

CONFIDENTIAL

KITIMAT OIL REFINERY AND PIPELINE

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Executive Summary

We propose to build a world scale state-of-the-art heavy oil refinery and marine terminal near Kitimat BC at a cost of \$18 billion. In addition we will build a diluted bitumen (dilbit) pipeline from Edmonton to Kitimat at a cost of \$6 billion and a natural gas pipeline for \$1 billion. The total cost is \$25 billion.

The business case is strong as discussed below. There is a very high public benefit to BC and Canada with the development of 3000 permanent jobs and large new tax revenues for governments.

The pipeline itself is of vital importance to Canada as our sole market in the US will require less imported oil in future. Polls show the pipeline will be accepted in BC only if a refinery is built to convert the dilbit to refined fuels before it is placed in tankers.

The refinery will be built to Canadian standards and it will use new Canadian technology to cut greenhouse gases in half. Environmentally this will be far better for the planet than if the refinery is built in Asia.

All governments support the project. Discussions with First Nations are ongoing and we expect that most if not all will support the project as well. A wide majority of local Kitimat and Terrace citizens are also in favour.

China is prepared to buy all of the output from the refinery. It will also lend most of the funds to construct it. We ask that the Federal government lend or guarantee one-third of the total funds required, or \$8 billion.

Before formally asking for the funding we propose that a major feasibility study be completed. Due to the extensive engineering component of the study and the size of the project, the study is expected to cost up to \$200 million. We ask that the Federal government loan or guarantee one-half of these funds, or \$100 million.

Plant Specifications

Kitimat Clean Ltd. is proposing to construct a new heavy oil refinery approximately 25 kilometers to the north of Kitimat BC on a 3,000 hectare site.

The refinery will process 550,000 barrels per day (87,445 cubic meters per day) of diluted bitumen from the oilsands region of Alberta delivered to the site by pipeline or by rail. The diluent will be extracted at the refinery and returned to Alberta if needed there. If not, it will be processed into gasoline. The bitumen will be converted into fuel products, primarily for export.

The projected capital cost of the refinery is \$18 billion. The tidewater location will enable the modular construction, transportation and installation of large refinery components from lower wage countries.

The proposed refinery will be the largest refinery on the west coast of North America and amongst the largest in the world. Direct employment will be in the order of 1,500 full time equivalent jobs with another 1,500 contract jobs to support the operations and maintenance. During the construction period it is expected that a workforce of 6,000 will be required for a five year period.

The proposed Northern Gateway Pipeline would cross the site. Existing road and electrical infrastructure border the property. The location is only 15 miles from CN's main line and the Rio Tinto Alcan spur line runs through the site. Natural gas pipelines for the proposed LNG facilities will also be nearby.

Six dedicated product pipelines will run from the refinery to a marine terminal on the Douglas Channel. The Douglas Channel is a wide and deep fjord. There is a two kilometer wide fairway down Douglas Channel for most of its length.

We hope to use VLCC tankers to transport the refined fuels to markets around the Pacific Rim. VLCC's, which carry two million barrels per ship, have never been used before to deliver refined fuels because they are too big for many ports. In this case we expect to use two specially constructed terminals in Canada and China that will accept them. Also we would like to power the tankers with LNG which will be produced nearby at Kitimat. LNG is much better environmentally for the planet than Bunker C oil.

In our drive to be as safe and as green as possible we may even commission a fleet of new VLCC tankers to ensure they are built and operated to our specifications and state-of-the-art.

Business Case

All export oil refineries are built near the sea for ease of transporting large prefabricated components during construction and piping separated refinery outputs during operation. The site we have tied up is likely the only site available for a refinery in North America on the Pacific coast. Locating on the Pacific is essential as the only growing oil markets in the world are China and India. The US has no export refineries on the Pacific and it is unlikely they will be able to build any. BC has no other large appropriate site on the coast.

Approximately 80% of the operating cost in a refinery is the cost of the feedstock. Experts believe the Alberta dilbit feedstock will remain at least \$30 per barrel cheaper than the Mideast crude oil that must be imported by all Asian refineries. In fact over the past year it has been up to \$60 cheaper. The feedstock alone gives the Kitimat refinery a 20% cost advantage.

The second largest cost for the refinery, 8% of operating cost, is natural gas. Natural gas is up to five times more expensive in Asia.

Labour will be more expensive in Canada than in Asian countries but it accounts for only 2% of refinery operating costs.

Scale of production is a big factor in the cost per barrel of refining. The Kitimat plant will be twice as large as the average refinery in the Far East. It will be in the top ten in the world.

Shipping costs will be less. There will be no need to transport diluent across the ocean. In addition the distance from Kitimat to the Far East is less than from the Mideast. And when compared to the North American Gulf of Mexico refineries there is a \$20 per barrel transportation advantage shipping to the Far East.

In conclusion, the Kitimat refinery will have an overwhelming cost advantage over any other refinery in North America or on the Pacific basin. It will have annual revenue of \$24 billion. Its pretax margin will be over 10%.

The pipeline has mandated tolls. It will also be profitable.

All loans from China and Canada can be repaid in ten years. The payback for the Federal government could be as short as one year given the taxes involved in BC and Alberta and the potential impact on dilbit prices to the US.

Why is This a Good Idea for BC and Canada?

The refinery and pipelines will be the largest single investment in the history of BC.

The refinery will create 6,000 construction jobs in BC for five years. The pipelines will create additional thousands of construction jobs for two years.

The refinery will result in more permanent jobs than any project has ever created in the province. It will create 3,000 well paid permanent jobs in BC. They should last 50 to 100 years.

Additional factories spring up beside all refineries to make use of byproducts and chemical streams. Typically for each refinery job there is a second petrochemical job created. We could end up with another 3,000 direct petrochemical jobs in the valley.

These direct jobs will create thousands of indirect jobs in the area.

The refinery will be a large consumer of BC's surplus natural gas, which will help BC's economy in the Northeast. At 1.25 billion cubic feet per day, the consumption will be larger than that of the Apache Chevron Kitimat LNG plant.

Any risk of a supertanker spill of bitumen will be eliminated. Shipping gasoline, jet fuel, and diesel is much safer. While still toxic, they all float and evaporate. Often little or no remediation is required.

Dirtier refineries elsewhere will be displaced which will improve the world's environment.

Billions of dollars each year in economic spinoffs will help reduce government deficits.

A great deal of money will be generated each year for local First Nations.

The refinery will also provide enormous benefits for Alberta and Canada in that it will consume 400,000 barrels per day of heavy oil from Alberta that is in danger of being landlocked. By changing the North American supply/demand situation this will have the additional positive effect of reducing the \$25 billion per year of existing sales discounts on all Canadian oil exported to US refineries, freeing up more profit and more income tax.

Environmental Issues

Refineries do not release waste water. It is all recycled. The only environmental concerns have to do with air emissions. Engineering consultants say we will have no difficulty in controlling air emissions with scrubbers. Canada's regulations are strong. The planet's environment will be better for the refinery being located in Canada and not in a jurisdiction lacking in controls.

In addition we have made the decision to build a Fischer Tropsch (FT) refinery rather than a Coker refinery. Every heavy oil refinery built in the world to date has used Coker technology. We will be the first to use the FT process. Expander Energy from Calgary developed the technology and received patents for it this spring.

Diesel, gasoline and jet fuel require a certain ratio of carbon atoms to hydrogen atoms. The residual oil in a heavy oil refinery has far too much carbon. Cokers pull it out. Using Coker technology a refinery the size of Kitimat produces 100 train cars a day of sulphurous coke as a byproduct. FT technology uses the opposite approach. It adds hydrogen to the residual oil to get the required ratio of carbon to hydrogen. The hydrogen is taken from natural gas. No coke is produced. Effectively, low priced natural gas is transformed into high value diesel.

The extra capital cost to build an FT refinery is \$3 billion. There is an adequate return on this capital. But the greatest benefit is in the emissions from the refinery. CO₂ emissions are cut in half. The benefit is so great it nearly neutralizes the extra CO₂ given off in the oil sands' production process. As my daughter says, "Dad let's keep this refinery in our back yard so we can build it right and help look after the planet".

There is a great deal of concern in BC about the feedstock pipeline. Pipelines are safe if managed properly. The TransMountain pipeline is the only existing oil line in BC. It has been in the ground for 60 years and has never had an environmentally damaging leak. Pipelines today are even better made and better constructed. They are coated. They are welded better. They are better controlled with automatic sensors and shutoff valves. They are better inspected. And to help prevent geophysical problems they are drilled underneath rivers and mountains rather than being routed overtop.

We can build the pipeline intelligently and operate it safely. We have lots of time to research the issues carefully and use the world's best practices. The refinery will take a lot longer to build than the pipeline.

If BC remains set against a pipeline the oil will come to the refinery by rail. CN and the oil companies are keen on this. A great deal of crude in North America is being moved by rail now. The costs are not that different in this case and no permits are required. Rail tankering is, however, not as safe and it is more disruptive. Small towns along the route with level crossings would rue having 12 more trains running through every day.

BC Social License

We are aware of three extensive polls that have been completed over the past year or two. Mustel completed a poll for us last March that had similar results to the other two:

- The majority of B.C. residents agree that B.C. and Canada should add value to natural resources before exporting (86%), that it is better to refine bitumen within B.C. rather than offshore (76%), and agree with diversifying exports to find markets beyond the United States for Canada's petroleum products (70%).
- Only 30% of B.C. residents are in favour of the current Northern Gateway Pipeline plan to ship unrefined bitumen offshore (57% oppose and 13% unsure).
- If an environmentally sound method of transporting bitumen from Alberta to the refinery in B.C. can be found, support for the refinery proposal is 66%, opposition is 24% and 10% are unsure.
- Without the foregoing assurance, after being provided with basic information about the refinery, 52% express support for the proposal, 39% oppose it and 9% are unsure.
- The main reasons for supporting the proposal include economic benefits for B.C., and the creation of jobs within the province.
- The main reasons for opposing the proposal are general concerns for the environment but these concerns appear to be more related to the transport of bitumen to the refinery and climate change issues, rather than to the refinery itself.
- In summary, if environmental concerns can be addressed related to the transport of bitumen, there is strong support for the proposed refinery from all regions of the province. Even before hearing about our new refinery design which will dramatically reduce greenhouse gases, two out of three support the concept.

Progress Report

We are making very good progress on all fronts. Most issues are resolved. The site is tied up. All governments in Canada are keen. We have talked to many First Nations thus far and believe we will reach agreement with most if not all. The public is on board locally and throughout BC. The business case is strong. Financing is roughed out. We have signed a memorandum of understanding with the Industrial and Commercial Bank of China, the largest bank in the world. We are working to sign another with China Development Bank which has a special mandate to invest funds outside of China. Chinese oil companies want the refined fuels. We have chosen the technology for the refinery. We expect to submit the Environmental Application this fall. This Permitting process takes about two years and during that time we will sign contracts on all the foregoing matters.

Once we have financing and offtake contracts signed we need to commission a complete feasibility study. It will include all the design engineering and costing so that the capital costs and the operating processes are completely detailed and thought through. It will also include a thorough financial analysis. The cost of the study is estimated to be \$200 million. The Chinese are prepared to loan funds to help finance it. We ask the Federal government for up to \$100 million to complete the funding.