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November 22, 2012

Rachel Shaw, Project Assessment Director
BC Environmental Assessment Office
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Victoria BC V8W 9V1

Dear Rachel Shaw,

**Re: Vancouver Airport Fuel Delivery Project
VAFFC's Summary Comments**

Enclosed with this letter is a copy of VAFFC's Summary Comments.

VAFFC prepared this summary to explain in one brief document how it has responded to the various areas of interest that were raised during the course of the Project review and to give the overarching context for this Project. The document also briefly outlines the key points that flow from the comprehensive record of information that VAFFC has filed during the Project assessment.

The Project is a culmination of years of research, review and consultation. It has been assessed over several years through a rigorous review undertaken in accordance with the federal and provincial environmental assessment processes. The resulting Project review record is comprehensive and robust by any reasonable measure. VAFFC submits that all reasonable concerns about the Project have been answered.

VAFFC looks forward to working with the EAO in implementing this important project if an environmental certificate is granted.

Sincerely,
Vancouver Airport Fuel Facilities Corporation

Adrian Pollard, PEng
Project Director

CC: Carrie Brown, Port Metro Vancouver



VANCOUVER AIRPORT FUEL FACILITIES CORPORATION

VANCOUVER AIRPORT FUEL DELIVERY PROJECT ASSESSMENT

Summary Comments

21 November 2012



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1 INTRODUCTION

This document outlines Vancouver Airport Fuel Facilities Corporation's (VAFFC's) perspective on the Vancouver Airport Fuel Delivery Project (Project). These comments are supported by the comprehensive record of information that VAFFC has filed during the Project assessment.

When reviewing that record, the overarching context of this Project must be considered to assess the benefits and risks properly:

- The current fuel delivery infrastructure is inadequate. It cannot meet peak demand at Vancouver International Airport (YVR) and must be supplemented by frequent truck deliveries each day.
- This Project will replace the current fuel delivery system with a more efficient configuration having a smaller physical and environmental footprint that better aligns with the current fuel supply logistics. It is an upgrade, not a new use.
- This Project will provide YVR with a reliable, safe and competitively priced fuel supply which is essential for YVR to remain competitive with other airports that compete to be a Pacific gateway. It is necessary infrastructure to support flights at YVR which serve important regional, provincial and national interests.
- On a stand-alone basis, the risks of this Project are few and will be managed to insignificant levels with well understood and proven risk management methods.
- On a comparative basis, the risks of this Project are far less than the current fuel delivery infrastructure.
- On a net basis, therefore, this Project is the most sustainable option because it will reduce risk and create greater social, environmental and economic benefits.

The status quo is not sustainable over the long term. The record demonstrates that this Project is the best solution to serve the growth at YVR.

2 OVERVIEW OF THE ENVIRONMENTAL REVIEW

The Project is a culmination of years of research, review and consultation. The Project review is comprehensive and robust by any reasonable measure and has involved an in-depth analysis of the issues using world-class expertise. The participation of the federal, provincial and municipal agencies, First Nations, and the public has been extensive. VAFFC has responded to all the issues raised, and has even gone beyond

the scope of the review in some cases to respond to issues of public and government interest. This Project has proven its merit.

A brief outline of the review follows:

- In November 2008, VAFFC applied to the BC Environmental Assessment Office (EAO) to opt into the project review process under the *Environmental Assessment Act*. Although the Project did not exceed any “Reviewable Project” threshold, VAFFC thought the EAO-led review would assist in responding to the public interest and coordinating the various reviews necessary for federal and provincial approvals. The opt in request was supported by the Canadian Environmental Assessment Agency, Vancouver Airport Authority, Vancouver Fraser Port Authority (VFPA), City of Richmond, Fraser Basin Council and the Fraser River Environmental Management Program.
- The EAO accepted the Project for review in February 2009.
- VFPA led the concurrent federal assessment which was harmonized with the EAO review.
- Twelve First Nations participated in the joint review as members of the Technical Working Group (TWG). Other First Nations were informed of the Project. VAFFC met with the TWG First Nations who wished to meet individually with VAFFC to review the Project and respond to their interests. VAFFC has responded to all the interests raised and has reached agreements with most of the participating First Nations.
- Other TWG members included the relevant federal, provincial, and municipal government representatives.
- VAFFC undertook an extensive public outreach program which included:
 - maintaining a dedicated website with information about the Project, the review process, and the opportunities for public comment;
 - advertising in the local newspapers and on the Project website;
 - providing information to and meeting with stakeholder groups;
 - responding to comments and questions through the EAO process, and through the Project website and dedicated phone line;
 - meeting with community and business organizations, public officials, elected representatives, and municipal councils; and

- hosting open houses and information sessions both within and outside of EAO public comment periods.
- VAFFC filed its draft Application Information Requirements (AIR) document in late 2009 which was then reviewed by the EAO, First Nations, the TWG and the public, all of whom provided written comments. The EAO also convened a public open house in April 2010 to allow for further input on the draft AIR.
- After finalizing the AIR in October 2010, VAFFC completed its studies and filed the Project Application for review in February 2011.
- During the review of the Project Application, VAFFC responded to a wide range of comments, including:
 - over 1,000 comments from the TWG and First Nations; and
 - over 1,200 comments from the public.
- VAFFC undertook further study on areas of interest that arose during the review, including the following major studies:
 - Spill prevention and response planning This work included drafting a Project-specific Oil Pollution Emergency Plan (OPEP) and field testing of marine spill response strategies with the assistance of Western Canada Marine Response Corporation (WCMRC). The field testing confirmed the effectiveness of those measures, as described in the OPEP;
 - Spill risk assessment with the spill mitigation measures in place This study demonstrated the risk of spills is extremely low under the final Project design conditions, when the proposed spill mitigation measures are in place;
 - The potential impact of an aviation fuel spill on biofilm in the Fraser Estuary These studies were undertaken by Battelle, an internationally recognized research institute, and confirmed that the risk to biofilm in the event of a spill is low, even if the spill is large;
 - Alternate aviation fuel delivery options This independent study by Ausenco-Sandwell and Golder Associates confirmed the findings of earlier work by VAFFC and Hatch that the Project was the best fuel delivery option for YVR's future. This study was not a component of the Project review, but VAFFC thought the work would help answer continuing public and agency interest in the selection of this Project; and

- Pipeline route alternatives In response to concerns from the City of Richmond, VAFFC filed an addendum to the Project Application in November 2011 to assess the Highway 99 route which reduces the length of pipeline within municipal road rights-of-way to less than 3.5 km.
- In 2010, VFPA commissioned Det Norske Veritas to undertake an independent *Fraser River Tanker Traffic Study* to assess the operational risks of movements of bulk liquid cargo on the South Arm of the Fraser River. This study concluded that the risk posed by tanker traffic on the river is low and that the traffic can be managed safely. If the Project proceeds, VAFFC will be subject to, and participate in, the further development and implementation of the study's recommendations.

The culmination of this rigorous review process is a deep and broad record of information that has resulted in a Project design that has been tested, adjusted and refined to respond to all relevant concerns.

At the end of this intensive assessment, the record demonstrates that the Project in its current form is positive and sustainable from a social, environmental and economic perspective.

3 PROJECT BENEFITS AND RISKS

3.1 Project Justification – The Importance of Replacing the Current Fuel Delivery Infrastructure

Aviation fuel is currently delivered to YVR through a 41 km pipeline owned by Trans Mountain (Jet Fuel) Inc. (TMJ) and by trucks from fuel suppliers in the United States – about 1,000 round trips each month on average. Truck deliveries are the only viable option currently available for increasing supply to YVR because the existing pipeline system cannot meet the fuel demand at YVR during peak demand periods. The existing pipeline system was built at a time when four local refineries were in operation and the capacity to refine aviation fuel exceeded demand. With only one refinery remaining, new delivery infrastructure is needed.

VAFFC proposes a new aviation fuel delivery system that will meet the future demand for fuel at YVR and reflect the changes in the supply market logistics. The Project will situate the delivery infrastructure closer to YVR with a marine terminal that can access a diverse and abundant choice of international fuel suppliers.

The Project will include the following components:

- Upgrade of an existing marine terminal located in Richmond on the north shore of the South Arm of the Fraser River;
- A new fuel receiving and storage facility near the marine terminal; and
- A new 15 km delivery pipeline to YVR.

Marine vessel transport is the most economic means to access a broad range of flexible, competitively priced and secure fuel supply sources worldwide. Since YVR is located in an international port, access to marine deliveries figures prominently in the current and long-term planning of aviation fuel delivery to YVR.

An overview of the existing and proposed systems is shown in the diagram on **Figure 3.1**. **Figure 3.2** identifies the location of routes and infrastructure for comparison.

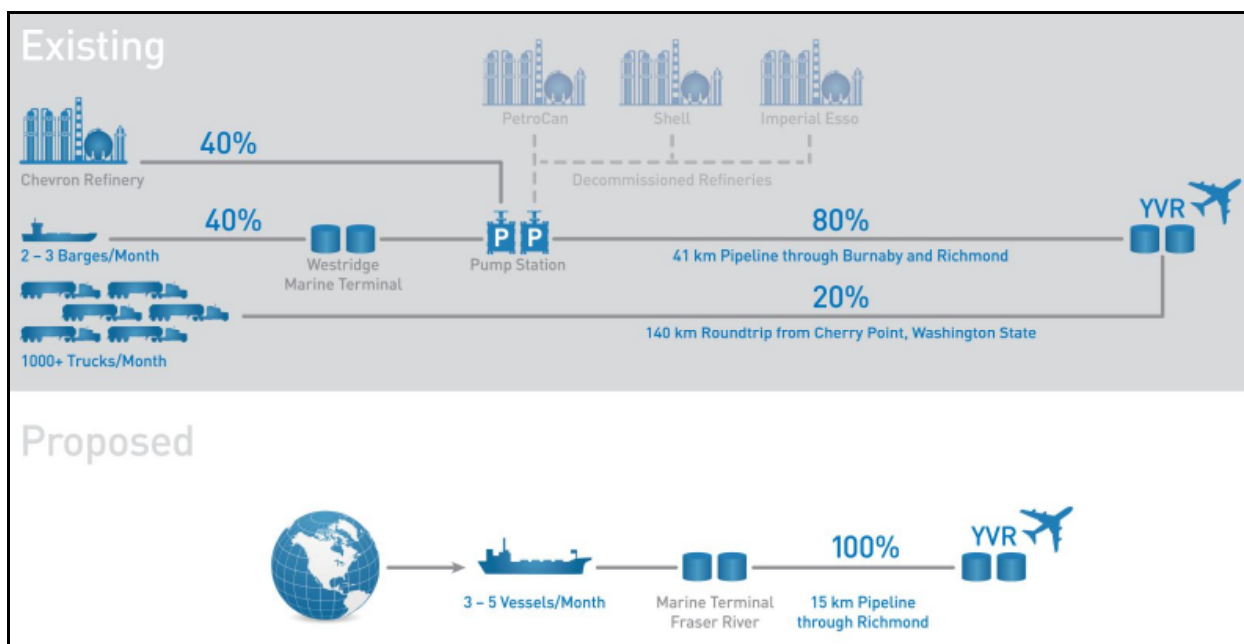


Figure 3.1 Overview of Existing and Proposed Fuel Delivery Systems



The Project will result in significant economic, social and environmental benefits, including the following:

- Access to more dependable, diverse and competitive offshore fuel supply sources to meet YVR's long-term fuel requirements. Access to the global market will greatly improve the economics, reliability and security of fuel supply to YVR;
- Strengthen YVR's position as a Pacific gateway of choice and continue YVR's important economic contribution to the Lower Mainland Region, British Columbia and Canada;
- Contribute to the regional economy during construction and operation of the Project;
- Reduce the physical and environmental footprint of fuel delivery to YVR:
 - eliminate the need for truck deliveries;
 - replace a 41 km under-sized and aging pipeline through Burnaby and Richmond with a 15 km right-sized and modern pipeline through Richmond; and
 - reduce vessel transit distance in Port Metro Vancouver waters by re-directing aviation fuel vessel traffic to the new marine terminal instead of the Westridge Terminal;

- Improve the operational and economic performance of the fuel delivery infrastructure by upgrading from the existing system to a shorter, consolidated and modern system closer to YVR; and
- Enhance spill response capacity on the South Arm of the Fraser River which will benefit current and future uses in the area. The Project will add significant spill response equipment, planning, training, and operational expertise for the Fraser River that does not currently exist.

3.3 The Net Effect of Replacing the Fuel Delivery Infrastructure

This Project replaces the existing fuel delivery infrastructure; it is not a “greenfield” incremental use. The new infrastructure will better align with the current and future logistics of fuel deliveries to YVR. It will also have a smaller environmental footprint and risk profile than the existing infrastructure that it will replace. A direct effect of this Project, therefore, is a net reduction in the environmental footprint and risk associated with aviation fuel delivery to YVR.

The existing fuel delivery system involves the following activities:

- pipeline delivery of 40% of YVR fuel from the Chevron refinery in North Burnaby;
- barge delivery of 40% of YVR fuel from Washington State to North Burnaby, and subsequent pipeline delivery to YVR (2 barges per month); and
- truck delivery of 20% of YVR fuel from Washington State directly to YVR (1,000 trucks per month).

The Chevron refinery is at capacity, so any increase in the demand for aviation fuel at YVR must be supplied from international sources, which is currently delivered by barge and truck from a single refinery in Washington State. Given the pipeline capacity, truck deliveries from this refinery must increase to match growth in fuel demand at YVR.

The proposed fuel delivery system involves the following activities:

- barge or ship delivery of 100% of YVR fuel from local and worldwide sources to the new marine terminal on the Fraser River (3 to 5 vessels per month); and
- pipeline delivery of 100% of YVR fuel from the marine terminal to YVR.

Once the new system is in operation, the use of the existing pipeline will diminish quickly because the shipments to YVR will transfer to the new system under the control of member airlines. VAFFC expects TMJ will cease the operation of the existing 41 km

pipeline soon after since it will no longer be economic to operate. The decommissioning of this system, and the elimination of truck deliveries from Washington State, will benefit Burnaby, Richmond, Delta and South Surrey.

The marine terminal, fuel receiving and pipeline facilities will be designed to meet current safety and environmental standards and will accommodate long-term growth with a single, efficient delivery system shared by all airlines that use YVR. The risk trade-off analysis clearly favours the proposed Project.

3.4 Managing Spill Risk

3.4.1 On Water

VAFFC took a precautionary approach to identifying risks to the marine environment and to designing measures to manage those risks.

VAFFC's precautionary approach to identifying risk is reflected in the following:

(a) Assessing the probability of an aviation fuel spill

The spill probability factors used in the analysis are conservative because they overstate the likelihood of a spill for this region. The analysis was based on historical worldwide spill statistics for all types of petroleum products. The statistics include spills of all types of oil product when single-hulled vessels were used, regulations were less stringent, and navigational technology was less advanced. Even under this conservative approach, the probability of a spill is very low.

The spill probability for the local region is even lower given the stringent local regulations and standards, port conditions (sandy river bottom in the South Arm of the Fraser River), and expertise (dedicated Pilots).

Based on the most recent Pacific Pilotage Authority data, B.C. has a 99.969% "incident free" rate (or approximately one incident every 3,330 vessel moves). The term "incident" refers to any unplanned situation that causes damage to a vessel or berth structure. Damage could therefore be as minor as a scratch on the hull or a cracked wooden pile, which would not result in a spill. Applying these incident rates to the Project, which will involve between 36-60 vessel calls a year, the chance of an "incident" is once every 55-to-92 years.

(b) Assessing the consequence of an aviation fuel spill

VAFFC engaged leading scientists with expertise on Fraser River hydrodynamics and spill algorithms to model the behaviour and fate of potential spills. The modelling intentionally used extreme conditions that do not reflect realistic Project operating conditions, including: excessively large spill scenarios; removal of ship-based or active mitigation from the analysis (i.e., no effort to stop or contain a spill); and a wide range of climatic and tidal conditions. This conservative approach helped inform the development of robust marine response strategies to protect sensitive areas.

In its review of VAFFC's work, Environment Canada recognized the modelling approach as being "current with industry and academic best-practices for oil spill fate and behaviour models." Further, Environment Canada noted VAFFC's approach to estimating worst-case fate and trajectory modelling were compatible with a "least regret" approach advocated in current research in this area. Overall, Environment Canada supported and encouraged these approaches as "the current state-of-the-art for spill modelling and potential incident preparation." (Environment Canada submission dated 13 November 2012 to the EAO).

Environment Canada also asked VAFFC to investigate the potential effects of a fuel spill on the biofilms that populate the Fraser River delta foreshore and are a possible food source for migratory birds. VAFFC agreed and asked that the Project review be suspended to allow time to design and undertake the field studies and scientific analyses, all with input from Environment Canada. In its review of the resulting reports, Environment Canada commended VAFFC's efforts to respond to the questions on biofilm. VAFFC has also committed to working with Environment Canada's experts to further the research if this Project receives an environmental certificate.

VAFFC's precautionary approach to managing risk is reflected in the following:

(a) Consulting spill risk experts

VAFFC retained WCMRC to develop and test marine-based spill response strategies for the Project. These included site-specific equipment and procedures for responding in several different areas of the Fraser River. WCMRC was also retained to develop a comprehensive OPEP for the marine terminal that incorporates the marine spill response strategies.

WCMRC is the Response Organization certified under the *Canada Shipping Act* to respond to marine oil spills on the Pacific Coast and the leading expert in this region.

(b) Incorporating best practices into planning, prevention and response

VAFFC proposes spill prevention and response measures which will meet or exceed federal and international regulations and guidelines and will reflect industry best practices. The primary focus is on spill prevention and will include the following measures:

1. All vessels visiting the terminal will be double-hulled;
2. All vessel transits on the river will be under the expert control of experienced river pilots and will be accompanied by dedicated escort and berthing tugs, as appropriate for the vessel;
3. All vessels calling at the terminal will be pre-screened and vetted through a tanker acceptance program. These vessels will also be required to carry pollution liability insurance at the prevailing industry standards;
4. The terminal will feature state-of-the art hydraulically-assisted unloading arms with leak-free manifold connections for fuel transfer;
5. Unloading operations will be curtailed if climatic conditions (e.g., high wind speeds) or river characteristics (e.g., exceptionally fast currents) exceed the pre-set operational limits;
6. Spill response vessels will be deployed upon arrival of a vessel in the river, will accompany the vessel to the terminal, and will complete pre-booming activities both at the terminal and in Ladner Reach for every vessel unloading event;
7. VAFFC will install boom anchor points at strategic locations along the river and will have a dedicated spill response satellite station at the marine terminal;
8. VAFFC will equip the terminal with skimmers to enable rapid and effective recovery of spilled product contained within the pre-deployed booming in the unlikely event of a spill at the terminal; and
9. On-site and on-water deployment of response personnel, vessels and equipment will shorten the initial response time from “hours” to “minutes”.

The implementation of these approaches will result in one of the highest standards of operation of any marine terminal in B.C. These prevention and response measures will reduce an already low risk profile to a very low risk.

3.4.2 On Land

The design, construction and operation of Project facilities are well understood and can be undertaken safely and environmentally responsibly.

VAFFC will follow best practices for all components of the Project. The land-based risks associated with the Project will be managed to insignificant levels with currently available technology and expertise. VAFFC has significant experience and success with fuel handling facilities, including fuel storage and pipeline delivery systems. Well established standards and programs will be used for testing and maintenance to verify that the systems operate with low risk to operators, the public and the environment.

When assessing the risks associated with the new pipeline through Richmond, it is important to note that the current fuel delivery system crosses Richmond with 10 km of pipeline, two river crossings, and frequent daily truck deliveries. The Project will result in less than 11 km of pipeline in Richmond, with over 7.5 km of it located on the Highway 99 right-of-way. The new pipeline will have only one river crossing. The new infrastructure will also eliminate the need for truck deliveries in all but exceptional circumstances.

Overall, the Project will reduce the current risk profile in the region, including in Richmond. Most of the new pipeline will be located on lands under federal and provincial jurisdiction in a well-defined and mapped right-of-way.

The land-based risk currently distributed through Burnaby, Richmond, Delta and South Surrey will then be localized in Richmond, which is home to YVR and receives much of the local economic benefit associated with YVR.

The new pipeline will operate under a tightly controlled and electronically monitored program to transfer fuel to YVR. For the foreseeable future, the pipeline will operate well below its capacity. Flexible timing of fuel transfers to YVR and the ability to deactivate the pipeline for extended periods of time will provide greater certainty of safety and environmental protection along its entire length.

4 CONCLUSION

This Project has been assessed and tested over several years through a rigorous review undertaken in accordance with the federal and provincial environmental assessment processes. The record demonstrates that:

- This Project is needed to support YVR and the important regional, provincial and national interests that it serves;
- It is the best option to deliver fuel to YVR since it best meets the social, environmental and economic objectives that underpin sustainable development;
- The Project will replace the existing fuel delivery system with modern infrastructure having a smaller physical footprint and superior long-term performance;
- On a net basis, it will reduce the existing environmental footprint and risk profile for delivering fuel to YVR;
- The Project risks are low and will be managed to insignificant levels with well-understood and available technology and expertise; and
- The Project benefits are significant from a social, environmental and economic perspective.

VAFFC submits that all reasonable concerns about the Project have been answered and the considerable merits have been demonstrated.