



**COLUMBIA
RIVER
PILOTS**

Columbia River Pilots Vessel Movement Guidelines

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Columbia River Pilots Vessel Movement Guidelines

I. Introduction

These guidelines are offered to vessel owners, operators and agents to assist in planning vessel movements on the Columbia and Willamette River Pilotage Ground. These are general guidelines, advisory in nature only and are not intended to supersede or limit in any way the authority or judgment of any individual pilot. Every specific situation is unique with regard to the type and class of vessel, its operating condition and crew, the existing weather, river currents and numerous other variable conditions. All final decisions remain within the discretion and authority of the pilot(s) dispatched to the job.

IMPORTANT: READ CAREFULLY

These guidelines are intended for planning purposes only. They have been developed to assist dispatchers and vessel owners, operators and agents in planning vessel movements. These guidelines are not intended, nor should they be construed, as a representation of minimum or maximum requirements or a warranty that, if the recommendations outlined in the guidelines are met, an operation can be successfully performed. **IN ANY EVENT, NO REPRESENTATION OR WARRANTIES OF ANY SORT ARE MADE OR INTENDED BY THE COLUMBIA RIVER PILOTS OR ANY OF ITS MEMBER PILOTS BY THESE GUIDELINES.** In each instance, the individual pilot who is assigned to the vessel will determine whether the planned operation can be successfully completed with the resources allocated, and in every case the pilot is free to exercise his or her authority to proceed with fewer resources, or request more resources, than indicated in these guidelines.

Please note that actual conditions may preclude the performance of the movement as originally planned. For this reason, it is the vessel agent's responsibility to contact the pilots' office to determine in advance whether, in the assigned pilot's opinion, the resources initially allocated will be satisfactory. Agents should also be prepared to assist the assigned pilot with additional resources if needed. Each vessel has its own peculiar handling characteristics. Some vessels, because of handling limitations, will need additional tugs or other resources, and in some instances, cannot be moved under all conditions or at certain times. The vessel agent should provide complete details of any known vessel handling characteristics in order to assist both in planning and the performance of actual piloting operations.

II. Pilot Transfers

STATIONARY

- Ensure that there is a safe means of access between the vessel and terminal with access to a secure ladder in all cases, free of tripping hazards.
- Establish that an officer, with direct communication to the bridge, is present at the ladder or point of access to the ship's deck during pilot transfer.
- Establish that the ladder or point of access to the ship's deck is secure.
- Ensure that the area is suitably lit before undertaking a nighttime embarkation or disembarkation.
- Have "man-overboard" recovery equipment available and ready for use on the vessel. The recovery system must include the ability to retrieve a pilot without the pilot's assistance.

UNDERWAY

- The pilot boat must have adequate deck spacing with the house, free of tripping hazards, and have handrails available on the house.
- The pilot boat must be able to perform transfers at the safe speed of the piloted vessel. Speeds of 8 knots through the water, or greater, can be expected.
- Establish that an officer, with direct communication to the bridge, is present at the ladder or point of access to the ship's deck during pilot transfer.
- Establish that the ladder or point of access to the ship's deck is secure.
- Ensure that the area is suitably lit before undertaking a nighttime embarkation or disembarkation.
- Ensure that pilot boat personnel are using safety harnesses while on deck during pilot transfers.
- Have "man-overboard" recovery equipment available and ready for use on the pilot boat. The recovery system must include the ability to retrieve a pilot without the pilot's assistance.

RELIEF PILOTS

- Oregon fatigue management regulations (OAR 856-010-0029(1)(a)) limit the number of continuous hours on duty that a pilot may work. Piloting of vessels on the Columbia and Willamette River Pilotage Ground is subject to guidelines adopted by COLRIP to comply with the regulations.
- To minimize additional costs associated with fatigue management, we encourage vessels to arrive on a flood tide when possible, and their agents to promptly notify COLRIP dispatch of any condition or event that may affect vessel schedule.

III. General Information

A. Harbor Safety Plan: The Lower Columbia Region has a Harbor Safety Plan (HSP) in effect. COLRIP encourages all vessels to be familiar with the HSP and to plan all transits consistent with its terms, as applicable. The Lower Columbia Region HSP can be accessed at: www.lcrhsc.org

B. Restricted Main Engine RPMs: The vessel agent must notify the pilots' office of any condition that would restrict use of the vessel's main engine. This includes, for example, work done on the main engine that would require break-in time upon sailing, a governor that restricts engine RPMs, or any condition that may require COLRIP dispatch to adjust transit time. **ANY non-original equipment or device that restricts or limits main engine power or performance shall be disengaged upon entering the Columbia River. Pilots shall be notified if such a device has been installed on the main engine(s).**

C. Channel Depth: Except as limited by localized, temporary shoaling, the Columbia River channel is currently maintained to a depth of 43 feet and a width of 600 feet. The Willamette River channel is 43 feet deep up to approximately river mile 2, upriver from that point the controlling depth is 40 feet. Vessels may be subject to substantial delays while awaiting the proper tide and river levels to be present during the transit and arrival at the bar. Although many berths also maintain a 43 foot depth, others do not and may have considerably less water approaching or alongside their docks. Prior to their port call, all vessels must verify via their agent that adequate depths exist at those berths.

D. Deep Draft Transits: As indicated in US Coast Pilot Volume 10, Chapter 5, paragraph 105 (2nd Edition 2021), vessels with a fresh water draft of less than 36 feet are generally able to transit the river at any time. In order to take advantage of tidal conditions, inbound vessels ≥ 600 feet LOA with drafts of 36 feet or greater and < 600 feet LOA with drafts 80% of maximum or greater are usually required by COLRIP to arrive at Astoria 2.5 hours before high water, Astoria (Tongue Pt. Station). During minus tides, one-foot of draft correction will be added to the vessel's draft for every one foot of minus tide. For example, a 35-foot draft during a one-foot minus tide will be treated as a 36-foot draft. Depending on river conditions, outbound vessels with drafts greater than 38 feet may have sailing times adjusted by COLRIP to ensure adequate under keel clearance.

E. Under Keel Clearance: All vessel movements will be planned based on predicted river levels to maintain a static under keel clearance (UKC) that is no less than two feet. Actual UKC may vary depending on the accuracy of the river level predictions and channel depth charting. COLRIP cannot and does not guarantee the accuracy of river level predictions or channel depth information provided by outside agencies.

F. Draft Reporting: COLRIP requires all vessel drafts to be reported in fresh water.

G. Overhead Clearances: On the Columbia River (above mile 23) a datum is used called the Columbia River Datum (CRD). It is a non-tidal datum due to the effect of being in a river and seasonal strong river flows masking tidal influences. At 0' (zero) CRD limiting air draft on the Columbia River is 196.7 feet (59.95 meters) at the Longview Bridge and limiting air draft on the Willamette River is 175 feet (53.33 meters) at the Fremont Bridge in Portland.

As the Longview Bridge is the limiting obstacle for nearly all traffic on the river system the following clearances are applicable for this bridge:

- 196.7 feet for a 120-foot width
- 196.2 feet for a 200-foot width
- 195.0 feet for a 300-foot width

To each of these clearances the river gauge must be applied. For example, assume the river gauge height at the Longview Bridge is +5.3 feet so the clearance under the bridge for the 300-foot path is 189.7 feet ($195 - 5.3 = 189.7$).

River gauge predictions are obtained from the commonly used "Loadmax" program, which predicts the water level above or below CRD starting about ten days in advance. The predictions take into account tidal influences, discharge from upriver dams, tributary outflows, precipitation, as well as seasonal differences. Loadmax becomes more accurate as the prediction time decreases (i.e. It is more accurate looking at two days out versus ten days out). Loadmax is very good at predicting accurate water levels however, it is not always correct. Additionally, and especially true during high flows, the river level is higher in the middle than it is on the edge of the river where the sensor is located. Therefore, the following air draft safety parameters (which shall be based on static data) will be applied to all vessels:

1. 195 feet will be the baseline air draft clearance allowing for a 300-foot-wide transit lane.
2. Clearances greater than 10' based on Loadmax prediction will have no restrictions.
3. Clearances less than 10' will require a professional surveyor to validate air draft.
4. Once a specific ship is validated a surveyor is no longer required for subsequent transits.
5. 5' of clearance is the minimum (even with a surveyor). Any clearance less than 5' the transit is not guaranteed & will be on a case-by-case basis.

A note about the surveyor: The surveyor boards with the pilot in Astoria and places a GPS unit capable of extreme accuracy at the high point of the vessel and, as the approach to the bridge is made, calculates the clearance in real time. Ultimately, the surveyor is validating the vessel's published keel to mast height.

H. Beam Limitations: There are no restrictions limiting the length or beam of vessels transiting the Columbia or Willamette Rivers; however, certain slips, finger piers and face berths may not be able to accommodate some ships. Check with those facilities you intend to visit prior to your port call.

I. Vessel Trim – Down by the Head: Because of poor handling characteristics, COLRIP strongly discourages vessels from transiting in a condition where the forward draft exceeds the aft draft (down by the head). At the time an order is placed for a pilot, vessels intending to transit down by the head are required to report this condition to COLRIP so that appropriate preparations can be made.

J. Tug Escorts: When an escort is required, an escort plan will be created on a case by case basis, with such plans including, at a minimum:

- Number and class of tugs required
- The tugs' usage during operations
- The estimated speed of escort transit
- Whether escort transit is daylight only

Unless directed otherwise by COLRIP, tugboats dispatched for escort duty shall be able to effectively execute “tethered indirect” and/or “tethered direct” operations (i.e. tractor tugs only). Tugboat operators dispatched for escorts are expected to have baseline proficiency in escort duty relevant to the capabilities of the tugboat.

K. Dead Ship Tows: The USCG Sector Columbia River has a Dead Ship Tow Policy in effect. All vessels over 150 feet LOA (except barges) are required to submit a Dead Ship Tow Plan to the USCG at least 72 hours in advance of scheduled movement.

L. Anchorage Use: Vessels must coordinate their anchorage needs with the Columbia River Pilots' dispatcher prior to their arrival. Columbia River Anchorage Guidelines can be accessed at the Lower Columbia Region HSP: www.lcrhsc.org

M. Anchor Buoys: There are currently three anchor buoys in the upper Vancouver anchorage, one in the lower Vancouver anchorage, one in the Kalama anchorage, one in the Prescott anchorage, and two in the Rainier anchorage. Contact the Columbia River Pilots' dispatcher for scheduling of all buoys and anchorage availability.

N. Swinging for Compass: Swinging for compass will occur during daylight hours only. The Set Job departure time is to occur between sunrise and two hours prior to sunset.

O. Large Vessels in Heavy Winds: For planning purposes, movements of vessels greater than 800' LOA will generally not be initiated in wind speeds greater than 25 knots.

P. Arrivals/Departures at Swan Island Dry Docks: For planning purposes, movements into or out of the Swan Island Dry Docks will generally not be initiated:

- For vessels ≥ 7000 m² Sail Area, in winds exceeding 15 knots.
- For vessels < 7000 m² Sail Area, in winds exceeding 20 knots.

Q. Arrivals/Departures at Willbridge: For planning purposes, vessel movements into or out of the Willbridge terminal will generally not be initiated when river current exceeds 2.0 knots.

IV. Assist Tugs

A. Introduction

- The term “4% Bow Thruster” shall refer to bow thrusters with documented and 100% available metric horsepower (1.36 HP/KW) greater than or equal to 4% of the vessel’s Summer DWT. A 4% Bow Thruster can substitute for the smallest tug within the Tug Guidelines.
- Tugs within a class are not necessarily the same and, occasionally, specific tugs may be requested due to their particular design, type of propulsion, deck machinery or number of propellers. Bow and stern thrusters should be considered an aid and do not necessarily replace a tug whether it is due to lack of horsepower or other inherent limitations.
- Tugs are listed in classes according to “bollard pull,” as certified by the American Bureau of Shipping (ABS) or other acceptable independent authority. Bollard pull is used rather than horsepower because it is the only meaningful way to rate a tug’s efficiency. Additionally, the tug’s design type, such as a tractor, twin screw or single screw, and the addition of kort nozzles and flanking rudders, has a definite effect on the utility and efficiency of a particular tug. Use of any tug that has not been certified by an acceptable independent authority must be cleared in advance by the assigned pilot or operations pilot.
- The bollard pull capabilities of named tugs stated elsewhere in these guidelines is information that has been provided by third parties. It has not been separately confirmed by the Columbia River Pilots, which cannot and does not guarantee the accuracy of information provided by others. By restating the bollard pull information provided by others the Columbia River Pilots does not accept responsibility for its accuracy. Anyone needing confirmation of bollard pull capabilities for specific tugs must contact the tug owners or operators directly.

B. Tug Class Ratings

Class	Minimum Bollard Pull (in pounds/short tons)	
	Ahead	Astern
A ^{Max}	160,000/ 80.0t	144,000/ 72.0t
A+	110,000/ 55.0t	100,000/ 50.0t
A	80,000/ 40.0t	70,000/ 35.0t
B or B(+)	60,000/ 30.0t	45,000/ 22.5t
C	35,000/ 17.5t	25,000/ 12.5t
D	20,000/ 10.0t	10,000/ 5.0t

A^{Max}, A+, A and B+ Class boats must be tractor tugs.

CLASS	TUG
A ^{Max}	Samantha S
A+	Shaver Sommer S Sarah Brusco Carolyn Dorothy
A	Peter J Brix Portland Arthur Foss Deschutes Willamette Washington Vancouver
B+	PJ Brix
B	Clearwater Columbia
C	Betsy L
D	

C. Wind Forces

Wind speed and direction can have a dramatic effect on assist tug forces needed for vessel maneuvering. The tug guidelines in following sections assume light winds.

1. Decisions relating to vessel movements requiring more than 55 tons of force to hold the vessel against a wind from any direction will be made on a case-by-case basis by the pilot depending on direction and force of wind and the type and characteristic of the vessel.
2. Wind on the beam is one of the factors used in evaluating the counter force necessary for tugs and or thrusters on a particular transit. The formula below calculates the approximate static tons of beam wind exerted upon a vessel based on its sail area.

Agents and operators ordering pilots are encouraged to provide to the dispatcher the specific sail area of a vessel when ordering a pilot.

$$\text{Static Metric Tons of Wind on the Beam} = \frac{(V^2/18) \times \text{Sail Area}}{1000}$$

Sail Area = Square meters determined by Length (m) × Height (m)
(Height is freeboard plus highest container row)

V = Wind velocity in Meters Per Second (Knots of wind ÷ 1.944)

Tons of Force = Short Tons (Metric Tons × 1.102)

Wind Speed

Knots	5	10	15	20	25	30	35	40
Meters/Sec	2.6	5.1	7.7	10.3	12.9	15.4	18	20.6
V²/18	0.4	1.5	3.3	5.9	9.2	13.2	18	23.6

Sail Area (m²)	TONS OF FORCE							
2000	1	3	7	13	20	29	40	52
3000	1	5	11	20	30	44	60	78
4000	2	7	15	26	41	58	79	104
5000	2	8	18	33	51	73	99	130
6000	3	10	22	39	61	87	119	156
7000	3	12	25	46	71	102	139	182
8000	4	13	29	52	81	116	159	208
9000	4	15	33	59	91	131	179	234
10000	4	17	36	65	101	145	198	260
11000	5	18	40	72	112	160	218	286
12000	5	20	44	78	122	175	238	312
13000	6	22	47	85	132	189	258	338
14000	6	23	51	91	142	204	278	364

ABSENT COUNTERVALING CIRCUMSTANCES, DOCKING OR UNDOCKING TUG FORCE TONS SHOULD BE GREATER THAN OR EQUAL TO 1.5 TIMES THE WIND FORCE TONS.

D. Pre-job Expectations

COLRIP assumes that the hull plating, bitts, chocks, and all other equipment reasonably expected to withstand pressure during ship assistance by tugs will accommodate the full forces applied by tugs allocated under these guidelines. If the bitts, chocks, plating or any other equipment cannot withstand the maximum predicted forces, the vessel's master and agent are obligated to contact both COLRIP and the assigned tug company **BEFORE THE JOB COMMENCES** with the correct, safe working load (SWL) maximums.

Assist tug operators may sometimes be inclined to deliver less power than called for by a pilot out of concern over the SWL of a ship's bitts, chocks or other equipment. Failure of tug operators to respond fully to orders from the pilot can imperil the safety of a ship being assisted, nearby structures and persons who may be present. Any tug operator who has information regarding the SWL of ship's equipment that would cause the operator to refuse to deliver full tug power when ordered must notify the pilot of this concern **BEFORE THE JOB COMMENCES**.

A communication between the tug provider and the pilot assigned to the job is expected **BEFORE THE JOB COMMENCES**. The communication can be initiated by either party. If for any reason there has been no communication regarding the pilot's preferences for a particular job, these guidelines serve as the default recommendations, and the tug provider should only dispatch tugs that are consistent with these guidelines.

E. Tug Guidelines

1. General Reference

These guidelines apply to all docks unless different specific guidelines are provided in section 2 below.

Vessel LOA	Draft	Arrival	Departure	Notes:
>752'	≥30'	B+, B+	B+, B+	
	<30'	B+, B	B+, B	
Panamax (approx 750' LOA by 106' Beam)	≥30'	B+, B+	B+, B+	
	<30'	B+, C	B+, C	
Handymax (approx 623' LOA by 106' Beam)	≥30'	B+, B	B+, B	
	<30'	B, C	B, C	
Handysize (approx 585' LOA by 90' Beam)	≥30'	B+, C	C, C	
	<30'	C, C	C, C	

2. Specific Guidelines That Differ From General Reference.

Vessels requiring Class A+ tugs may substitute 1 Class A and 1 Class B for the Class A+ tug.

a. Portland

LDC (O-Dock)

Vessel LOA	Draft	Arrival	Departure	Notes:
Any	Any	B+, B	B+, B+	No thruster substitute.

Swan Island: Dry Docks

Vessel LOA	Draft	Arrival/Departure	Notes:
≥600'	Any	B+(make up), B, C	No thruster substitute.
<600'	Any	B+(make up), C	No thruster substitute.

≥7000 m² Sail Area, docking or undocking with ≤15 knots of wind speed.

<7000 m² Sail Area, docking or undocking with ≤20 knots of wind speed.

DOCKING OR UNDOCKING WITH WIND SPEED GREATER THAN STATED SHOULD BE UNDERTAKEN ONLY AFTER DISCUSSING THE CIRCUMSTANCES WITH THE MASTER.

Swan Island: General

VESSELS GREATER THAN 800' LOA:

- MUST ARRIVE TO AN EMPTY BERTH, PRIOR TO INBOUND PILOT BOARDING.
- DOCKING OR UNDOCKING WITH WIND SPEED GREATER THAN 25 KNOTS SHOULD BE UNDERTAKEN ONLY AFTER DISCUSSING THE CIRCUMSTANCES WITH THE MASTER.

Willbridge Terminal

Arrival/Departure Current Velocity (knots)				
Vessel LOA	Draft	≤ 1.0	1.1 ≤ 1.5	1.6 ≤ 2.0*
≤601'	38'-40'	A, B+	A+, A+	A+, A+, A+
≤601'	30'-37'	A, B+	A+, A	A+, A+, A
≤601'	<30'	B+, B+	B+, B+	A+, A

No thruster substitute.

A representative of the vessel should contact COLRIP's office at least 24 hours in advance of an arrival/departure for current river conditions. Refer to the river current station at the following location: WILLAMETTE—AT PORTLAND (PRTO3)

<https://www.nwrhc.noaa.gov/river/station/flowplot/flowplot.cgi?id=PRTO3>

*DOCKING OR UNDOCKING WITH CURRENT GREATER THAN 2.0 KNOTS SHOULD BE UNDERTAKEN ONLY AFTER DISCUSSING THE CIRCUMSTANCES WITH THE MASTER.

Terminal 4: B-411

Vessel LOA	Draft	Arrival	Departure
Any	Any	See General Reference.	B

No thruster substitute on departure when only a bow thruster available.

Terminal 6: B-605 to B-603

Vessel LOA	Draft	Arrival	Departure	Notes:
1001' - 1200'	Any	A+, A+, A	A+, A+, A	May create one-way traffic in certain areas during transit.
901' - 1000'	Any	A+, A+	A+, A+	May create one-way traffic in certain areas during transit.
801' - 900'	Any	A, A	A, A	

No thruster substitute.

VESSELS GREATER THAN 800' LOA:

- MUST ARRIVE TO AN EMPTY BERTH, PRIOR TO INBOUND PILOT BOARDING.
- DOCKING OR UNDOCKING WITH WIND SPEED GREATER THAN 25 KNOTS SHOULD BE UNDERTAKEN ONLY AFTER DISCUSSING THE CIRCUMSTANCES WITH THE MASTER.

Terminal 6: B-601 (2 tugs + line boat on arrival, 2 tugs on departure)

Vessel LOA	Draft	Arrival	Departure	Notes:
Any	Any	B+, B	B+, C	No thruster substitute.

b. Vancouver**Van B-10** (2 tugs + line boat on arrival and departure)

Vessel LOA	Draft	Arrival	Departure	Notes:
Any	Any	B+, B	B+, C	No thruster substitute.

c. Kalama**Kalama Chemical** (2 tugs per dock agreement)

Vessel LOA	Draft	Arrival	Departure	Notes:
Any	Any	B+, C	C, C	No thruster substitute.

d. Longview**WEYCO Cargo** (2 tugs on departure per dock agreement)

Vessel LOA	Draft	Arrival	Departure	Notes:
Any	Any	B+, B	B+, B	No thruster substitute on departure.

e. Astoria**Astoria and Rice Island Anchorages**

Vessel LOA	Draft	Arrival	Departure	Notes:
Any	≥30'	B	B	Tide dependent.
Any	<30'	C	C	Tide dependent.

Port Docks: Face

Vessel LOA	Draft	Arrival	Departure
Any	Any	See General Reference.	See General Reference.

VESSELS GREATER THAN 800' LOA:

- MUST ARRIVE TO AN EMPTY BERTH.
- DOCKING OR UNDOCKING WITH WIND SPEED GREATER THAN 25 KNOTS SHOULD BE UNDERTAKEN ONLY AFTER DISCUSSING THE CIRCUMSTANCES WITH THE MASTER.

Port Docks: Slip

Vessel LOA	Draft	Arrival	Departure	Notes:
Any	Any	B+, B+	B+, B+	Tide dependent, no thruster substitute.