



VANCOUVER FRASER PORT AUTHORITY PROJECT PERMIT APPLICATION

Containerized Dry Bulk Operation at Fraser Surrey Docks

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INTRODUCTION

DP World proposes to commence handling containerized bulk cargoes at its Fraser Surrey Dock (FSD) terminal located in Surrey, BC (the project). A Project Permit from the Vancouver Fraser Port Authority (VFPA) is required for the project to proceed. This document along with a completed Project Permit application form and supporting plans and studies form the application for a VFPA Project Permit through the Project and Environmental Review (PER) process.

FSD previously received a Project Permit for this Project in 2017 (PER 16-139). However, the terminal did not move forward with the project at that time and the permit has since expired. DP World acquired the terminal in 2019 and has been considering additional uses for the terminal to make better use of available capacity. Handling containerized bulk cargoes at the terminal has been identified as a business opportunity with current demand in the marketplace and compatible to existing operations. Consequently, DP World is now applying for a new Project Permit for the project.

EXECUTIVE SUMMARY

DP World proposes to commence handling containerized dry bulk cargoes at FSD by utilizing existing terminal infrastructure. These cargoes would be handled much in the same way as other containerized cargoes are handled at the terminal. Laden containers would arrive at site via truck and be staged in the container storage yard pending loading onto a vessel. However, rather than loading the entire container onto a container vessel, the contents of the containers would be emptied from the container directly into the hold of a bulk vessel. The empty container would then be stored on site in the container yard awaiting pick-up by truck for transport back to the site of product origin.

To enable this new operation, the dry bulk cargoes would be transported to the site via specialized containers informally referred to as “rotainers” or “rotoboxes” that open on the top rather than on the ends as conventional containers do. As well, the standard spreader heads of the gantry cranes used for unloading the container would be temporarily replaced with specialized revolving heads capable of rotating the container, positioning it directly within the hold of the vessel and opening it to empty the contents. A mobile dust suppression unit fitted around the rim of the vessel hatch would emit a vapour wall to prevent fugitive dust from escaping the hold of the vessel.

The proposed operations do not require the construction of any new infrastructure on site or additional off-road motorized equipment. The specialized revolving heads are interchangeable with the standard

spreader heads and the two types of heads will be manually switched out as necessary. The mobile dust suppression unit would connect to existing water supply services on site. Existing equipment in the container yard would be used to move the rotainers in the same manner as existing container volumes.

DP World anticipates handling a wide range of containerized dry bulk cargoes in this manner including but not limited to copper concentrate, potash, zinc and lead concentrates. Initial volumes within the first three years of operation are estimated to be up to 120,000 metric tonnes of copper concentrate. However, DP World estimates that the terminal could handle up to 1.0 million metric tonnes of dry bulk cargoes in this manner should there be market demand. Anticipated initial volumes translate into approximately 4,800 TEU's per year resulting in an average of eight trucks day and one vessel per month.

FRASER SURREY DOCKS BACKGROUND

DP World leases a property from Vancouver Fraser Port Authority (VFPA) at 11060 Elevator Road in Surrey, BC for the operation of the Fraser Surrey Docks (FSD) marine terminal. The terminal currently handles containers, dry bulk agricultural products, break-bulk cargoes such as forest products and steel and other cargoes and is considered to be the largest multi-purpose marine terminal on the west coast of North America. FSD has been an integral and responsible member of the community since 1962. DP World Canada acquired the terminal in 2019.

MARKET AND ECONOMIC BENEFITS

MARKET

DP World is currently investigating the shipment of dry bulk from various locations in British Columbia and western Canada. The types of commodities that are suitable for containerized bulk handling include niche products that move in relatively lower volumes such as copper and zinc concentrates and iron ore. While potash and wood chips and pellets tend to be shipped in higher volumes, containerized bulk transport can still be economical. However, containerized bulk transport is considered uneconomical for products that move in high volumes such as many agricultural products and coal.

DP World is entering into contract negotiations with a shipper of copper concentrate to move their product through FSD by way of containerized bulk volumes. This shipper currently moves volumes through another terminal at the Port of Vancouver by way of bulk operations. The ability to move product through FSD via containerized bulk operations provides a more competitive environment for the shipper and additional capacity to accommodate their anticipated growth in volumes. Their current mine is expected to be producing copper concentrate until 2022 at which time a new mine is expected to commence operation that would provide greater volumes. The current markets for this shippers' product include India, the Philippines and parts of China. With enhanced quality of their produce from their new mine, the shipper intends to expand to markets in Japan, Korea and other parts of China.

ECONOMIC BENEFITS

The existing container handling infrastructure at FSD is currently underutilized. The Operation will increase and diversify business at the terminal and make better use of existing assets. The advancement of this Operation will benefit the local community economically by creating employment opportunities for local vendors such as equipment fabricators, contractors, and equipment suppliers. The export of additional cargoes at FSD will also create ongoing employment opportunities at the terminal.

As well, the Operation supports Canada's trade by providing an additional outlet for BC's and Canada's export products that would otherwise be handled through bulk terminals only. A key driver for the Operation is to meet the overseas market for dry bulk commodities that are being produced from a number of mining operations in British Columbia.

OPERATIONS DESCRIPTION

CURRENT CONTAINER OPERATIONS

Container volumes have increased in the past two years after seeing a decline in the previous decade. Volumes handled at the terminal for the five-year period 2016 – 2020 are as follows:

- 2020 July YTD – 126,896 units
- 2019 – 214,330 units
- 2018 – 146,109 units
- 2017 – 68,193 units
- 2016 – 64,130 units

Berths No. 7, 8, and 9 are used for loading and unloading containers on and off of container ships. These berths are fitted with three traveling quay side container cranes with a hoisting capacity of up to 80 tonnes. The berths have a combined capacity to handle approximately 400,000 TEUs per annum, well above current container volumes.

Proposed Operations

DP World proposes to handle containerized dry bulk cargoes at FSD, using existing facilities, specifically the breakbulk or container truck gates, the container yard, berths 7, 8 and 9; container gantry cranes 3, 4 and 5. Appendix A provides a general layout of the terminal site.

The project does require the use of 20' specialized containers that will be supplied by the shipper, often referred to as rotainers or rotoboxes. These containers open at the top rather than on the ends as conventional containers do and can be unloaded directly into the hold of a bulk vessel. They are fitted with specially designed and lockable lids to prevent the contents coming in contact with the outside environment. Furthermore, the fully enclosed container system prevents water or other environmental factors for coming into contact with the material inside of the container.

To handle these containers at the terminal, DP World will purchase new revolving heads for the existing container gantry cranes. The revolving heads enable the crane to lift the rotobox container, rotate it 180 degrees, remove its lid to empty the contents of the container and replace the lid before landing the container back on the ground or on a vehicle for transport. The revolving heads are interchangeable with the standard spreading heads on the gantry cranes used to handle conventional containers at FSD. The two types of heads can be switched out manually and no modifications to the cranes are required.

The operation logistics are described in the following steps:

- 20' rotobox containers are loaded primarily at mine sites within BC and western Canada and trucked to FSD. The laden containers will be stored in the container yard until the bulk vessel

arrives for loading. The containerized bulk cargoes are not stored outside of the container on the site at any time.

- One to three gantry cranes will be used for loading of the bulk vessel. The revolving head will be manually fitted to the gantry crane(s) to perform the following specific activities:
 - latch onto the container
 - lift the container up, over and into the hatch of the bulk vessel
 - remove the lid while in the vessel's hatch of the bulk vessel
 - invert the container 180 degrees thereby emptying the contents of the container into the hold of the bulk vessel, all while the revolver head and container is inside of the ship's hold reducing the potential risk of fugitive dust
 - right the container and at the same time placing the lid back on the container
 - land and unlatch the container on the terminal deck or onto a vehicle to transport the empty container
- A mobile automated dust suppression system mounted around the ship holds emits a vapour barrier wall during the unloading process, providing further mitigation to potential fugitive dust emissions
- Once emptied, the containers are returned to the container yard for storage pending pick-up by truck for transport back to the mine site.

Figure 1: Preparing to Unload Container within Hold of OGV (source: greenport.com)



PROPOSED CARGOES AND ANTICIPATED VOLUMES

Initial containerized bulk cargoes would be copper concentrate. Once this model is proven at FSD, DP World anticipates handling other containerized bulk cargoes through the terminal. Bulk cargoes that may move through the terminal include but are not limited to:

- Copper concentrate (initial volumes)
- Potash
- Wood pellets and chips
- Lead concentrate
- Zinc concentrate

Table 1: Anticipated Volumes

Cargo	Annual Metric Tonnes	Notes
Year 1-3	120,000	Initial volume of copper concentrate
Years 3-5	120,000 – 240,000	Incremental growth as model is proven
Year 5+	TBD	Based on market demand; estimated capacity of 1.0 MMT

The estimate of initial volumes in years 1 to 3 reflect current discussions with a shipper of copper concentrate. Future volumes are hypothetical based on DP World’s current understanding of market demand. The terminal would have the capacity to handle up to 1.0 MMT of containerized bulk cargoes through the proposed operations.

TRUCK AND VESSEL OPERATIONS

Initial volumes translate into approximately 4,800 TEUs per year. At this time, all volumes are expected to arrive to the terminal via truck with initial volumes of an average of 8 trucks/day. It is anticipated that these trucks will access and depart the terminal via the back breakbulk gate, bypassing the container truck gates as they are not subject to the terminal’s truck reservation system. If volumes grow substantially in the future, trucks may be routed through the container truck gates.

Initial volumes also translate into approximately one vessel/month in the range of 40,000 to 50,000 DWT (up to 15 vessels/year). Initially, it is expected that vessels will be partially loaded with 10,000 to 30,000 tonnes of material at FSD and will go to another terminal in the Port of Vancouver to complete loading.

MOBILE DUST SUPPRESSION SYSTEM

While fugitive dust is not anticipated during the loading operations, a mobile dust suppressions system will be used as an additional preventative measure. The system will be installed around the hatch of the hold in the bulk vessel hold prior to unloading of the containers. This system acts as a barrier to further mitigate any fugitive dust emissions from the loading process by continuously spraying a fine mist of water fog from each of the four sides of the ship’s hold and across the top of the ship’s hold during the inverting of the container. This system requires less water than a conventional water spray system and is estimated to use approximately 40 litres of water per hour. It is compatible with the range of products under consideration to move through the terminal.

ENVIRONMENTAL BENEFITS

The handling of dry bulk products in the speciality containers allows for the full containment of the dry bulk product from point of origin to the inside of the hold of the vessel. The containerized option completely replaces the need for stockpiles, conveyance systems and ship loaders. As a consequent, many of the challenges and risks associated with a typical dry bulk handling facility are eliminated such as runoff from open stockpiles as well as fugitive dust from open stockpiles, conveyers and transfer points.

SUPPORTING PLANS

The following plans are included in the appendices in support of the application:

AIR EMISSION MANAGEMENT PLAN

This report was commissioned for this project to confirm the negligible risk for fugitive dust emissions to be generated during the project operations and provide a plan to further prevent emissions from occurring. It also includes a plan for training employees in related activities as well as procedures for employees to report any incidences of fugitive dust emissions.

FRASER SURREY DOCKS WATER AND LAND POLLUTION PREVENTION PLAN

DP World maintains a Water and Land Pollution Prevention Plan that addresses stormwater management for the terminal. Attached is the most recent version of the plan. The plan has been reviewed to confirm that existing processes would apply to containerized bulk cargoes. Should the project be approved, the plan will be updated to indicate the new products being handled.

FRASER SURREY DOCKS EMERGENCY RESPONSE PLAN

DP World maintains an Emergency Response Plan for the terminal that addresses spill response. has been updated as a draft to recognize the project. Attached is the most recent version of the plan. It has been reviewed to confirm that existing processes would apply to containerized bulk cargoes and that specific updates are not required.