

TRANS MOUNTAIN PIPELINE ULC

Service Standards

Regarding the Transportation of Petroleum

Issued: December 22, 2017

Effective: January 1, 2018

Issued By:
Shipper Services
Trans Mountain Pipeline ULC.
Suite 2700, 300 – 5th Avenue SW
Calgary, Alberta T2P 5J2
<https://www.transmountain.com/>

Introduction

These Service Standards provide general information regarding Trans Mountain Pipeline ULC, as general partner of Trans Mountain Pipeline L.P. ("**Trans Mountain**" or "**Carrier**"), pipeline system operation and service levels that are applicable for Deliveries through Trans Mountain's Mainline System and for Deliveries through the Trans Mountain Pipeline (Puget Sound) LLC ("**Puget**") system. System operations and service levels may vary as throughput and commodity mixes vary. Actual system operations and service levels will, however, fully conform to the Carrier's obligations under the *National Energy Board Act*, and where required, to the Carrier's affiliate obligations as filed with Federal Energy Regulatory Commission ("**FERC**").

Carrier is obligated to provide transportation service pursuant to the terms and conditions specified by the Petroleum Tariff: Rules and Regulations ("**Petroleum Tariff**") on file with the National Energy Board ("**NEB**") and in the case of Puget, the Rules and Regulations under the Local Tariff on file with the FERC. These Service Standards are not intended to amend either Trans Mountain's or Puget's Rules and Regulations.

These Service Standards are divided into four sections:

1.	Operations	3
2.	Quality	4
3.	Logistics	6
4.	Communications and Reporting	7
5.	Disputes between Shippers	9

For the commodities transported, these Service Standards generally describe normal routing and batching, ratability, predicted transit times, tank utilization, batch sizes, line fill, quality and interface management issues.

Capitalized terms referenced in these Service Standards shall have the meanings set out in the Petroleum Tariff.

1. Operations

a. Description of "System"

Trans Mountain consists of a single pipeline transporting Crude Petroleum and Refined Petroleum from receipt locations in Edmonton, Alberta and Kamloops, British Columbia to Delivery locations in Sumas and Burnaby, British Columbia. Refined Petroleum is also Delivered to Kamloops, British Columbia from refineries in Edmonton, Alberta.

Puget, connected to Trans Mountain at the international boundary located just south of Sumas Station, transports Crude Petroleum from Sumas, British Columbia to the refineries at Cherry Point, Ferndale, and Anacortes in Washington State.

Trans Mountain provides a batch transportation service whereby light, synthetic and heavy Petroleum and Refined Petroleum is transported, or batched, through the pipeline. These materials are sequenced to minimize quality impacts and interface handling. Since the Trans Mountain pipeline is a continuous 610mm diameter pipe, with the exception of two 80 kilometer segments of 762mm diameter pipe from Edson, Alberta to Hinton, Alberta and from Darfield, British Columbia to Kamloops, British Columbia, and a 161km segment of 914mm diameter pipe from Hinton, Alberta to Rearguard, British Columbia, the batch configuration generally follows established limits. Because Trans Mountain is a single pipeline, there is no ability to segregate volumes by assigning commodities to distinct and separate pipelines. All commodities travel down the same pipeline.

b. Edmonton Batch Accumulation

The sole purpose of Trans Mountain Edmonton Terminal tanks is to accumulate batch volumes for the continuous supply of pipeline batches. Edmonton tankage is allocated to meet monthly nomination requirements. Generally and where monthly nominations justify, tankage is allocated to permit rateable receipts from Edmonton feeder pipelines. Where monthly nominations of a commodity or pool are insufficient or allocation of a tank for a nomination month may adversely impact the Carrier's ability to meet these Service Standards or the Rules and Regulations, the Carrier may require Shipper(s) to unrateably Deliver to Edmonton and receive at Delivery Point.

c. Edmonton Terminal Crude Petroleum Blending

The Trans Mountain Edmonton Terminal can blend Crude Petroleum from up to four (4) Trans Mountain tanks simultaneously on injection, with each tank potentially containing pooled Petroleum.

d. Pooling

To maximize tank utilization, Trans Mountain may accumulate certain Petroleum grades into pools. Each pool is defined by measured density, sulphur and microcarbon residue (MCR) characteristics. Many currently approved crudes are assigned to a pool with all new crudes reviewed against pool criteria for possible inclusion. Where a crude product has been assigned to a pool, Trans Mountain will monitor crude receipts to ensure compliance with the Pool Criteria and Shippers will make reasonable efforts to ensure crude delivered to Trans Mountain meet the Pool Criteria. Segregation is required for certain crudes with characteristic(s) unsuitable for pooling or that require special handling. Refined Petroleum is also segregated.

Trans Mountain may employ three pools at its Edmonton Terminal: Mixed Sweet ("MSW"), Mixed Sour ("MSR") and Light Synthetic ("SYN").

Pool Criteria

	Density (kg/m3)		Sulphur (wt%)		MCR	Source
	Min.	Max.	Min.	Max.	(wt%)	
SYN	800	880	-	0.25	< 0.25	Alberta upgrader.
MSW	800	880	-	0.50	< 4.0	Various
MSR	800	880	0.5	3	< 4.0	Various

e. Third Party Edmonton Supply

Shippers may nominate volume from a third party connected facility which may by-pass Trans Mountain's inlet meters, manifold, or booster pumps (or a combination of the three) allowing additional blending or accumulation flexibility vs Trans Mountain's capabilities.

Generally, Trans Mountain will accept third party supply of a batch from 100% to 15% of the batch volume, limited by Trans Mountain and the third party's facility capabilities or other factors. Trans Mountain may require the supplied volume to be uniformly blended with other batch components supplied by Trans Mountain tankage or other third party facilities. At its discretion, Trans Mountain may blend from a maximum of four facilities, including Trans Mountain's tanks.

Third party supplied Petroleum that is intended to be Delivered to Westridge Marine Terminal must be supplied unrateably within the month as directed by Trans Mountain.

f. Kamloops Deliveries

At Kamloops, British Columbia, Refined Petroleum is Delivered into Suncor's distribution terminal and simultaneously, Crude Petroleum from Pembina West Pipeline is received into the pipeline at Kamloops Station. Crude Petroleum received at Kamloops is either injected into a passing batch or, pumped as a distinct batch during Refined Petroleum Deliveries. If Refined Petroleum Delivery windows to Suncor are insufficient to accommodate Crude Petroleum from Pembina West, the Petroleum Tariff allows the system to shutdown upstream to accommodate injections downstream. Also, during times of reduced throughput, the pipeline can be diverted into Kamloops tankage to provide a pumping window for a distinct BC Crude Petroleum batch. The batch diverted into Kamloops tankage is subsequently pumped back into the mainline following completion of the Kamloops pumping.

g. Sumas Deliveries

At Sumas, British Columbia, Crude Petroleum is transferred to Puget for Delivery to Washington State refineries. Prior to transfer to Puget, the batches may be broken out into tankage at Sumas.

h. Burnaby Deliveries

At Burnaby, British Columbia, Deliveries are made to either the Chevron refinery or the Suncor products terminal. Volumes are also aggregated at the Burnaby tank farm for subsequent export via the Westridge Marine Terminal. Refined Petroleum destined for the Suncor Terminal does not enter tankage at Burnaby Terminal.

2. Quality

All Trans Mountain commodity segregation is subject to normal operating impacts and is undertaken on a reasonable efforts basis.

a. Buffers and Flushing

Certain Crude Petroleum may have characteristics considered detrimental to other Shippers' products for which Trans Mountain has determined certain measures be taken during transportation or storage, referred to as "special handling". Currently, special handling entails batches be buffered or flushed or both, and may include other measures. Shippers with Crude Petroleum that contain in excess of 1% olefins are considered Olefinic crudes and are required to provide adequate flush volume which will inject separately and follow the Olefinic crude. General volume requirement is three times volume of tank bottoms. Flushing of both Edmonton and either Sumas or Burnaby tanks is required. The same flush material may be used for two tank farms (Edmonton and Sumas or Edmonton and Burnaby) per cargo.

Trans Mountain carries a range of Crude Petroleum and Refined Petroleum to Delivery facilities with varying processing capabilities. Given this, some facilities may prefer to not receive product that has been exposed to Crude Petroleum with certain characteristics. In the case of Shippers moving these less desired products, buffer may be requested.

b. Commodity Approval Process

Carrier requires all new commodities requesting system access to undergo an approval process. The Commodity Approval Process provides orderly system preparation for handling the new commodity including: analysis of required facilities, system impact, special handling requirements, pool and tankage assignments and quality implications. The Commodity Approval Process is available on the Carrier's website.

c. Commodity Segregation

Segregation is achieved through tank allocation and mainline batch management. Carrier will provide reasonable efforts to ensure that only compatible commodities use the same tank. Carrier will notify Shipper if tank allocations deviate from the standard as outlined in the table below¹. Changes will not be made to the table below without consultation with Shippers.

		NEW PETROLEUM GRADE						
		CONDENSATES	LIGHT SWEET	LIGHT SOUR	LIGHT SYNTHETIC	HEAVY	SUPER HEAVY	REFINED PRODUCTS
PREVIOUS PETROLEUM GRADE	CONDENSATES	C	B	B	S	B	B	S
	LIGHT SWEET	B	C	B	B	B	B	S
	LIGHT SOUR	B	B	C	S	B	B	S
	LIGHT SYNTHETIC	B	B	B	C	B	B	S
	HEAVY	S	B	B	S	B	B	S
	SUPER HEAVY	S	B	B	S	B	B	S
	REFINED PRODUCTS	S	S	S	S	S	S	S

Note: S = Segregated, C = Commingled, B = Bottom

d. Quality Control and Interface Management

To manage the interface and quality between the various batches transiting the system, Carrier employs a variety of handling techniques. Batches of adjacent similar Crude Petroleum are typically cut at a mid-point interface, though alternate handling techniques are possible with concurrence between the affected Shippers. Interfaces with heavy Crude Petroleum, or those material types which may degrade the preceding or proceeding batch, will typically be cut on density and the prevailing increase in interface volume will be the responsibility of the Shipper receiving such volume. Arrangements for interface handling are determined and agreed upon between affected parties and Carrier prior to the batch entering the pipeline.

e. Quality Testing and Sampling

Petroleum sampling is undertaken in accordance with API Standards and accepted practices for custody transfer purposes and to confirm the quality of Petroleum received and Delivered. Representative samples are collected through automatic line sampling devices. These samples are analyzed to determine the levels of Sediment (S) and Water (W), which is then used to calculate the net cubic metre volume of merchantable Petroleum and to ensure that the Petroleum Tariff requirements for no more than 0.5% S&W are met.

In addition to regular testing for S&W, Carrier also performs other routine analyses, consisting of up to 12 different physical and chemical tests for each Crude Petroleum type at least once per year. More frequent testing is undertaken on an as-needed basis. The following table illustrates the parameters and frequency of Carrier's testing program as it relates to individual commodities:

¹ The purpose of the table is to determine the method (Segregated, Commingled, Bottom) used when the service of a tank is changed. Previous Petroleum Grade refers to the grade of Petroleum that the tank was used for prior to the change in service. New Petroleum Grade refers to the grade of Petroleum that the tank will be used for after the change in service.

	BS&W	Density	Total Sulphur	H2S in Liquid	Viscosity	Pour Point	TAN	Olefins	C30+	TVP/RVP
CONDENSATES	R, D	R, D	R - Monthly	R - Annually	R - Annually			R - Annually	R - Annually	R - Annually
LIGHT SWEET CRUDES	R, D	R, D	R - Monthly	R - Annually	R - Annually	R - Annually		R - Annually	R - Annually	R - Annually
LIGHT SOUR CRUDES	R, D	R, D	R - Monthly	R - Annually	R - Annually	R - Annually		R - Annually	R - Annually	R - Annually
LIGHT SYNTHETIC CRUDES	R, D	R, D	R - Monthly	R - Annually	R - Annually	R - Annually		R - Annually	R - Annually	R - Annually
HEAVY CRUDES	R, D	R, D	R - Monthly	R - Annually	R - Annually	R - Annually	R - Annually	R - Annually	R - Annually	R - Annually
SUPER HEAVY CRUDES	R, D	R, D	R - Monthly	R - Annually	R - Annually	R - Annually	R - Annually	R - Annually	R - Annually	R - Annually
HIGH TAN SUPER HEAVY CRUDES	R, D	R, D	R - Monthly	R - Annually	R - Annually	R - Annually	R - Annually	R - Annually	R - Annually	R - Annually
REFINED PRODUCTS		R, D				R - Annually		R - Annually	R - Annually	R - Annually

Note: R = Receipt, D = Delivery

f. Reference Temperatures

Petroleum with viscosity that exceeds 350 cSt at the stated reference temperature may not transit the Trans Mountain system. Viscosity is a function of temperature and is measured at a reference temperature which is provided in two week intervals. The Reference Temperature Table can be found on the Carrier's website.

3. Logistics

a. Batch Train Configuration

Trans Mountain is unique in that Crude Petroleum and Refined Petroleum are transported through the same pipeline in a process known as batching. Specific batch configurations have developed over time as the proportion of Refined Petroleum and Crude Petroleum types being transported have changed. Originally, Trans Mountain was entirely a Crude Petroleum pipeline but has since evolved with the needs of its Shippers and currently transports a diverse range of commodities.

Individual batches in the pipeline are carefully sequenced into batch trains which take into consideration quality, interface handling and ratability concerns. There are generally 5-6 product trains pumped at regular intervals per month. The size and injected configuration of these batch trains are limited to maximize throughput, satisfy Deliveries to all Shippers and account for each downstream consignee's specific handling capabilities.

b. Batch Sizes

i. Minimum Batch Size

Minimum batch sizes are generally restricted to 8,000 m³ for Delivery to one consignee and destination. Minimum batch sizes are necessary due to interface growth that occurs while transporting individual batches. Injections of individual commodities of less than the minimum batch size are permitted if the commodity is part of a larger batch train as is the case with Refined Petroleum trains or Crude Petroleum buffers.

ii. Maximum Batch Size

Maximum batch sizes are dictated by ratability concerns for all commodities moving through the system and also influenced by reasonable power hydraulic requirements. In addition, tankage availability and other operational considerations will limit batch sizes.

iii. Maximum Batch Train Size

Maximum batch trains, typically made up of Refined Petroleum, are necessary in order to ensure ratable Deliveries to other consignees and to allow for normal maintenance activities. Batch train size is usually restricted to 80,000 m³ and less.

c. Tankage Utilization

The efficient transportation of commodities within the system is reliant on effective management of system tankage. Tanks are allocated to ensure reasonable segregation, ensuring batches can be accumulated and injected consistent with these Service Standards and Trans Mountain's Rules and Regulations.

Edmonton tankage is provided to permit the rateable receipt from feeders and injection of batches, both pooled and segregated. Certain segregated commodities are restricted by destination point logistics and individual commodity volumes. The Carrier may reasonably reallocate tankage as necessary to maximize tank utilization at all times.

d. Predicted Transit Times

Transit times are dependent upon the level of Nominations for the month. The following table indicates expected transit times for various throughput levels.

Indicative Transit Times (number of days between locations):

	FROM: Edmonton						FROM: Kamloops					
<i>Flow Rate (‘000 bpd)</i>	165	190	210	235	260	300	165	190	210	235	260	300
Destinations:												
<i>Kamloops</i>	9.3	8.0	7.3	6.5	5.9	5.1	<i>na</i>	<i>na</i>	<i>na</i>	<i>na</i>	<i>na</i>	<i>na</i>
<i>Sumas</i>	12.0	10.4	9.4	8.4	7.6	6.6	2.7	2.4	2.2	1.9	1.7	1.5
<i>Anacortes / Ferndale</i>	12.7	11.0	10.0	8.9	8.1	7.0	3.4	3.0	2.7	2.4	2.2	1.9
<i>Burnaby</i>	12.7	11.0	10.0	8.9	8.1	7.0	3.4	3.0	2.7	2.4	2.2	1.9

e. Working Stock and Line Fill

Working Stock and Line Fill describes the specific volume in the Mainline System for a particular Shipper at a particular point in time. It is typically measured at month end for inventory control purposes and Shipper balances. Line fill is comprised of the Shipper's volume held in the pipeline, station lines, tank bottoms and can include Working Stock.

4. Communications and Reporting

a. Nominations

For each calendar month, scheduling functions begin with receipt of Nominations on the Notices of Shipment provided by Shippers on dates set out on the Carrier's website. If apportionment is required or on a portion thereof, Carrier will verify the Nominated volumes submitted. If following Nomination verification, apportionment still exists, Nominations will be apportioned again according to the Petroleum Tariff in effect at the time.

Once Nominations are submitted, the next month's schedules are completed within approximately 5 business days following the close of Nominations. Revisions to pipeline schedules usually occur every business day throughout the month to reflect changing conditions or revised Nominations.

b. Delivery Schedules

Carrier provides monthly Delivery schedules at the start of each month and provides regular updates at a minimum of once per week throughout the month. Carrier also provides updates as required when significant changes occur.

c. Supply and Management of Stock

Carrier reports to Shippers on a regular basis regarding the supply and management of stock within the Trans Mountain system. The following table is indicative of the reporting involved.

Supply Management Activities		
Process	Activity	Reporting
Nominations	Due on a specific date and time as specified in Carrier's website	Nomination due date issued to all Shippers within last month of year preceding Nomination calendar.
Apportionment	All Nomination information is compiled to determine if apportionment is required. If required, apportionment is announced the afternoon of the day after Nominations are due (as outlined in the COLC forecast-reporting calendar). Revised N.O.S.'s due back 24 hours from time of announcement.	Carrier issues letter to all Shippers, feeder pipelines and interested parties.
Month-end Splits	Feeders notified of month-end total Deliveries to Trans Mountain by the end of the 2 nd working day of the new month for the previous month. Feeders provide to Trans Mountain month-end splits by 3 rd working day	No reporting.
Refined Petroleum report	Indicates anticipated Delivery times and volumes for Refined Petroleum Deliveries following consultation with Shippers	Available by download.
Monthly Shippers balance	Issued on the 9 th working day of each month	Carrier issues monthly Shippers balance statement.
Toll Tariff invoicing	Issued on the 4 th working day after the 15 th and the 4 th working day after the last working day of the month	Carrier issues invoices.

d. VISTA

Carrier's scheduling software (VISTA) provides online access to current and historical Nominations (up to 18 months), real-time injection and Delivery schedules, upstream/downstream Nomination verification, consignee Delivery reports, and an electronic message board.

e. Planned or Unforeseen Events

Planned or unforeseen events which will materially affect or disrupt schedules to the extent that Deliveries will be impacted will be discussed with the relevant parties within two (2) business days or sooner if Deliveries are planned to occur. If disruptions are anticipated to be of sufficient magnitude to have the potential of affecting the shipping community at large then an "All Shippers and Interested Parties" bulletin will be issued within two (2) business days.

Significant changes to Trans Mountain's operations can have a material impact on oil markets and, in turn, on producers, marketers, Shippers and refiners. As such, Carrier will strive to provide impacted parties with timely access to information.

Unscheduled or unplanned events that impact, or have the potential to impact Trans Mountain's operations will be communicated to producers, marketers, Shippers and refiners and the Canadian Association of Petroleum Producers, as quickly as possible. Ideally, changes to planned or scheduled events will be communicated with prior notice. Generally and where feasible, the objective will be to inform impacted parties of events or circumstances so that there are "no surprises" regarding system operations.

It is also recognized that Carrier has a reciprocal dependency on its customers to provide accurate and timely information in order to fulfill the above.

5. Disputes between Shippers

In a batched pipeline system with Shippers and commodities sharing the same facilities, it is inevitable that Shippers and commodities will be impacted by the operations of the pipeline and/or other Shippers. Carrier will endeavor to maintain segregation of commodities and services such that disputes between Shippers are held at a minimum. However, conflicting priorities may ultimately result in a dispute between Shippers.

In these circumstances, Carrier will endeavor to resolve the dispute quickly while taking into account the operational impact to other Shippers and to system operation as a whole. Carrier will make operating decisions based on the greater good of all system users and system operations while minimizing further impact from the condition that gave rise to the dispute. Since Shipper confidentiality is a significant aspect influencing the resolution of most disputes, Carrier will endeavor to provide all required information to resolve the dispute, provided however, that it will not be required to violate Shipper confidentiality.

To minimize the escalation of disputes, Carrier will first look to the offending Shipper to resolve any operational impacts and to have that Shipper correct the situation so as not to impact any other Shipper(s).

In a case where the offending Shipper cannot correct the situation in sufficient time and impact(s) to other third party Shipper(s) results, Carrier will endeavor to first minimize the impact to the third party Shipper(s) and then working with the Shippers involved, attempt to resolve the situation through direct negotiation.

If an attempt to negotiate a resolution fails, Carrier will use any and all provisions at its disposal whether at law or provided to it within the Petroleum Tariff to rectify the situation and return the system to normal operating conditions as quickly as possible.