Pipeline Transportation of Diluted Bitumen from the Canadian Oil Sands

- Diluted bitumen is one of the types of crude oil derived from the Canadian oil sands in Alberta, Canada. It is a combination of bitumen, the heavy oil that is extracted from the oil sands, and a diluent, which is usually natural gas condensate, naphtha or mix of other light hydrocarbons. The diluted mixture improves the quality of bitumen and allows the crude oil (referred to as "dil-bit" in the industry) to meet pipeline product quality specifications posted with federal regulators so the crude oil flows through transmission pipelines.
- Diluted bitumen has characteristics that are similar to other heavy crudes that are currently being transported safely in pipelines. As shown in the chart below it is comparable to heavy crudes from Venezuela, Mexico and California:

Table 1 Trace Element Concentrations in Various Heavy Crude Oil Types

Location	Crude Name	API Gravity	Sulfur % wt	Vanadium (ppm)	Nickel (ppm)	Mercury (ppm)	Lead (ppm)
Canada	Bow River Heavy*	26.7	2.1	54	21	---	---
	Western Canadian Select†	20.6	3.4	134	56	---	---
	Cold Lake Blend**	22.6	3.6	169	65	---	---
	Wainwright-Kinsella **	23.1	1.6	80	40	---	---
California	California API 15	13.2	5.5	266	111	---	3
	California API 11	10.3	3.3	245	106	bdl	3
	Hondo	19.6	4.3	196	75	bdl	bdl
	Point Arguello Heavy	18.2	3.4	---	---	---	---
	Santa Clara	22.1	2.9	193	77	bdl	bdl
Iran	Soroosh	18.1	3.3	101	35	---	---
Mexico	Maya	21.3	3.0	257	44	bdl	bdl
Nigeria	Focardos Blend	29.7	0.3	---	---	---	---
Venezula	Tia Juana Heavy	12.1	2.7	---	---	---	---
	Lago Treco	22.6	2.6	---	---	---	---
	Boscan	10.1	5.5	1320	117	bdl	bdl
	Bacaquero	16.8	2.4	---	---	---	---
	BCF 24	23.5	2.0	---	---	---	---

bdl = below detection limits; --- = no data reported

* = Conventional crude

** = Dil-bit

† = Made up of conventional and Dil-Bit streams as it is a special blend of various crude types

References:
Crude Monitor. 2011. Crudemonitor.ca. Website accessed 24 Jan 2011. Website: http://www.crudemonitor.ca/home.php.
Environment Canada. 2011. Oil Properties Database. Website accessed 24 Jan 2011. Website: http://www.etc-cte.ec.gc.ca/databases/oilproperties/.

- Despite recent claims to the contrary, diluted bitumen is not a new commodity in U.S. and Canadian pipelines. It has been transported in existing pipelines for more than a decade.

- Transportation of diluted bitumen does not pose an increased risk to pipeline infrastructure or the environment. In fact, no instances of crude oil releases caused by internal corrosion from pipelines carrying Canadian crude are evident in the U.S. Department of Transportation's pipeline accident data from 2002 through early 2011[1]. The facts are clear that crude oil from the oil sands is no more corrosive to transmission pipelines than other crudes.
- Corrosion experts support these facts and do not believe that diluted bitumen poses a unique threat to pipelines. In a recent statement, Oliver Moghissi, President of NACE International, said:

  "Corrosivity of diluted bitumen is largely similar to crude oil, which is considered to be low. In addition, the threat of corrosion from diluted bitumen can be managed by conventional engineering practice in the same way as crude oil."

- Some misinformation has stemmed from confusion over piping segments used in the production of bitumen in the production field before the bitumen is upgraded or diluted. By the time diluted bitumen reaches the interprovincial, international and interstate pipeline network, the crude oil must meet quality specifications that are posted with the National Energy Board in Canada and the Federal Energy Regulatory Commission in the U.S. Pipeline operators in fact take samples of incoming batches at receipt and during transit to monitor product adherence to quality specifications required of its shippers. Pipeline operators are responsible to deliver agreed-upon batch quality to the destination refinery.
- Transmission pipelines that carry crude oil produced from the Canadian oil sands operate at temperatures ranging from 41-75 °F, contrary to the false claims by some opposed to oil sands development. Let's stick to the facts. It is true that some piping used in the production area for the oil sands operates at higher temperatures before the oil is diluted or upgraded, but that production or gathering piping is specifically designed for such use. Transmission pipelines transporting oil out of Alberta to the United States and beyond cross thousands of miles at a moderate and safe temperature that does not pose risk to the pipeline, coating or lands under which the pipeline crosses.
- In response to claims that Alberta's crude pipelines are experiencing more releases as a result of transporting diluted bitumen when compared to U.S. pipelines, the Energy Resources Conservation Board (ERCB), stated,

  "Analysis of pipeline failure statistics in Alberta has not identified any significant differences in failure frequency between pipelines handling conventional crude versus pipelines carrying crude bitumen, crude oil or synthetic crude oil."

[1] Data collected by the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration on form PHMSA F 7000-1, Accident Report Form – Hazardous Liquids Pipeline Systems.

The ERCB also noted that comparing releases in Alberta's data, where there is no reporting threshold, to PHMSA's U.S. data with a 5 barrel threshold is inappropriate.

- The only conclusion that can be reached based on fact is that diluted bitumen is essentially the same as any other type of crude and is not more of a risk to pipelines, people or the environment than other crudes already being transported via pipeline.
- The U.S. refining sector has invested in upgrades of refineries throughout the country to adapt to changes in world oil supply, including the increasing percentage of the world's oil that is heavy crude. Refineries in the midcontinent are positioned to use this increasing supply of reliable energy from our trading partner to the North. Refineries in the U.S. Gulf Region that have long received heavy crude from other countries are already well positioned to handle supplies from Canada. The supplies of lighter crude from North Dakota and surrounding states and provinces (collectively referred to as the Williston Basin) are a welcome supply of lighter crude, but will only partially satisfy the crude oil required in the U.S.
- Pipelines are one of the safest and most efficient ways to transport liquid energy commodities and we must not allow false claims about the characteristics of the crude being transported to delay or block permits for pipelines.

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