water shall attain, after the treatment, ballast water having a viable organism and indicator microbe content less than the following concentrations:

(*a*) 10 viable organisms per cubic metre greater than or equal to 50 µ in minimum dimension;

(*b*) 10 viable organisms per millilitre less than 50 µ and greater than or equal to 10 µ in minimum dimension;

(*c*) one colony-forming unit (cfu) of toxicogenic *Vibrio cholerae* (O1 and

et où l'eau atteint une profondeur d'au moins 300 m.

NORME DE RENOUVELLEMENT DE L'EAU DE BALLAST

8. (1) La mesure du renouvellement volumétrique ou de la salinité de l'eau de ballast ne comprend pas les sédiments provenant de l'eau de ballast qui sont déposés dans un navire.

(2) Le navire qui procède au renouvellement de l'eau de ballast est tenu d'obtenir :

a) d'une part, un renouvellement volumétrique effectif d'au moins 95 pour cent;

b) d'autre part, une salinité de l'eau de ballast d'au moins 30 parties par mille, s'il procède au renouvellement dans une zone située à une distance d'au moins 50 milles marins du rivage.

(3) Dans le cas du navire qui procède au renouvellement par flux continu, le pompage de trois fois le volume de chaque citerne à ballast constitue un renouvellement volumétrique effectif de 95 pour cent à moins que son plan de gestion de l'eau de ballast ne démontre que le pompage de moins de trois fois le volume permet d'obtenir un renouvellement volumétrique de 95 pour cent.

NORME DE TRAITEMENT DE L'EAU DE BALLAST

9. Le navire qui procède au traitement de l'eau de ballast est tenu d'obtenir, après traitement, une eau dont la teneur en organismes viables et en agents microbiens indicateurs est inférieure aux concentrations suivantes :

a) 10 organismes viables par mètre cube dont la dimension minimale est égale ou supérieure à 50 µ;

b) 10 organismes viables par millilitre dont la dimension minimale est inférieure à 50 µ et égale ou supérieure à 10 µ;

c) une unité formant colonies de *Vibrio cholerae* toxigène (O1 et O139) par 100

O139) per 100 mL or one cfu per 1 g (wet weight) zooplankton samples;

(*d*) 250 cfu of *Escherichia coli* per 100 mL; and

(*e*) 100 cfu of intestinal enterococci per 100 mL.

mL ou une unité formant colonies par gramme (masse humide) d'échantillons de zooplancton;

d) 250 unités formant colonies d'*Escherichia coli* par 100 mL;

e) 100 unités formant colonies d'entérocoque intestinal par 100 mL.

SEDIMENT DISPOSAL

10. (1) A ship shall not discharge into waters under Canadian jurisdiction sediment that has settled out of ballast water and comes from the routine cleaning of spaces used to carry ballast water taken on board the ship outside of waters under Canadian jurisdiction.

(2) The ship may carry out the disposal of the sediment at a reception facility.

ÉLIMINATION DES SÉDIMENTS

10. (1) Il est interdit au navire de rejeter dans les eaux de compétence canadienne des sédiments provenant de l'eau de ballast qui se sont déposés et du nettoyage régulier des espaces utilisés pour transporter à bord de l'eau de ballast puisée à l'extérieur des eaux de compétence canadienne.

(2) Le navire peut éliminer les sédiments à une installation de réception.

BALLAST WATER MANAGEMENT PLAN

11. (1) Effective six months after the day on which these Regulations come into force, the owner of a ship shall ensure that the ship carries on board and implements a ballast water management plan setting out safe and effective procedures for ballast water management and containing at least the following:

(*a*) a detailed description of the ballast water management processes that the ship must use;

(*b*) a detailed description of the safety procedures that the crew and the ship must follow with respect to ballast water management;

(*c*) a detailed description of the procedures that the crew must follow with respect to satisfying the requirements of these Regulations and implementing the ballast water management plan;

(*d*) a detailed description of the procedures that the crew must follow for the disposal, at sea or on land, of sediment resulting from the routine cleaning of the spaces used to carry ballast water; and

PLAN DE GESTION DE L'EAU DE BALLAST

11. (1) À compter de six mois après la date d'entrée en vigueur du présent règlement, le propriétaire du navire veille à ce qu'un plan de gestion de l'eau de ballast soit conservé à bord du navire et qu'il soit mis en œuvre. Le plan établit une procédure sûre et efficace pour la gestion de l'eau de ballast et comporte au moins ce qui suit :

a) une description détaillée des processus de gestion de l'eau de ballast que le navire doit utiliser;

b) une description détaillée des consignes de sécurité que le navire et l'équipage doivent suivre relativement à la gestion de l'eau de ballast;

c) une description détaillée des mesures que l'équipage doit prendre pour satisfaire aux exigences du présent règlement et mettre en œuvre le plan de gestion de l'eau de ballast;

d) une description détaillée de la procédure que l'équipage doit suivre pour éliminer, en mer ou à terre, les sédiments provenant du nettoyage régulier des es-

(*e*) a detailed description of the procedures that the crew must follow for coordinating ballast water management with Canadian authorities.

(2) The ballast water management plan shall also include the following:

(*a*) a detailed description of the ballast water system, including the design specifications;

(*b*) for ships that exchange ballast water through flow-through exchange, evidence of the stability of the tank boundary structure in cases where the tank head is equivalent to the full distance to the top of the overflow;

(*c*) for ships that exchange ballast water through sequential exchange, a list of the exchange sequences that take account of the strength, stability, minimum draught forward and propeller immersion, as well as a list of solutions to the problems of sloshing, slamming and ballast inertia;

(*d*) a description of the operational limits, such as wave height for various speeds and headings, for the safe and effective management of ballast water;

(*e*) an identification of the officer on board who is responsible for implementing the plan; and

(*f*) the ballast water reporting form and requirements respecting its delivery, as well as the reporting requirements applicable to the ship under the laws of other jurisdictions.

12. (1) Effective six months after the day on which these Regulations come into force, the owner of a Canadian ship or a ship that could be registered under Part I of the *Canada Shipping Act* shall submit four

paces utilisés pour transporter de l'eau de ballast;

e) une description détaillée de la procédure que doit suivre l'équipage pour coordonner la gestion de l'eau de ballast avec les autorités canadiennes.

(2) Le plan de gestion de l'eau de ballast comporte également les éléments suivants :

a) une description détaillée du système d'eau de ballast, y compris les normes de conception;

b) pour les navires qui renouvellent l'eau de ballast par flux continu, des données démontrant que la structure d'entourage de la citerne est stable dans les cas où la colonne d'eau est équivalente à la pleine distance jusqu'au haut du trop plein;

c) pour les navires qui renouvellent l'eau de ballast par échange séquentiel, une liste des séquences de renouvellement qui tiennent compte de la puissance, de la stabilité, du tirant d'eau avant minimum et de l'immersion du propulseur, de même qu'une liste de solutions aux problèmes liés au ballottement, au martèlement et à l'inertie du ballast;

d) une description des limites opérationnelles, tels les creux de vague acceptables pour divers caps et vitesses, permettant d'assurer une gestion sûre et efficace de l'eau de ballast;

e) la mention de l'officier de bord chargé de la mise en œuvre du plan de gestion de l'eau de ballast;

f) le formulaire de rapport sur l'eau de ballast et les exigences relatives à sa transmission, de même que les exigences en matière de rapport applicables au navire en vertu du droit d'une autre juridiction.

12. (1) À compter de six mois après la date d'entrée en vigueur du présent règlement, le propriétaire d'un navire canadien ou d'un navire qui pourrait être immatriculé sous le régime de la partie I de la *Loi sur la marine marchande du Canada* présente au

copies of its ballast water management plan to the Board.

(2) If any change is made to the ship or its operations that affects its ballast water management plan, four copies of an amended ballast water management plan shall, as soon as possible, be submitted to the Board.

EXCEPTIONAL CIRCUMSTANCES

13. (1) If a ship that is required to manage ballast water in accordance with subsection 4(2) or (3) or a ship that is not required to manage ballast water in accordance with section 5 cannot comply with these Regulations or its ballast water management plan because of an equipment failure or because it would compromise the stability of the ship or the safety of the ship or of persons on board, the ship shall notify the Minister of Transport at least 96 hours before entry into the territorial sea and provide updates on the status of the situation in the manner provided in section 5.1 of TP 13617.

(2) Despite subsection (1), a ship that is unable to give 96 hours' notice before entry into the territorial sea shall notify the Minister of Transport as soon as it becomes possible to do so.

(3) After being notified, the Minister of Transport shall, in consultation with the master of the ship, determine the measures that, without compromising the safety of the ship or of persons on board, would reduce as much as practicable the likelihood of the introduction of harmful aquatic organisms or pathogens into waters under Canadian jurisdiction.

(4) In determining the measures that should be implemented, the Minister of Transport shall take the following criteria into account:

(*a*) the information provided to the Minister of Transport by the master of the ship respecting the nature of the ballast

Bureau quatre exemplaires de son plan de gestion de l'eau de ballast.

(2) Lorsqu'une modification apportée au navire ou à son exploitation a une incidence sur son plan de gestion de l'eau de ballast, quatre exemplaires du plan de gestion de l'eau de ballast modifié sont présentés au Bureau dès que possible.

CIRCONSTANCES EXCEPTIONNELLES

13. (1) Le navire qui est tenu de gérer son eau de ballast en conformité avec les paragraphes 4(2) ou (3), ou le navire qui n'est pas tenu de gérer son eau de ballast en conformité avec à l'article 5, qui ne peut se conformer au présent règlement ni à son plan de gestion de l'eau de ballast en raison d'une défaillance de l'équipement ou parce que cela compromettrait la stabilité ou la sécurité du navire ou celle des personnes à bord en avise le ministre des Transports au moins 96 heures avant d'entrer dans la mer territoriale et le tient informé de l'évolution de la situation de la manière prévue à l'article 5.1 de la TP 13617.

(2) Malgré le paragraphe (1), le navire qui est incapable de donner un préavis de 96 heures avant d'entrer dans la mer territoriale en avise le ministre des Transports dès qu'il lui devient possible de le faire.

(3) Après réception de l'avis, le ministre des Transports détermine, en consultation avec le capitaine du navire, les mesures qui, sans compromettre la sécurité du navire ni celle des personnes à son bord, permettraient de réduire autant que possible la probabilité que des agents pathogènes ou des organismes aquatiques nuisibles soient introduits dans les eaux de compétence canadienne.

(4) Pour déterminer les mesures qu'il convient de mettre en œuvre, le ministre des Transports tient compte des facteurs suivants :

a) les renseignements que lui fournit le capitaine du navire sur la nature de l'eau de ballast qu'il transporte, y compris sa

water it is carrying, including its origin and the operations previously performed on the ballast water on board the ship;

(*b*) possible operations that would, taking into account prevailing sea conditions, remove or render harmless harmful aquatic organisms and pathogens within the ballast water taken onto the ship outside waters under Canadian jurisdiction or that would minimize their uptake in that ballast water or their discharge with that ballast water into waters under Canadian jurisdiction;

(*c*) the feasibility of implementing the possible operations, taking into account their compatibility with the design and operation of the ship; and

(*d*) the consequences of the possible operations on the safety of the ship and of persons on board.

(5) The ship shall implement the measures determined by the Minister of Transport, which shall include one or more of the following:

(*a*) the retention of some or all of the ballast water on board the ship while it is in waters under Canadian jurisdiction;

(*b*) the exchange of the ballast water or a portion of it in the location indicated, using the procedures specified;

(*c*) the discharge of the ballast water or a portion of it in the location indicated, using the procedures specified; and

(*d*) the treatment of the ballast water or a portion of it on board the ship in accordance with a specified method.

(6) The ship shall provide all reasonable assistance that the Minister of Transport may request.

REPORTING

14. (1) The master of a ship bound for a port, offshore terminal or anchorage area in Canada shall submit to the Minister of

provenance et les opérations dont elle a fait l'objet au préalable à bord du navire;

b) les opérations possibles qui permettraient, compte tenu de l'état de la mer, d'éliminer ou de rendre inoffensifs les agents pathogènes ou les organismes aquatiques nuisibles présents dans l'eau de ballast puisée à l'extérieur des eaux de compétence canadienne ou de réduire au minimum leur introduction dans l'eau de ballast ou leur rejet avec celle-ci dans les eaux de compétence canadienne;

c) la faisabilité d'exécuter les opérations possibles, compte tenu de leur compatibilité avec la conception et l'exploitation du navire;

d) les conséquences des opérations possibles sur la sécurité du navire et des personnes à son bord.

(5) Le navire est tenu de mettre en œuvre les mesures déterminées par le ministre des Transports, lesquelles comportent une ou plusieurs des actions suivantes :

a) la conservation de la totalité ou d'une partie de l'eau de ballast à bord du navire pendant qu'il se trouve dans les eaux de compétence canadienne;

b) le renouvellement de la totalité ou d'une partie de l'eau de ballast à l'endroit indiqué, au moyen de la procédure précisée;

c) le rejet de la totalité ou d'une partie de l'eau de ballast à l'endroit indiqué, au moyen de la procédure précisée;

d) le traitement de la totalité ou d'une partie de l'eau de ballast à bord du navire en conformité avec une méthode précisée.

(6) Le navire est tenu de fournir au ministre des Transports toute l'assistance raisonnable qu'il peut demander.

RAPPORTS

14. (1) Le capitaine du navire qui se dirige vers un port, un terminal situé au large ou un mouillage au Canada présente au mi-

Transport a completed Ballast Water Reporting Form in the manner provided in section 5.2 of TP 13617 as soon as possible after a management process is performed or a measure determined by the Minister is implemented.

(2) A copy of every submitted Ballast Water Reporting Form shall be carried on board the ship for 24 months after it is submitted.

nistre des Transports le Formulaire pour l'eau de ballast rempli de la manière prévue à l'article 5.2 de la TP 13617 dès que possible après l'exécution d'un processus de gestion ou la mise en œuvre d'une mesure déterminée par le ministre.

(2) Une copie de chaque Formulaire pour l'eau de ballast présenté est conservée à bord pendant une période de 24 mois après sa présentation.

COMING INTO FORCE

15. These Regulations come into force on the day on which they are registered.

ENTRÉE EN VIGUEUR

15. Le présent règlement entre en vigueur à la date de son enregistrement.

APPENDIX G

PCT Pre-Start Ship/Shore Safety Checklist

PACIFIC COAST TERMINALS CO. LTD.
SULPHUR/POTASH LOADING FACILITY
PRE-START SHIP/SHORE SAFETY CHECKLIST

SHIP NAME:_____

DATE OF ARRIVAL:_____

Prior to commencing ship loading operations, the Master/Chief Officer or Ship Agent on their behalf must read and check √ each item acknowledging compliance with the following statements: **(Guidelines for completion are on the reverse)**

	Acknowledged √
1. Vessel Lines Vessel crews will ensure lines are attended and taut at all times	
2. Radar Operation Operation of ships radar is prohibited during vessel loading	
3. Gangways & Nets The ship must provide safe gangway access for PCT personnel. Gangway nets shall extend on both sides of an access ladder or gangway for a distance of 1.8 meters and be draped under the gangway from the side of the ship and attached to the dock below. Gangway nets shall be kept taut at all times and have hand lines all the way along the gangway. Where a full railed accommodation ladder or gangway is used, the safety net shall extend from the top rail under the accommodation ladder or gangway.	
4. Portable Gangway Rental In the event that the vessel requires rental of the shore based gangway as a means of access, the attached agreement must be signed prior to utilization. A tariff rate will apply as per the attached Gangway Rental Agreement.	
5. Hatch Movement Opening or closing of active hatches will not be performed during loading operations.	
6. Crane & Gear Movement Movement of on board cranes or gear that could interfere with ship loading must be communicated to the Ship loading Foreman. When not in use cranes must be properly secured.	
7. Cutting & Welding Cutting & welding is not permitted without the expressed permission of PCT.	
8. Bunkering Bunkering of fuel and lube oils must be done in accordance with Vancouver Port Authority "Bunker Oil Transfer Checklist" guidelines.	
9. Entry & Exit To Shore Vehicle traffic to and from vessels berthed at PCT will be in accordance with the facility security policy. Access requirements will vary with current security level. Pedestrian traffic to and from the vessel is not permitted. If required, transportation for ships crew will be provided to and from the terminal gate. Hi-Viz vests, CSA approved work boots and Hard hats are mandatory for all vessel personnel working on the berth.	
10. Drugs & Alcohol No ship crewmembers shall sell, consume, distribute, possess or be under the influence of any drug or alcohol on PCT premises	
11. Noise Any activity generating noise exceeding 45 (dB) must cease between the hours 22:00 - 07:00	
12. Discharging Ballast The ship will arrange to discharge ballast without causing delays during loading	
13. Discharging Dunnage and Garbage The ship crew shall ensure that dunnage or garbage is not deposited at the terminal.	
14. Potable Water Potable water is available at the berth and is charged out as per the current tariff rate. Water consumption is based on marine survey data, (Initial tank dip versus final survey).	
15. Water Depths Depth of Water at Lowest Tide on Berth #2 = 12.3 meters. Any over-the-tide conditions and operations are to be managed by the ship and must be pre-planned, understood, and agreed to by the terminal in advance.	
16. Emergency Preparedness In the event of an emergency, the Master of the Ship must ensure that a sufficient number of crew remain on board and that the Ship is ready to vacant the berth on short notice.	
17. Shiploader Information Explained to Ship that Shiploader is able to shuttle and slew over to each hatch. Average Loading Rate = 3000 - 5000 MT/Hour	
18. Cargo Loading In is understood that any changes to the loading plan must not be made unless there has been prior consultation and agreement with PCT. Trim the cargo to the Masters requirements and maintain a record of the weight of the cargo loaded. Sulphur loading does not stop in the event of heavy rain or snowfall.	
19. Loading of Stores The loading of Stores, Barrels, or other equipment via the Vessels crane, must be done with loads securely fastened, in such a way that the aforementioned will not pose a hazard to people, the environment, or shore equipment.	
20. Communication The above information will be communicated to all pertinent crewmembers. Ship/Terminal Communication Method = Vessel Agent Ship contact phone number (if available): _____. Ship Loading Foreman: 604- 931-9213 – Ext 1 Duty Manager: 604-931-9242	

The Master/Chief Officer or Ships Agent on their behalf must sign this checklist acknowledging they understand and will comply with these terminal requirement during loading operations.

Master/Chief Officer (or on their behalf Ships Agent):

Name:_____

Signature:_____

Terminal Representative:

Name:_____

Signature:_____

Ship/Shore Safety Checklist

The purpose of the Ship/Shore Safety Checklist is to improve working relationships between ships and Pacific Coast Terminal Co. Ltd., and thereby improving the safety of operation. Misunderstandings can occur and mistakes will be made when ships' officers do not fully understand the intentions of the terminal personnel, and the same applies when terminal personnel do not understand what the ship can and cannot safely do.

Completing the checklist before the ship starts loading assures that the ship is fully aware of the berthing requirements before the ship arrives. The numbering of the guidelines below correspond to the question numbers on the checklist.

1. Ships should remain well secured in their moorings. Movement of the ship should be prevented by keeping the mooring lines taut; therefore, attention should be given to the movement of ships caused by tides, currents and the loading operation in progress.

2. Rule 209 of the B.C. Maritime Employers Association & International Longshoremen's and Warehousemen's Union safety regulations states that radar shall not operate during loading operations.

3 & 4 The means of access between the ship and dock must be safe and legal and must be provided by the ship. It should consist of an appropriate gangway or accommodation ladder with a properly fastened safety net underneath. A rental gangway is available from the terminal in the event the vessel equipment is not compatible with the berth configuration. Access equipment must be tended by ship personnel to ensure a safe means of access and egress for terminal personnel. It should be well illuminated during hours of darkness.

5. Communication should be maintained between the Terminal's Ship Foreman and the Captain or Ships Duty Officers. This will ensure the ship hatch movements are monitored and do not interfere with operation and safety of the Shiploader. Hatches must be secured when in the open position.

6. The controlling personnel on ship and terminal must maintain effective communication with each other. The objective is to prevent development of hazardous situations such as use of ship cranes or gear, which could interfere with ship loading operations.

7. Because of the nature of sulphur, hot work is not permitted without the expressed permission of PCT. Hot work is defined as welding, burning or use of naked flame on the vessel that could cause a fire.

8. Bunkering at PCT berth must be done in accordance with Vancouver Port Authority "Bunker Oil Transfer Checklist" guidelines.

9. Ship personnel exiting or accessing the PCT site must use the main roadways only. PCT has many hazardous operations that ship personnel are unaware of. Cutting across any rail track is extremely dangerous and prohibited.

10. PCT is a Zero Tolerance Workplace for Drugs & Alcohol

11. The City of Port Moody bylaws prohibit sound levels exceeding 45 (dB) at the site perimeter between the hours of 22:00 and 07:00.

12. PCT's Shiploader has the potential to load 5000 Mt/hr. Therefore ships should review their ballast discharge requirements to ensure they do not cause loading delays.

13. Canadian Food Inspection Agency (CFIA) regulations control import of wood utilized for pallets, dunnage or crating. The purpose of the regulation is to curtail entry of non-native insects and control the health of native plants.

14. Potable Water consumption is calculated from the marine survey documents. The final survey tank dip minus the initial dip determines the volume of potable water loaded. The vessel will be invoiced as per the current tariff rate.

15. It is the Ship's responsibility to ensure that the Ship is loaded and de-ballasted in a manner that does not put it at risk of touching bottom. Furthermore, the Master of the Ship understands all draft restrictions and will ensure the vessel will remain a float while at berth. Any Over-the-Tide Operations and procedures will be agreed to in advanced and discussed with the Foreman prior to the commencing of loading.

16. In the event of an emergency, the Master of the Ship must ensure that a sufficient number of crew remain on board and that the Ship is ready to vacant the berth on short notice.

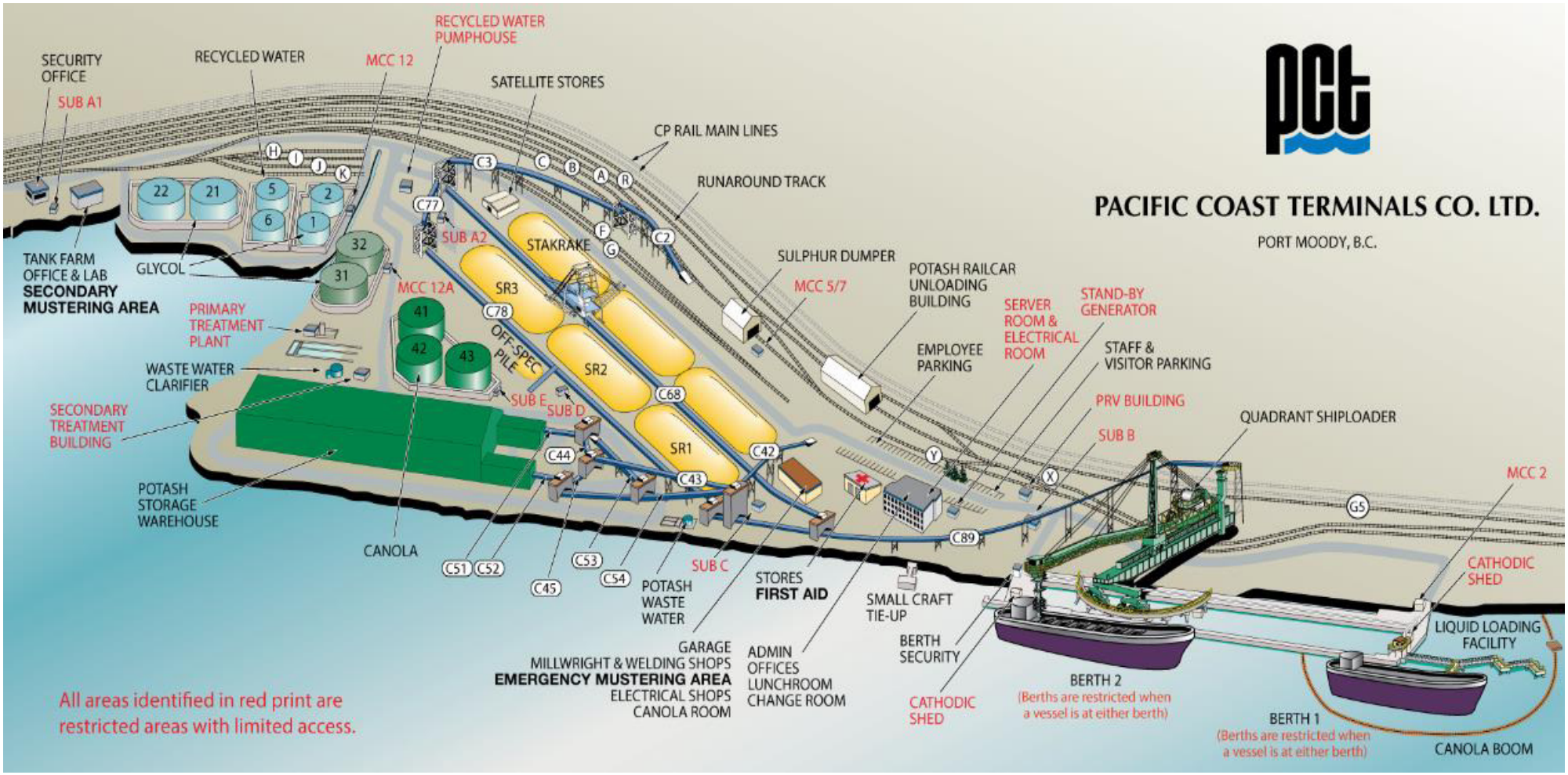
17. The maximum amount of Sulphur that can physically fit onto the conveyor belt before it overflows is 8000 MT/hour. PCT's target average loading rate is 5000 MT/hour, however there can be periods of time in which the rate may exceed 5000 MT/hr.

18. Excessive wind shutdown guideline: Refer to Emergency Shiploader Shutdown Procedures for more detail. **After the Shiploader has been parked for winds greater than 40 mph:** PCT Ship Foreman will monitor the wind speed graph on the RSView screen. If the wind speed is trending downward for 30 minutes and there have been no gusts recorded beyond 40mph, the Ship Foreman will initiate start up procedures. The Ship Foreman will then resume ship-loading operations.

19. This document is only effective if the information on it is communicated to the appropriate ship personnel. It is the responsibility of the Ship's Agent and Ship Captain to ensure crewmembers follow these guidelines.

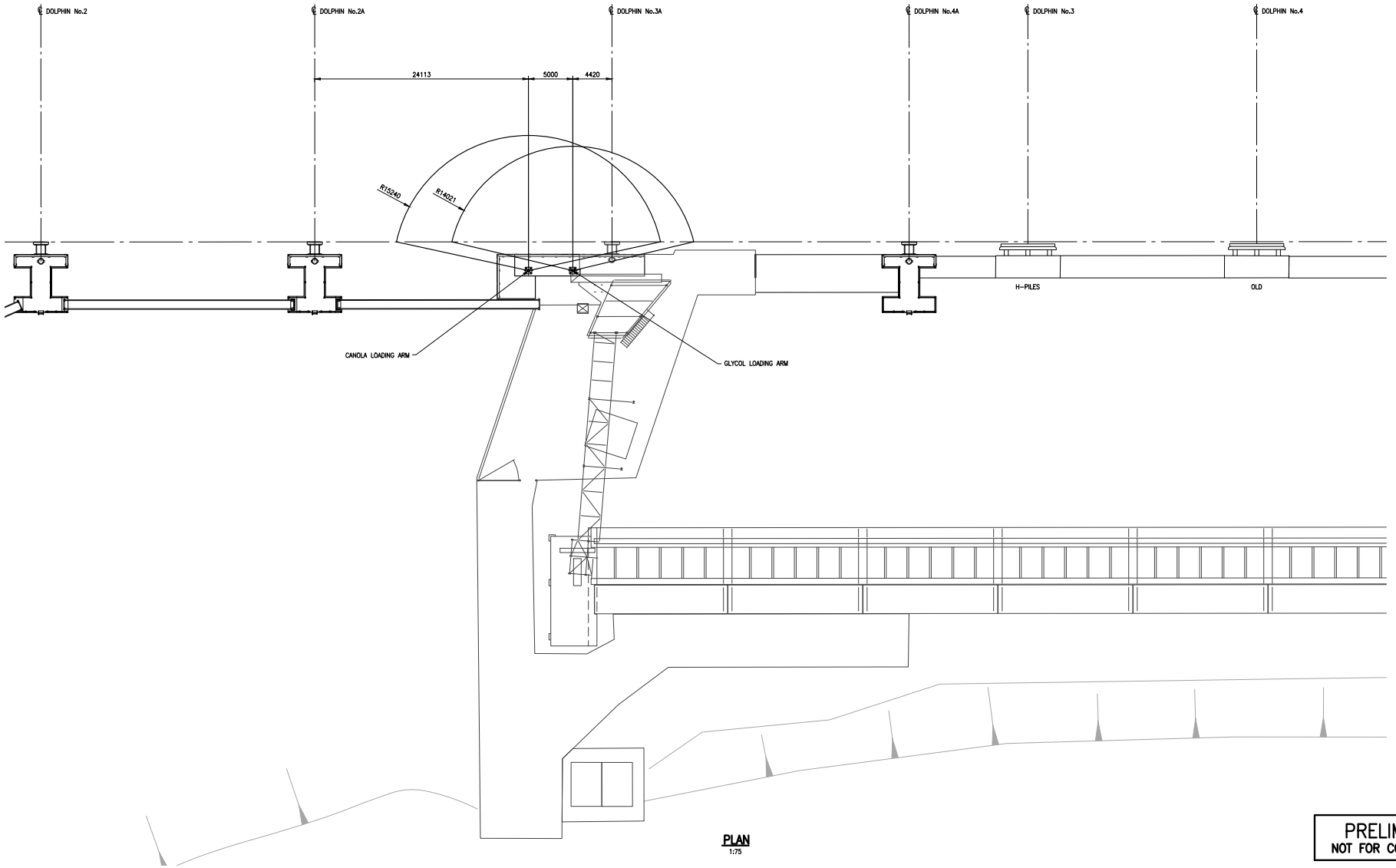
APPENDIX H

Muster Location Map


PACIFIC COAST TERMINALS CO. LTD.
PORT MOODY, B.C.
SECURITY OFFICE
SUB A1
RECYCLED WATER
RECYCLED WATER PUMPHOUSE
MCC 12
SATELLITE STORES
CP RAIL MAIN LINES
RUNAROUND TRACK
TANK FARM OFFICE & LAB
SECONDARY MUSTERING AREA
GLYCOL
SUB A2
STAKRAKE
SULPHUR DUMPER
MCC 5/7
POTASH RAILCAR UNLOADING BUILDING
SERVER ROOM & ELECTRICAL ROOM
STAND-BY GENERATOR
EMPLOYEE PARKING
STAFF & VISITOR PARKING
MCC 12A
PRIMARY TREATMENT PLANT
WASTE WATER CLARIFIER
SECONDARY TREATMENT BUILDING
OFF-SPEC PILE
SR3
SR2
SR1
SUB E
SUB D
PRV BUILDING
SUB B
QUADRANT SHIPLOADER
MCC 2
POTASH STORAGE WAREHOUSE
CANOLA
SUB C
POTASH WASTE WATER
STORES
FIRST AID
SMALL CRAFT TIE-UP
CATHODIC SHED
LIQUID LOADING FACILITY
GARAGE
MILLWRIGHT & WELDING SHOPS
EMERGENCY MUSTERING AREA
ELECTRICAL SHOPS
CANOLA ROOM
ADMIN
OFFICES
LUNCHROOM
CHANGE ROOM
BERTH SECURITY
CATHODIC SHED
BERTH 2
(Berths are restricted when a vessel is at either berth)
BERTH 1
(Berths are restricted when a vessel is at either berth)
CANOLA BOOM
All areas identified in red print are restricted areas with limited access.

APPENDIX I

Loading Arm Reach General Arrangement



PLAN
1:75

PRELIMINARY
NOT FOR CONSTRUCTION

REF.	DWG. NUMBER	DESCRIPTION
REFERENCE DRAWINGS / DESIGN STANDARDS		

CLIENT PROJECT No: –

CWA ACAD FILE: 15857-000-GA-002-003.DWG

No.	YYYY-MM-DD	DESCRIPTION	DRAWN	DWG. CHECK	DESIGN	DESIGN CHECK	APPROVED
P1	2017-06-26	ISSUED FOR INFORMATION	CPL	–	RB	–	CAP

ISSUES / REVISIONS * HAND INITIALS ON FILE

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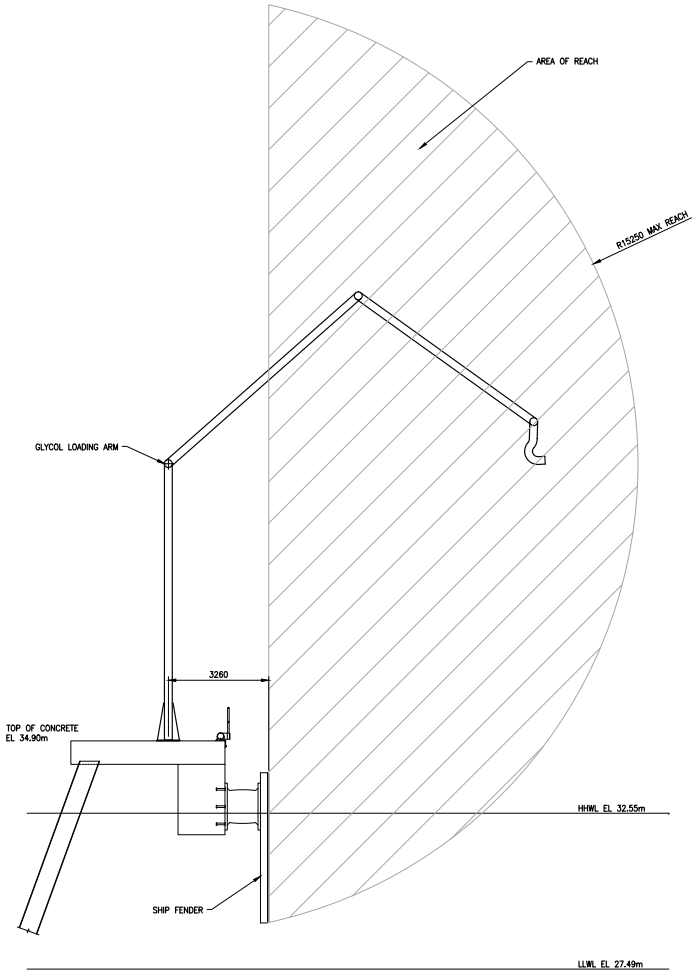
DRAWN BY: LGJ/CPL SCALE: AS NOTED

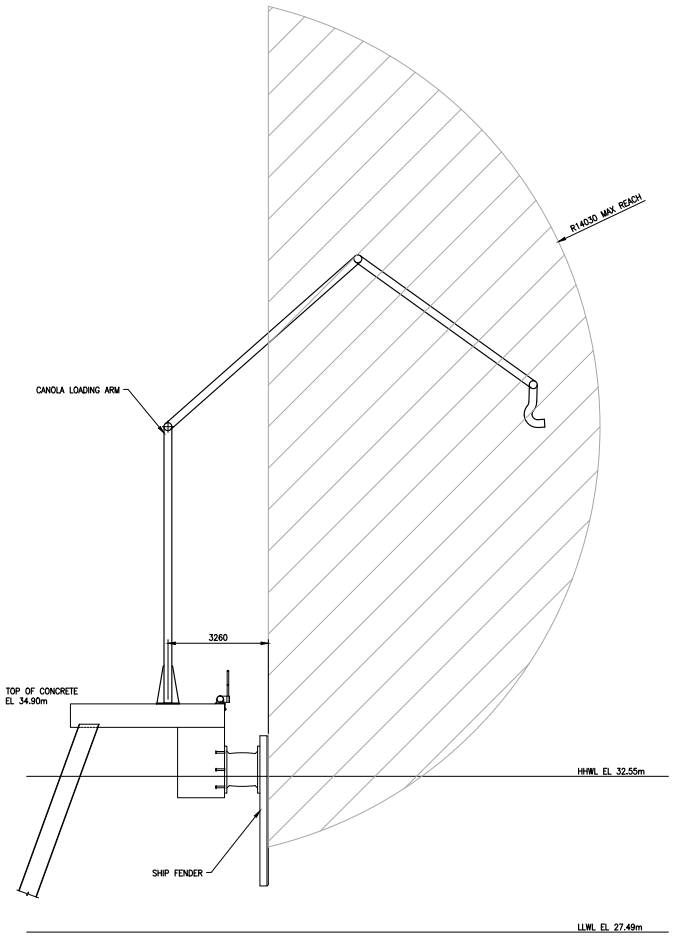
PACIFIC COAST TERMINALS LTD.
PORT MOODY, BC
MARINE INSPECTION

LOADING ARM
PLAN

PROJECT No.	AREA	DEPT.	DWG. No.	REV.
15857	000	GA	002	P1



ELEVATION
1:75



ELEVATION
1:75

PRELIMINARY
NOT FOR CONSTRUCTION

REF.	DWG. NUMBER	DESCRIPTION

REFERENCE DRAWINGS / DESIGN STANDARDS

CLIENT PROJECT No: –

CWA ACAD FILE: 15857-000-GA-002-003.DWG

No.	YYYY-MM-DD	DESCRIPTION	DRAWN	DWG. CHECK	DESIGN	DESIGN CHECK	APPROVED
P1	2017-06-26	ISSUED FOR INFORMATION	CPL	–	RB	–	CAP

ISSUES / REVISIONS * HAND INITIALS ON FILE

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DRAWN BY: LGJ/CPL SCALE: AS NOTED

PACIFIC COAST TERMINALS LTD.
PORT MOODY, BC
MARINE INSPECTION

LOADING ARM ELEVATIONS

PROJECT No.	AREA	DEPT.	DWG. No.	REV.
15857	000	GA	003	P1

APPENDIX J

Safety Data Sheets for Commodities Handled

- Ethylene Glycol Polyester Grade
- Crude, Super De-Gummed Canola Oil
- Commercially Formed Solid Elemental Sulphur
- Potassium Chloride

MEGlobal Canada Inc. encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. Product and Company Identification

Product Name
ETHYLENE GLYCOL POLYESTER GRADE

COMPANY IDENTIFICATION
MEGlobal Canada Inc.
Suite 2100
450 - 1st Street S.W.
Calgary, AB T2P 5H1
Canada

For MSDS updates and Product Information: 888-610-9048

Prepared By: Prepared for use in Canada by EH&S, Hazard Communications.
Revision 2012.12.05
Print Date: 2/4/2013

Customer Information Number: 888-610-9048
http://www.meglobal.biz/
SDSQuestion@dow.com

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: 989-636-4400
Local Emergency Contact: 989-636-4400

2. Hazards Identification

Emergency Overview
Color: Colorless
Physical State: Liquid.
Odor: Sweet
Hazards of product:

WARNING! Harmful or fatal if swallowed. May cause eye irritation. Isolate area.

Potential Health Effects
Eye Contact: May cause slight eye irritation. Corneal injury is unlikely. Vapor or mist may cause eye irritation.

Skin Contact: Brief contact is essentially nonirritating to skin. Prolonged contact may cause slight skin irritation with local redness. Repeated contact may cause skin irritation with local redness.
Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts. Repeated skin exposure to large quantities may result in absorption of harmful amounts. Massive contact with damaged skin or of material sufficiently hot to burn skin may result in absorption of potentially lethal amounts.
Inhalation: At room temperature, exposure to vapor is minimal due to low volatility. With good ventilation, single exposure is not expected to cause adverse effects. If material is heated or areas are poorly ventilated, vapor/mist may accumulate and cause respiratory irritation and symptoms such as headache and nausea.
Ingestion: Oral toxicity is expected to be moderate in humans due to ethylene glycol even though tests with animals show a lower degree of toxicity. Ingestion of quantities (approximately 65 mL (2 oz.) for diethylene glycol or 100 mL (3 oz.) for ethylene glycol) has caused death in humans. May cause nausea and vomiting. May cause abdominal discomfort or diarrhea. Excessive exposure may cause central nervous system effects, cardiopulmonary effects (metabolic acidosis), and kidney failure.
Aspiration hazard: Based on physical properties, not likely to be an aspiration hazard.
Effects of Repeated Exposure: Observations in humans include: Nystagmus (involuntary eye movement). In animals, effects have been reported on the following organs: Kidney. Liver.
Birth Defects/Developmental Effects: Based on animal studies, ingestion of very large amounts of ethylene glycol appears to be the major and possibly only route of exposure to produce birth defects. Exposures by inhalation or skin contact, the primary routes of occupational exposure, had minimal effect on the fetus, in animal studies.
Reproductive Effects: Ingestion of large amounts of ethylene glycol has been shown to interfere with reproduction in animals.

3. Composition/information on ingredients

Component	CAS #	Amount W/W
Ethylene glycol	107-21-1	> 99.0 %

Amounts are presented as percentages by weight.

4. First-aid measures

Description of first aid measures

General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Inhalation: Move person to fresh air; if effects occur, consult a physician.
Skin Contact: Immediately flush skin with water while removing contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Destroy contaminated leather items such as shoes, belts, and watchbands. Safety shower should be located in immediate work area.
Eye Contact: Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.
Ingestion: Do not induce vomiting. Seek medical attention immediately. If person is fully conscious give 1 cup or 8 ounces (240 ml) of water. If medical advice is delayed and if an adult has swallowed several ounces of chemical, then give 3-4 ounces (1/3-1/2 Cup) (90-120 ml) of hard liquor such as 80 proof whiskey. For children, give proportionally less liquor at a dose of 0.3 ounce (1 ½ tsp.) (8 ml) liquor for each 10 pounds of body weight, or 2 ml per kg body weight [e.g., 1.2 ounce (2 1/3 tbsp.) for a 40 pound child or 36 ml for an 18 kg child].

Most important symptoms and effects, both acute and delayed

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), no additional symptoms and effects are anticipated.

Indication of immediate medical attention and special treatment needed

If several ounces (60 - 100 ml) of ethylene glycol have been ingested, early administration of ethanol may counter the toxic effects (metabolic acidosis, renal damage). Consider hemodialysis or peritoneal dialysis & thiamine 100 mg plus pyridoxine 50 mg intravenously every 6 hours. If ethanol is used, a therapeutically effective blood concentration in the range of 100 - 150 mg/dl may be achieved by a rapid loading dose followed by a continuous intravenous infusion. Consult standard literature for details of treatment. 4-Methyl pyrazole (Antizol®) is an effective blocker of alcohol dehydrogenase and should be used in the treatment of ethylene glycol (EG), di- or triethylene glycol (DEG, TEG), ethylene glycol butyl ether (EGBE), or methanol intoxication if available. Fomepizole protocol (Brent, J. et al., New England Journal of Medicine, Feb. 8, 2001, 344:6, p. 424-9): loading dose 15 mg/kg intravenously, follow by bolus dose of 10 mg/kg every 12 hours; after 48 hours, increase bolus dose to 15 mg/kg every 12 hours. Continue fomepizole until serum methanol, EG, DEG, TEG or EGBE are undetectable. The signs and symptoms of poisoning include anion gap metabolic acidosis, CNS depression, renal tubular injury, and possible late stage cranial nerve involvement. Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. In severe poisoning, respiratory support with mechanical ventilation and positive end expiratory pressure may be required. Maintain adequate ventilation and oxygenation of the patient. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. If burn is present, treat as any thermal burn, after decontamination. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. Fire Fighting Measures

Suitable extinguishing media

Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Extinguishing Media to Avoid: Do not use direct water stream. May spread fire.

Special hazards arising from the substance or mixture

Hazardous Combustion Products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide. Nitrogen oxides.

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.

Special Protective Equipment for Firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

See Section 9 for related Physical Properties

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to Section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Collect in suitable and properly labeled containers. Small spills: Absorb with materials such as: Cat litter. Sand. Sawdust. Zorb-all®. Hazorb®. Large spills: Dike area to contain spill. Pump into suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

7. Handling and Storage

Handling

General Handling: Do not swallow. Avoid contact with eyes. Wash thoroughly after handling. Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Storage

Do not store near food, foodstuffs, drugs or potable water supplies. Additional storage and handling information on this product may be obtained by calling your sales or customer service contact. Ask for a product brochure.

8. Exposure Controls / Personal Protection

Exposure Limits

Component	List	Type	Value
Ethylene glycol	CAD ON OEL	CEV	100 mg/m3
	ACGIH	Ceiling Aerosol.	100 mg/m3
	CAD BC OEL	TWA Particulate.	10 mg/m3
	CAD BC OEL	CEILING Vapor.	50 ppm
	CAD BC OEL	CEILING Aerosol.	100 mg/m3
	CAD BC OEL	STEL Particulate.	20 mg/m3
	OEL (QUE)	CEILING Vapor and mist.	127 mg/m3 50 ppm
	OEL (QUE)	Vapor and mist.	Recirculation prohibited
	CAD AB OEL	CEILING	100 mg/m3

Consult local authorities for recommended exposure limits.

Personal Protection

Eye/Face Protection: Use safety glasses (with side shields). If there is a potential for exposure to particles which could cause eye discomfort, wear chemical goggles. If exposure causes eye discomfort, use a full-face respirator.

Skin Protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task. When handling hot material, protect skin from thermal burns as well as from skin absorption.

Hand protection: If hands are cut or scratched, use gloves chemically resistant to this material even for brief exposures. Use gloves with insulation for thermal protection, when needed. Examples of preferred glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl alcohol ("PVA"). Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited

to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Respiratory Protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

Ingestion: Avoid ingestion of even very small amounts; do not consume or store food or tobacco in the work area; wash hands and face before smoking or eating.

Engineering Controls

Ventilation: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

9. Physical and Chemical Properties

Appearance	
Physical State	Liquid.
Color	Colorless
Odor	Sweet
Odor Threshold	No test data available
pH	9 *Literature*
Melting Point	Not applicable to liquids
Freezing Point	-13 °C *Literature*
Boiling Point (760 mmHg)	> 197 °C *Literature* .
Flash Point - Closed Cup	111 °C *ASTM D56*
Evaporation Rate (Butyl Acetate = 1)	0.01 *Literature*
Flammability (solid, gas)	No
Flammable Limits In Air	**Lower**: 3.2 %(V) *Literature* **Upper**: 15.3 %(V) *Literature*
Vapor Pressure	0.09 mmHg @ 20 °C *Literature*
Vapor Density (air = 1)	2.1 *Literature*
Specific Gravity (H2O = 1)	1.115 20 °C/20 °C *Literature*
Solubility in water (by weight)	100 % *Literature*
Partition coefficient, n-octanol/water (log Pow)	-1.36 *Measured*
Autoignition Temperature	398 °C *Literature*
Decomposition Temperature	No test data available
Explosive properties	no data available
Oxidizing properties	no data available
Solubility in Solvents	not applicable
Molecular Weight	62 g/mol *Literature*
Molecular Formula	HOC2H4OH
Henry's Law Constant (H)	8.05E-09 atm*m3/mole; 25 °C Estimated.

10. Stability and Reactivity

Reactivity

No dangerous reaction known under conditions of normal use.

Chemical stability

Thermally stable at recommended temperatures and pressures.

Possibility of hazardous reactions

Polymerization will not occur.

Conditions to Avoid: Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible Materials: Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

Hazardous decomposition products

Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Aldehydes. Alcohols. Ethers.

11. Toxicological Information

Acute Toxicity

Ingestion

For Ethylene glycol: Lethal Dose, Human, adult 3 Ounces
LD50, rat, male and female 7,712 mg/kg

Dermal

LD50, rabbit > 10,600 mg/kg
LD50, mouse, male and female > 3,500 mg/kg

Inhalation

LC50, 6 h, Aerosol, rat, male and female > 2.5 mg/l

Eye damage/eye irritation

May cause slight eye irritation. Corneal injury is unlikely. Vapor or mist may cause eye irritation.

Skin corrosion/irritation

Brief contact is essentially nonirritating to skin. Prolonged contact may cause slight skin irritation with local redness. Repeated contact may cause skin irritation with local redness.

Sensitization

Skin

Did not cause allergic skin reactions when tested in guinea pigs.

Respiratory

No relevant data found.

Repeated Dose Toxicity

Observations in humans include: Nystagmus (involuntary eye movement). In animals, effects have been reported on the following organs: Kidney. Liver.

Chronic Toxicity and Carcinogenicity

Ethylene glycol did not cause cancer in long-term animal studies.

Developmental Toxicity

Based on animal studies, ingestion of very large amounts of ethylene glycol appears to be the major and possibly only route of exposure to produce birth defects. Exposures by inhalation or skin contact, the primary routes of occupational exposure, had minimal effect on the fetus, in animal studies.

Reproductive Toxicity

Ingestion of large amounts of ethylene glycol has been shown to interfere with reproduction in animals.

Genetic Toxicology

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

12. Ecological Information

Toxicity

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity

LC50, Pimephales promelas (fathead minnow), static test, 96 h: 72,860 mg/l

Aquatic Invertebrate Acute Toxicity

EC50, Daphnia magna (Water flea), static test, 48 h, immobilization: > 100 mg/l

Aquatic Plant Toxicity

ErC50, Pseudokirchneriella subcapitata (green algae), Growth rate inhibition, 96 h: 6,500 - 13,000 mg/l

Toxicity to Micro-organisms
EC50, OECD 209 Test; activated sludge, 30 min: 225 mg/l

Persistence and Degradability

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is ultimately biodegradable (reaches > 70% biodegradation in OECD test(s) for inherent biodegradability).

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
90 - 100 %	10 d	OECD 301A Test	pass
90 %	1 d	OECD 302B Test	Not applicable

Theoretical Oxygen Demand: 1.29 mg/mg

Bioaccumulative potential

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient, n-octanol/water (log Pow): -1.36 Measured

Mobility in soil

Mobility in soil: Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process., Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient, soil organic carbon/water (Koc): 1 Estimated.
Henry's Law Constant (H): 8.05E-09 atm*m3/mole; 25 °C Estimated.
Distribution in Environment: Mackay Level 1 Fugacity Model:

Air	Water.	Biota	Soil	Sediment
0.03 %	100 %	0 %	0 %	0 %

13. Disposal Considerations

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Recycler. Reclaimer. Incinerator or other thermal destruction device.

14. Transport Information

TDG Small container
NOT REGULATED

TDG Large container
NOT REGULATED

IMDG
NOT REGULATED

ICAO/IATA
NOT REGULATED

15. Regulatory Information

Hazardous Products Act Information: CPR Compliance

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

Hazardous Products Act Information: WHMIS Classification

D2A	Material is Teratogenic, Embryotoxic, or Fetotoxic

Hazardous Products Act Information: Hazardous Ingredients

This product contains the following ingredients which are Controlled Products and/or are on the Ingredient Disclosure List (Canadian HPA Section 13 and 14).

Component	**CAS #**	**Amount W/W**
Ethylene glycol	107-21-1	>= 99.0 %

16. Other Information

Recommended Uses and Restrictions

Identified uses

Chemical intermediate, e.g. for manufacture of polyester resins. De-icing fluid. Heat transfer fluid. It is recommended that you use this product in a manner consistent with the recommended use. If your intended use is not consistent with the recommended use, please contact our Customer Information Group (telephone number in Section 1 of this document).

Uses advised against

Production of tobacco products Generation of artificial smoke Electronic cigarettes (e-cigarettes) Applications with direct or indirect food or potable water contact Any application where the product is to be purposely used as a non-reactant component where the potential for sufficient human contact and/or ingestion exists Freezer gel packs and heating packs Glues and pastes Manufacturing of munitions Sprinkler systems Deicing of road or sidewalks Deicing of aircraft lavatories Consumer or hospital usage for deodorizing or air “purifying” purposes by spraying as an aerosol Fluid for pressure testing piping Pharmaceutical Use Treatment of wood rot and fungus in marine applications

Revision

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Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

N/A	Not available
W/W	Weight/Weight
OEL	Occupational Exposure Limit
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
ACGIH	American Conference of Governmental Industrial Hygienists, Inc.
DOW IHG	Dow Industrial Hygiene Guideline
WEEL	Workplace Environmental Exposure Level
HAZ_DES	Hazard Designation
VOL/VOL	Volume/Volume

MEGlobal Canada Inc. urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no

warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

Bunge Canada

2190 South Service Road West, Oakville, Ontario, Canada L6L 5N1

MATERIAL SAFETY DATA SHEET

Identity	**Crude, Super De-gummed Canola Oil**	CAS# 120962-03-0
SECTION I - MANUFACTURER		
Bunge Canada 2190 South Service Road West Oakville, Ontario L6L 5N1	Emergency Telephone Number Ted Hamill Bus. (905) 825-7983 or (905) 577-8057 Res. (905) 878-9323 E-mail: ted.hamill@bunge.com Phone Number for Information (905) 825-7959	
Date Prepared/Revised	February 14, 2011	
SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION		
Hazardous Components OSHA ACGIH PEL TLV	None	
Other Limits	N/A %	
Recommended (Optional)		
Specific Chemical Identity (Common Name)	**Mixed triglycerides (vegetable oil)**	
SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS		
Boiling Point	N/A	
Vapor Pressure (mm hg)	Less than 0.1 mm at 300°C	
Vapor Density (Air = 1)	N/A	
Specific Gravity (H_20 = 1)	0.91 - 0.92	
Melting Point	Liquid above 0°C	
Evaporation Rate (Butyl Acetate = 1)	N/A	
Solubility in Water	Insoluble	
Appearance and Odor	Amber liquid with mild characteristic odour	
SECTION IV - FIRE AND EXPLOSION HAZARD DATA		
Flash Point	>175 °C	
Flammable Limits LEL UEL	Not Established	
Extinguishing Media	Dry chemical or $C0_2$ preferred	
Special Fire Fighting Procedures	Stop spill, start fire fighting efforts immediately. Limit spread of oil. Treat as an oil (edible fat) fire	
Unusual Fire and Explosion Hazards	Ignition temperature approx. 345°C (653°F). If product begins to smoke, reduce heat.	

SECTION V - REACTIVITY DATA	
Stability	[ ] Unstable [X] Stable
Conditions to Avoid	
Incompatibility (Materials To Avoid)	Avoid flames and strong oxidizers
Hazardous Decomposition of Byproducts	N/A
Hazardous Polymerizations	[ ] May occur [X] Will Not Occur
Conditions to Avoid	
SECTION VI - HEALTH HAZARD DATA	
Route(s) of Entry Inhalation Skin Ingestion	 No hazard No hazard No hazard
Health Hazards (Acute and Chronic)	None
Carcinogenicity: NTP IARC Monographs OSHA Regulated	 None
Signs & Symptoms of Exposure	N/A
Medical Conditions Generally Aggravated by Exposure	None
Emergency First Aid Procedures	N/A
SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE	
Steps To Be Taken in Case Material is Released or Spilled	Use oil adsorbent and dispose properly (either sand or vermiculite floor adsorbent)
Waste Disposal Method	Do not put into sewer lines. Dispose of in accordance with local regulations
Precautions to be Taken in Handling and Storing	Keep away from fire or open flames. Do not overheat. If product begins to smoke, reduce heat.
Other Precautions	Consult federal and/or local authorities for approved disposal procedures
SECTION VIII - CONTROL MEASURES	
Respiratory Protection (specify type)	Not necessary under normal conditions of use
Ventilation	Local exhaust: normal ventilation. Special - If product is used at elevated temperatures a fume collection system is suggested
Protective Gloves	Impervious gloves suggested for repeated or prolonged contact
Eye Protection	As necessary for particular use
Other Protection Clothing or Equipment	Evaluate need based on particular application
Work/Hygienic Practices	Normal work and hygienic practices for handling non-hazardous liquid material for eventual food use
NOTE: The information in this MSDS is compiled from sources considered to be accurate to the best of our knowledge and applies to activities within the scope of the intended use of the product as a vegetable oil. No warranty is expressed or implied with respect to completeness or continuing accuracy of the information given here. Users should satisfy themselves that they have all current data relevant to their particular use.	

Section 1: IDENTIFICATION

Product Name:	Commercially Formed Solid Elemental Sulphur
Synonyms:	STCC # 14-716-15; BCSN – Sulphur (formed, solid) Group – C CAS # 7704-34-9 (all elemental Sulphur); Sulphur, Brimstone.
Product Use:	Manufacture of Sulphuric acid, Chemicals and Fertilizers. For specific application advice, see appropriate Technical Data Sheet or consult our company representative.
Restrictions on Use:	Not available.
Manufacturer/Supplier:	Sultran Ltd. 600 Bow Valley Square 2 205 - 5th Avenue S.W. Calgary, Alberta T2P 2V7
Phone Number:	(403) 265-1486
Emergency Phone:	CANUTEC: (613) 996-6666; *666 (cellular)
Date of Preparation of SDS:	April 26, 2016

Section 2: HAZARD(S) IDENTIFICATION

GHS INFORMATION

Classification: Skin Irritation, Category 2

LABEL ELEMENTS

Hazard Pictogram(s):

Signal Word: Warning

Hazard Statements: Causes skin irritation.

Precautionary Statements

Prevention: Wash thoroughly after handling.
Wear protective gloves, protective clothing and eye protection.

Response: IF ON SKIN: Wash with plenty of soap and water.
If skin irritation occurs: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.

Storage: Not applicable.

Disposal: Not applicable.

Hazards Not Otherwise Classified: Not applicable.

Ingredients with Unknown Toxicity: None.

This material is considered hazardous by the OSHA Hazard Communication Standard, (29 CFR

1910.1200).

This material is considered hazardous by the Hazardous Products Regulations.

Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Ingredient(s)	Common name / Synonyms	CAS No.	% wt./wt.
Sulphur	Not available.	7704-34-9	100

Impurities / Stabilizing additives: Hydrogen sulphide (CAS No. 7783-06-4)

Section 4: FIRST-AID MEASURES

Inhalation:

If inhaled: Call a poison center or doctor if you feel unwell.

Acute and delayed symptoms and effects: May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. This product may contain traces of Hydrogen sulphide which may accumulate in confined spaces. Inhalation of Hydrogen sulphide may cause loss of sense of smell, major irritation of the respiratory tract, headache, nausea, vomiting, dizziness, and fluid buildup in the lungs (pulmonary edema), which can be fatal. At 300 ppm unconsciousness may occur after 20 minutes. From 300 to 500 ppm, death can occur within 1 to 4 hours of continuous exposure. At 500 ppm the respiratory system is paralyzed, the victim collapses almost instantaneously, and death can occur after exposure of only 30 to 60 minutes. Above 500 ppm Hydrogen sulphide may cause immediate loss of consciousness; death is rapid, and possibly immediate.

Eye Contact:

If in eyes: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a poison center or doctor if you feel unwell.

Acute and delayed symptoms and effects: May cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision. This product may contain traces of Hydrogen sulphide which may accumulate in confined spaces. Hydrogen sulphide may cause eye irritation at 1-20 ppm and acute conjunctivitis at higher concentrations. Above 50 ppm H2S, eye irritation may include symptoms of redness, severe swelling, tearing, sensitivity to light and the appearance of 'Halos' around lights.

Skin Contact:

If on skin: Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.

Acute and delayed symptoms and effects: Causes skin irritation. Signs/symptoms may include localized redness, swelling, and itching.

Ingestion:

If swallowed: Call a poison center or doctor if you feel unwell. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.
Acute and delayed symptoms and effects: May cause gastrointestinal

irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea. Sulphur may be converted into Hydrogen sulphide in the intestine.

General Advice: In case of accident or if you feel unwell, seek medical advice immediately (show the label or SDS where possible).

Note to Physicians: Symptoms may not appear immediately. For inhalation of Hydrogen Sulphide, consider oxygen.

Section 5: FIRE-FIGHTING MEASURES

FLAMMABILITY AND EXPLOSION INFORMATION

Combusts slowly in air with pale flame which may be hard to see, especially in low humidity atmospheres. Flammable solid in powder form. Avoid contact with hot exhaust pipes and spark sources of ignition e.g. steel tracked vehicles. Does not meet criteria for classification as Class 4.1 Flammable Solids under IMOT/TDG Regulations. When heated, this material may evolve toxic and flammable Hydrogen sulphide.

Sensitivity to Mechanical Impact: This material is not sensitive to mechanical impact.

Sensitivity to Static Discharge: This material is sensitive to static discharge at temperatures at or above the flash point.

MEANS OF EXTINCTION

Suitable Extinguishing Media: Small Fire: Dry chemical, CO2, sand, earth, water spray or regular foam. Flood with water. Apply extinguishing media carefully to avoid creating airborne dust.

Large Fire: Water spray, fog or regular foam. Move containers from fire area if you can do it without risk.

Unsuitable Extinguishing Media: Not available.

Products of Combustion: Oxides of sulphur.

Protection of Firefighters: Fire may produce irritating and/or toxic gases. Contact may cause burns to skin and eyes. Runoff from fire control may cause pollution. Hydrogen sulphide is heavier than air and may collect in low lying areas and confined spaces. Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection. Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

Section 6: ACCIDENTAL RELEASE MEASURES

Emergency Procedures: Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).

Personal Precautions: Do not touch or walk through spilled material. Use personal protection recommended in Section 8.Keep away from heat, sparks and flame. Keep container closed (and grounded). Prevent

	dust accumulation (to minimize explosion hazard). Don full-face, positive pressure, self-contained breathing apparatus.
Environmental Precautions:	Prevent entry into waterways, sewers, basements or confined areas.
Methods for Containment:	Do not flush to sewer or allow to enter waterways.
Methods for Clean-Up:	Use explosion-proof equipment. Dust can be a fire or explosion hazard. Sweep up and shovel into suitable containers for disposal. Cleaning methods (e.g. compressed air) which can generate potentially combustible dust clouds should not be used.
Other Information:	See Section 13 for disposal considerations.

Section 7: HANDLING AND STORAGE

Handling:
Keep away from heat, sparks, open flames, and hot surfaces. – No smoking. Ground/bond container and receiving equipment. Use explosion-proof electrical, ventilating, and lighting equipment. Avoid contact with skin and eyes. Do not swallow. Do not breathe dust. Handle and open container with care. Protect from moisture. When using do not eat or drink. Wash hands before eating, drinking, or smoking. See Section 8 for information on Personal Protective Equipment. Protect equipment against wet elemental Sulphur corrosion.

Storage:
Maintain adequate ventilation at all times. Head spaces in storage tanks may contain toxic Hydrogen sulphide gas. Keep product cool and dry. Keep away from sources of ignition. Avoid generation and accumulation of dust. Rotation of storage may minimize acidity build-up. Acid build-up can also lead to corrosive attack on metals and concrete structural materials. Store away from incompatible materials. See Section 10 for information on Incompatible Materials. Keep out of the reach of children.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines
Component

Sulphur [CAS No. 7704-34-9]

ACGIH: 10 mg/m³ (TWA) (Inhalable.); 3 mg/m³ (TWA) (Respirable.); For Particles (Insoluble or Poorly Soluble) Not Otherwise Specified
OSHA: 15 mg/m³ (Total dust) (TWA), 5 mg/m³ (Respirable fraction) (TWA); For Particulates Not Otherwise Regulated (PNOR).

Hydrogen sulphide [CAS No. 7783-06-4]

ACGIH: 1 ppm (TWA); 5 ppm (STEL); (2009)
OSHA: 20 ppm (C); 50 ppm (Peak) (Maximum duration: 10 mins. once only if no other meas. exp. occurs.)
10 ppm (TWA); 15 ppm (STEL) [Vacated]

TWA: Time-Weighted Average
STEL: Short-Term Exposure Limit
C: Ceiling

Engineering Controls: Use ventilation adequate to keep exposures (airborne levels

of dust, fume, vapour, gas, etc.) below recommended exposure limits. Non-ferrous tools and non ferrous fittings recommended. Minimize all potential for product coming in contact with high temperature sources. Recognize corrosive properties of wet or moist elemental Sulphur even at neutral pH. Avoid use of copper. Minimize impact and abrasion when handling. Monitor and treat runoff for acidity.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Eye/Face Protection: Wear safety glasses. Indirect vented, dust-tight goggles are required if dust is generated when handling this product. Use equipment for eye protection that meets the standards referenced by CSA Standard CAN/CSA-Z94.3-92 and OSHA regulations in 29 CFR 1910.133 for Personal Protective Equipment.

Hand Protection: Wear protective gloves. Consult manufacturer specifications for further information.

Skin and Body Protection: Wear protective clothing. Flame resistant clothing that meets the NFPA 2112 and CAN/CGSB 155.20 standards is recommended in areas where material is stored or handled.

Respiratory Protection: If engineering controls and ventilation are not sufficient to control exposure to dust or Sulphur dioxide to below the allowable limits then an appropriate NIOSH/MSHA approved air-purifying respirator with Acid Gas/P100 combination cartridge/filter, or self-contained breathing apparatus must be used. Supplied air breathing apparatus must be used when oxygen concentrations are low, if airborne concentrations exceed the limits of the air-purifying respirators or where hydrogen sulphide is present or possibly present in confined spaces at hazardous levels.

General Hygiene Considerations: Handle according to established industrial hygiene and safety practices. Consult a competent industrial hygienist to determine hazard potential and/or the PPE manufacturers to ensure adequate protection. Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid dispersal of dust in the air.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Formed solid. Mixture of the following: Spherical, or generally spherical particles, such as granules, pellets and prills; Hemispherical; Two dimensional slates or flakes. NOTE: These forms of solid Sulphur are excluded from Class 4.1 under Schedule II, special provision 33(b), and are classified as Group "C" in the IMSBC Code (2012 edition, Incorporating Amendment 01-11).
Colour:	Bright yellow. Contamination may result in brown to black colour.
Odour:	Odorless when pure. Rotten eggs when Hydrogen sulphide present.
Odour Threshold:	0.00047 ppm, (Hydrogen sulphide) – rotten eggs 0.5 ppm (Sulphur dioxide) - acidic, pungent
Physical State:	Solid.
pH (1% solution in water):	2 to 4
Melting Point / Freezing Point:	112 to 119 °C (233.6 to 246.2 °F), depending on purity and molecular/ crystallographic form (changes with age).
Initial Boiling Point:	Not available.
Boiling Point:	444 °C (831.2 °F)
Flash Point:	207 °C (404.6 °F)
Evaporation Rate:	Not available.
Flammability (solid, gas):	May form combustible dust concentrations in air.
Lower Flammability Limit:	35 g/m^3
Upper Flammability Limit:	1400 g/m^3
Vapor Pressure:	0.11 mmHg at 140 °C (284 °F)
Vapor Density:	Not available.
Relative Density:	1.92 to 2.07 (Water = 1)
Solubilities:	Insoluble in water. Soluble in carbon disulphide.
Partition Coefficient: n-Octanol/Water:	Not available.
Auto-ignition Temperature:	190 °C (374 °F) (Fine particulate dust cloud in air.)
Decomposition Temperature:	Not available.
Viscosity:	Not available.
Percent Volatile, wt. %:	Not available.
VOC content, wt. %:	Not available.

Density: **Block form:** 1.92 to 2.07 g/cm³
Commercially granulated form: 1.04 - 1.44 g/cm³

Coefficient of Water/Oil Distribution: Not available.

Section 10: STABILITY AND REACTIVITY

Reactivity: Contact with incompatible materials. Sources of ignition. Exposure to heat.

Chemical Stability: Stable under normal storage conditions.

Possibility of Hazardous Reactions: Combined with moisture, Sulphur may form acidic / corrosive solutions. In the presence of moisture, iron, and oxygen, Sulphur has the capacity to form spontaneously combustible pyrophoric iron.

Conditions to Avoid: Contact with incompatible materials. Sources of ignition. Exposure to heat.

Incompatible Materials: Oxidizers. Alkali metals. Zinc. Halogens. Nitrates. Phosphorus. Ammonia.

Hazardous Decomposition Products: Hydrogen sulphide, Sulphur dioxide, and related oxides of sulphur may be generated upon combustion.

Section 11: TOXICOLOGICAL INFORMATION

EFFECTS OF ACUTE EXPOSURE

Product Toxicity

Oral: > 8437 mg/kg (rat)

Dermal: Not available.

Inhalation: Not available.

Component Toxicity

Component	CAS No.	LD_{50} oral	LD_{50} dermal	LC_{50}
Sulphur	7704-34-9	> 8437 mg/kg (rat)	Not available.	Not available.
Hydrogen sulphide	7783-06-4	Not available.	Not available.	444 ppm (rat); 4H

Likely Routes of Exposure: Eye contact. Skin contact. Inhalation. Ingestion.

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Lungs. Blood. Cardiovascular system. Central nervous system.

Symptoms (including delayed and immediate effects)

Inhalation: May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. This product may contain traces of Hydrogen sulphide which may accumulate in confined spaces. Inhalation of Hydrogen sulphide may cause loss of sense of smell, major irritation of the respiratory tract, headache, nausea, vomiting, dizziness, and fluid buildup in the lungs (pulmonary edema), which can be fatal. At 300 ppm unconsciousness may occur after 20 minutes. From 300 to 500 ppm, death can occur within 1 to 4 hours of continuous exposure. At 500 ppm the respiratory system is paralyzed, the victim collapses almost instantaneously, and death can

occur after exposure of only 30 to 60 minutes. Above 500 ppm Hydrogen sulphide may cause immediate loss of consciousness; death is rapid, and possibly immediate.

Eye: May cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision. This product may contain traces of Hydrogen sulphide which may accumulate in confined spaces. Hydrogen sulphide may cause eye irritation at 1-20 ppm and acute conjunctivitis at higher concentrations. Above 50 ppm H2S, eye irritation may include symptoms of redness, severe swelling, tearing, sensitivity to light and the appearance of 'Halos' around lights.

Skin: Causes skin irritation. Signs/symptoms may include localized redness, swelling, and itching.

Ingestion: May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea. Sulphur may be converted into Hydrogen sulphide in the intestine.

Skin Sensitization: Not available.

Respiratory Sensitization: Not available.

Medical Conditions Aggravated By Exposure: Not available.

EFFECTS OF CHRONIC EXPOSURE (from short and long-term exposure)

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Lungs. Blood. Cardiovascular system. Central nervous system.

Chronic Effects: Prolonged or repeated contact may dry skin and cause irritation. Prolonged overexposure to Sulphur dust can produce possible skin sensitization and permanent eye damage (clouding of the lens and chronic irritation). Prolonged inhalation can cause irritation of mucous membranes. Hydrogen sulphide may reduce lung function; cause neurological effects such as headaches, nausea, depression and personality changes; eye and mucous membrane irritation: damage to cardiovascular system.

Carcinogenicity: This product does not contain any carcinogens or potential carcinogens as listed by ACGIH, IARC, OSHA, or NTP.

Mutagenicity: Not available.

Reproductive Effects: Not available.

Developmental Effects

Teratogenicity: Not available.

Embryotoxicity: Not available.

Toxicologically Synergistic Materials: Not available.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity:

Daphnia magna (Water flea, age <24 hr): EC50 >5000000 ug/L, 48-hr, freshwater, static; Effect: intoxication, immobilization;

Daphnia magna (Water flea, 1st instar larvae); EC50 = 3850000 ug/L, 96 hr, freshwater, static; Effect: intoxication, immobilization;

Americamysis bahia (Opossum Shrimp, age 24 hr): LC50 = 736000 ug/L, 96 hr (95% confidence interval: 646000-839000 ug/L), saltwater, static;

Lepomis macrochirus (Bluegill): LC50 < 14000 ug/L, 96 hr, freshwater, static;

Lepomis macrochirus (Bluegill, juvenile): LC50 > 180000 ug/L, 96 hr, freshwater, static;

Oncorhynchus mykiss (Rainbow trout): Concentration: LC50 > 180000 ug/L, 96 hr, freshwater, static.

Persistence / Degradability: Solid Sulphur is biodegradable; microbiological reduction to hydrogen sulphide or oxidation to acidic oxy-Sulphur species is possible. Both of these products can have environmental consequences. Reclamation of Sulphur rich wastes is preferred over solid waste disposal. Commercial Sulphur waste reclaimers are available. Disposal must be in a certified landfill site approved for the use of elemental Sulphur. Special simultaneous application of limestone normally required.

Bioaccumulation / Accumulation: Not anticipated to be bioaccumulative.

Mobility in Environment: Fugitive sulphur dust can be carried considerable distances from origin especially in low humidity and windy conditions. Prolonged exposure of soil and vegetation to such dust can be harmful.

Other Adverse Effects: Not available.

Section 13: DISPOSAL CONSIDERATIONS

Disposal Instructions: Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

Section 14: TRANSPORT INFORMATION

Standard Transportation Commodity Code: **STCC #14-716-15**

U.S. Department of Transportation (DOT)

Proper Shipping Name: Not regulated.

Class: Not applicable.

UN Number: Not applicable.

Packing Group: Not applicable.

Label Code: Not applicable.

Canada Transportation of Dangerous Goods (TDG)

Proper Shipping Name:	Not regulated.
Class:	Not applicable.
UN Number:	Not applicable.
Packing Group:	Not applicable.
Label Code:	Not applicable.

IMDG Code Amendment 36-12 applying to IMO/TDG/ICAO regulations effective 1 Jan 2014 specifically states that Class 4.1 TDG regulations should not apply to commercially formed solid elemental Sulphur as defined in Section 9 of this MSDS under "Physical State".

Special shipping information: When shipped in bulk keep well ventilated and cool. Minimize exposure to direct wind impact. If in open cars or trucks, stow below the gunwale. Do not expose to sources of high heat e.g. glowing cinders. If wetted, consider protection of container against corrosion effect. If corrosion occurs be prepared for auto-ignition of corrosion product when exposed to air. IATA limits on carriage of samples by air.

Section 15: REGULATORY INFORMATION

Chemical Inventories

US (TSCA)
The components of this product are in compliance with the chemical notification requirements of TSCA.

Canada (DSL)
The components of this product are in compliance with the chemical notification requirements of the NSN Regulations under CEPA, 1999.

Federal Regulations

United States
This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SARA Title III

Component	Section 302 (EHS) TPQ (lbs.)	Section 304 EHS RQ (lbs.)	CERCLA RQ (lbs.)	Section 313	RCRA CODE	CAA 112(r) TQ (lbs.)
Hydrogen sulphide	500	100	100	313	U135	10000

State Regulations
Massachusetts
US Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000)

Component	CAS No.	RTK List
Sulphur	7704-34-9	Listed.
Hydrogen sulphide	7783-06-4	E

Note: E = Extraordinarily Hazardous Substance

New Jersey

US New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

Component	CAS No.	RTK List
Sulphur	7704-34-9	Listed.
Hydrogen sulphide	7783-06-4	SHHS

Note: SHHS = Special Health Hazard Substance

Pennsylvania

US Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

Component	CAS No.	RTK List
Sulphur	7704-34-9	Listed.
Hydrogen sulphide	7783-06-4	E

Note: E = Environmental Hazard

California

California Prop 65: This product does not contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Section 16: OTHER INFORMATION

Disclaimer:

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for their own particular use.

Date of Preparation of SDS: April 26, 2016

Version: 3.0

GHS SDS Prepared by: **Deerfoot Consulting Inc.**

Phone: (403) 720-3700

60er Kali® fine, 60er Kali® dustfree, 60er Kali® gran., 60er Kali® gran. B, SOLUMOP®, 61er Kali®

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH)

Date of issue: 6/27/2016 Revision date: 6/27/2016 Version: 3.00

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	:	Substance
Trade name	:	60er Kali® fine, 60er Kali® dustfree, 60er Kali® gran., 60er Kali® gran. B, SOLUMOP®, 61er Kali®
Chemical name	:	potassium chloride
EC no	:	231-211-8
CAS No	:	7447-40-7

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Use of the substance/mixture : Fertilizer

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Supplier
K+S KALI GmbH
Bertha-von-Suttner-Str. 7
34111 Kassel
T (+49) 561 9301-0 - F (+49) 561 9301-1753

Email competent person
sds@kft.de

1.4. Emergency telephone number

Emergency number : For Hazardous Materials [or Dangerous Goods] Incidents
Spill, Leak, Fire, Exposure, or Accident
Call CHEMTREC Day or Night
Within USA and Canada: 1-800-424-9300
Outside USA and Canada: +1 703-741-5970 (collect calls accepted)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Not classified

Adverse physicochemical, human health and environmental effects

To our knowledge, this product does not present any particular risk, provided it is handled in accordance with good occupational hygiene and safety practice.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

No labelling applicable

2.3. Other hazards

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

SECTION 3: Composition/information on ingredients

3.1. Substance

Name	Product identifier	%
potassium chloride	(CAS No) 7447-40-7 (EC no) 231-211-8	> 94

Full text of H-statements: see section 16

3.2. Mixture

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.

First-aid measures after skin contact : Wash skin with plenty of water.

First-aid measures after eye contact : Rinse eyes with water as a precaution.

First-aid measures after ingestion : Call a poison center or a doctor if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

No additional information available

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Water spray. Dry powder. Foam.

Unsuitable extinguishing media : No information available.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products in case of fire : Toxic fumes may be released.

5.3. Advice for firefighters

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Ventilate spillage area.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Do not allow into drains or water courses.

6.3. Methods and material for containment and cleaning up

Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

Information for safe handling. See Heading 7. Concerning personal protective equipment to use, see section 8. For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Ensure good ventilation of the work station. Wear personal protective equipment.

Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in a well-ventilated place. Keep cool.

7.3. Specific end use(s)

Fertilizer.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Exposure controls

Appropriate engineering controls:

Ensure good ventilation of the work station.

Hand protection:

Chemical resistant PVC gloves (to European standard EN 374 or equivalent). Nitrile rubber

Eye protection:

Safety glasses

Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

In case of insufficient ventilation, wear suitable respiratory equipment. Dust production: dust mask with filter type P1

Environmental exposure controls:

Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Solid
Appearance	:	Granulate.
Colour	:	white. red.
Odour	:	none to slight.
Odour threshold	:	No data available
pH	:	8 - 11 (aqueous solution)
Relative evaporation rate (butylacetate=1)	:	Not applicable
Melting point	:	770 °C
Freezing point	:	Not applicable
Boiling point	:	Not applicable
Flash point	:	Not applicable
Auto-ignition temperature	:	Not applicable
Decomposition temperature	:	Not applicable
Flammability (solid, gas)	:	Not flammable
Vapour pressure	:	Not applicable
Relative vapour density at 20 °C	:	Not applicable
Relative density	:	Not applicable
Density	:	1.989 g/cm³
Solubility	:	Water: 300 g/l (20 °C)
Log Pow	:	Not applicable
Viscosity, kinematic	:	Not applicable
Viscosity, dynamic	:	Not applicable
Explosive properties	:	Product is not explosive.
Oxidising properties	:	Not applicable.
Explosive limits	:	Not applicable

9.2. Other information

Bulk density	:	1040 - 1130 kg/m³

SECTION 10: Stability and reactivity

10.1. Reactivity

Product is stable.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

No additional information available.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified (Based on available data, the classification criteria are not met)

potassium chloride (7447-40-7)	
LD50 oral rat	3020 mg/kg

Skin corrosion/irritation : Not classified (Based on available data, the classification criteria are not met)
pH: 8 - 11 (aqueous solution)

Serious eye damage/irritation : Not classified (Based on available data, the classification criteria are not met)
pH: 8 - 11 (aqueous solution)

Respiratory or skin sensitisation : Not classified (Based on available data, the classification criteria are not met)

Germ cell mutagenicity : Not classified (Based on available data, the classification criteria are not met)

Carcinogenicity : Not classified (Based on available data, the classification criteria are not met)

Reproductive toxicity : Not classified (Based on available data, the classification criteria are not met)

Specific target organ toxicity (single exposure) : Not classified (Based on available data, the classification criteria are not met)

Specific target organ toxicity (repeated exposure) : Not classified (Based on available data, the classification criteria are not met)

Aspiration hazard : Not classified (Not specifically applicable)

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.

potassium chloride (7447-40-7)	
LC50 fish 1	880 mg/l (Pimephales promelas)
EC50 Daphnia 1	440 mg/l (daphnia magna)
EC50 72h algae (1)	> 100 mg/l

12.2. Persistence and degradability

potassium chloride (7447-40-7)	
Persistence and degradability	Not applicable.

12.3. Bioaccumulative potential

potassium chloride (7447-40-7)	
Log Pow	Not applicable
Bioaccumulative potential	Not applicable.

12.4. Mobility in soil

potassium chloride (7447-40-7)	
Ecology - soil	Not applicable.

12.5. Results of PBT and vPvB assessment

potassium chloride (7447-40-7)
This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

12.6. Other adverse effects

Other adverse effects : No additional information available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

European List of Waste (LoW) code : 02 01 09 - agrochemical waste other than those mentioned in 02 01 08

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	ADN	RID
14.1. UN number				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.2. UN proper shipping name				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.3. Transport hazard class(es)				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.4. Packing group				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
No supplementary information available				

14.6. Special precautions for user

- Overland transport

Not applicable

- Transport by sea

Not applicable

- Air transport

Not applicable

- Inland waterway transport

Not applicable

- Rail transport

Not applicable

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

No REACH Annex XVII restrictions

potassium chloride is not on the REACH Candidate List

potassium chloride is not on the REACH Annex XIV List

15.1.2. National regulations

No additional information available

15.2. Chemical safety assessment

A safety data sheet is not required for this product under Article 31 of REACH. This Product Safety Information Sheet has been created on a voluntary basis

No chemical safety assessment has been carried out

SECTION 16: Other information

Indication of changes:

None.

Abbreviations and acronyms:

IMDG	International Maritime Dangerous Goods
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
RID	Regulations concerning the International Carriage of Dangerous Goods by Rai
IATA	International Air Transport Association
GHS	Globally Harmonised System of Classification and Labelling of Chemicals
CAS	Chemical Abstract Service
LD50	Median lethal dose
LC50	Median lethal concentration
PBT	Persistent Bioaccumulative Toxic
vPvB	Very Persistent and Very Bioaccumulative

Department issuing data specification sheet: : KFT Chemieservice GmbH
Im Leuschnerpark. 3 64347 Griesheim
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Phone: +49 6155-8981-400 Fax: +49 6155 8981-500
Safety Data Sheet Service: +49 6155 8981-522

Contact person : Dr. Faiza Khan

KFT SDS EU

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product