



KENAI PENINSULA BOROUGH

Oil & Gas, Mining & Special Projects Office
144 N. Binkley Street
Soldotna, Alaska 99669

BUSINESS: (907) 714-2335 FAX: (907) 262-8616
bpoppp@borough.kenai.ak.us www.cookinletoilandgas.org

JOHN J. WILLIAMS
BOROUGH MAYOR

To: Mayor John J. Williams

Thru: Tim Navarre, Chief of Staff

Date: August 8, 2006

From: Bill Popp, Oil, Gas & Mining Liaison

Subject: Possible impacts of Prudhoe Bay shut down on Alaska refinery output

This preliminary analysis is a follow up on the “first take” my office provided on August 7th regarding the possible impacts of the Prudhoe Bay oil field closure. In particular, the effects on Alaska’s total refinery output of finished petroleum products and the ripple effects that may be felt in the communities of the Kenai Peninsula Borough. As pointed out in the “first take,” there could be significant impacts on in-state production of motor diesel, home heating fuels, power generation fuels, jet fuels and gasoline. These impacts could lead to price spikes and shortages for these fuels unless the refiners are able to secure either adequate alternative supplies of refined products from outside of Alaska, or alternative supply contracts for North Slope crude oil originating from fields other than Prudhoe Bay.

1. Existing refineries, total through puts and outputs and total Alaska consumption

Alaska currently has 6 refineries. Two refineries are based on the North Slope and only serve that region. Two refineries are based in Fairbanks. One is based in Valdez and one is based in Nikiski. The four refineries based in Fairbanks, Valdez and Nikiski serve the major population centers of Alaska and will be the focus of this analysis.

The Flint Hills refinery in Fairbanks is the largest refinery in Alaska with a rated through put of 220,000 barrels per day drawn directly from the Trans Alaska Pipeline (TAPS). This facility consumes approximately 64,000 barrels per day to manufacture finished consumer products and returns the unused 146,000 barrels of crude oil back into TAPS.¹ The Flint Hills refinery is totally reliant on North Slope crude oil and has no likely alternative supply. Up to 60,000 barrels per day of through put was State royalty oil from the Prudhoe Bay Field in 2005.² In 2003, the Flint Hills refinery total production of 23.35 million barrels of finished products³ broke down as follows:

¹ State of Alaska, DNR, Division of Oil & Gas 2003 Annual Report, page 6-1

² State of Alaska, DNR, Division of Oil & Gas 2006 Annual Report, Table IV.2

³ State of Alaska, DNR, Division of Oil & Gas 2003 Annual Report, page 6-1

Gasoline & Naptha	19% annual production	4.44 million barrels
Jet Fuel	57% annual production	13.31 million barrels
Diesel	19% annual production	4.44 million barrels
Gas Oil	4% annual production	.93 million barrels
Asphalt	1% annual production	.23 million barrels

The Petro Star Refineries in Fairbanks and Valdez have rated through put volumes of 15,000 barrels of crude oil per day at the Fairbanks facility and 40,000 barrels of crude oil per day at the Valdez facility that are drawn directly from TAPS. Both refineries consume only 25%, or 13,750 total barrels per day and return the remaining 41,250 barrels per day back into TAPS.⁴ Petro Star manufactures 5.02 million barrels of jet fuel, diesel and fuel oil annually under a contract with the military in Alaska to supply the majority of the fuel requirements at military facilities across Alaska.

The Tesoro Refinery in Nikiski has a rated through put volume of 72,000 barrels of crude oil per day at peak capacity, but averages 65,000 barrels per day annually. The Nikiski refinery processes approximately 19,000 barrels per day of Cook Inlet crude oil, up to 25,000 barrels per day of North Slope crude originating from the Alpine Field, with the remaining crude oil supply originating from foreign sources such as Indonesia, Africa and other foreign countries.⁵ The refinery consumes 55,000 barrels per day to manufacture finished consumer products and ships out the remaining 10,000 barrels per day of residual products to West Coast refineries and Hawaii for use in power generation. Tesoro does not currently purchase State royalty oil. In 2003, the Tesoro refinery total production of 19.07 million barrels of finished and residual products⁶ broke down as follows:

Gasoline	25% annual production	4.56 million barrels
Jet, diesel, fuel oil	45% annual production	9.03 million barrels
Bottoms & residual	30% annual production	5.48 million barrels

The latest total statewide fuel consumption data is only available for 2002.⁷ For the purposes of this report, data has been converted from daily consumption in gallons to annual consumption in 42 gallon barrels as follows:

Gasoline	6.56 million barrels per year
Aviation gasoline	.48 million barrels per year
Jet fuel	24.13 million barrels per year
No. 2 diesel	4.46 million barrels per year
No. 2 heating oil	1.98 million barrels per year ⁸
No. 2 Distillate	5.56 million barrels per year

While gross production of refined products, at 47.44 million barrels, exceeded gross annual Alaska consumption of refined products totaling 43.14 million barrels for 2002, this is a misleading statistic. As an example, Alaska refineries provided 88% of in-state demand for jet

⁴ State of Alaska, DNR, Division of Oil & Gas 2003 Annual Report, page 6-2

⁵ Tesoro Alaska

⁶ State of Alaska, DNR, Division of Oil & Gas 2003 Annual Report, page 6-2

⁷ State of Alaska, DNR, Division of Oil & Gas 2003 Annual Report, page 6-3

⁸ Annual consumption for 2001. Data unavailable for 2002.

fuel, or 21.23 million barrels,⁹ which resulted in the importation of an additional 3.2 million barrels of jet fuel from refineries outside of Alaska in 2002.

Another point is that the total in-state gasoline production of approximately 8.5 million barrels exceeded the total in-state consumer demand 6.56 million barrels in 2002. This resulted in the export of a significant surplus of approximately 2.0 million barrels of gasoline from Alaska in 2002. Collaterally, most naptha production was also exported to markets outside of Alaska.¹⁰

Finally, significant volumes in excess of 5.5 million barrels of heating oil, fuel oil and diesel are also imported from outside of Alaska annually. These fuels are used to meet home heating and regional power generation needs, especially in rural and bush communities.¹¹ It should be noted that a significant portion of the importation of these fuels is into Southeast Alaska from refineries located in the Pacific Northwest.

2. Potential impacts of Prudhoe Bay shut down on distillate fuels markets & consumers

There are many unknowns at this time as to what the effects will be on the refining capacities within the State of Alaska. These unknowns include:

- How long will the closure of the Prudhoe Bay Field last and how long will it take to restore full production?
- How much of through put used at the Fairbanks and Valdez refineries is based on crude oil contracted from the Prudhoe Bay field?
- What is the current size of crude oil inventories in storage at the various refineries and how long will that stored inventory last?
- What is the potential for significant price spikes in diesel, heating oil and aviation fuels?
- What is the potential for significant supply shortages in diesel, heating oil and aviation fuels?
- What volume of needed refined products could be obtained from out of state sources to offset any shortfalls of in-state refinery production that may occur as a result of the Prudhoe Bay closure?
- What are the specific impacts to home heating oil production in Alaska and how would any resulting shortfalls affect rural and bush communities?
- What are the specific impacts to fuel oil production in Alaska and how would any resulting shortfalls affect Railbelt, rural and bush community power generation?
- Can temporary crude oil supply contracts be negotiated to redirect North Slope crude oil, currently destined for West Coast refiners, to Alaska refineries until Prudhoe Bay is put back into full production?

Most of these questions remain unanswered at the time of this analysis. My office has been in direct contact with industry representatives, market analysts and industry media contacts in an effort to better understand the possible answers, solutions or outcomes to many of these current unknowns.

One possible answer is to the question of how long this 400,000 barrel per day loss of North Slope crude oil production, down from the current 800,000 barrels a day, will last. This possible

⁹ State of Alaska, DNR, Division of Oil & Gas 2003 Annual Report, page 6-2

¹⁰ State of Alaska, DNR, Division of Oil & Gas 2003 Annual Report, pages 6-1 thru 6-3

¹¹ State of Alaska, DNR, Division of Oil & Gas 2003 Annual Report, pages 6-1 thru 6-3

answer can be found in the just released U.S. Department of Energy, Energy Information Administration (EIA) monthly report “Short-Term Energy Outlook” for August,¹² EIA has provided a preliminary analysis of the Prudhoe Bay Field closure. In this analysis, EIA notes that, as a result of the Prudhoe Bay closure, it projects that **“Alaska crude oil monthly production will be reduced by 300,000 barrels per day in August, 400,000 barrels per day in September and October, 300,000 barrels per day in November, 200,000 barrels per day in December, 100,000 barrels per day in January, then returning to full production in February.”**¹³

The EIA report goes on to discuss impacts to the broader U.S. energy markets, with a specific focus on West Coast markets. EIA notes in its analysis that it is estimated that 1.1 to 1.3 million barrels per day of spare production is available, mostly in Saudi Arabia.¹⁴ However, the EIA analysis does not address the fundamental issue of surplus refining capacities that may be needed to offset lost refined products production in Alaska because of the lack of ability to switch to alternative crude oil sources at several of the Alaska in-state refineries.

Three out of the four in-state refineries currently serving the consumer markets of Alaska are 100% dependent on North Slope crude oil for feedstock and have no alternative sources crude oil. Of the total 340,000 average barrels per day of crude oil through put used by instate refineries, 88%, or 300,000 barrels a day originates from North Slope oil fields.¹⁵ The Flint Hills refinery relies on an average of 60,000 barrels per day of State royalty oil from the Prudhoe Bay Field, or 27% of its crude oil supply.¹⁶

The unanswered questions could have significant impacts to several communities within the Kenai Peninsula Borough, and throughout Alaska, if the ultimate answer falls near a worst case scenario. Of particular concern are the effects of possible supply shortages or significant price spikes for home heating and power generation fuels. These issues could have serious implications to communities that rely on those fuels almost exclusively for heat and/or power generation. In the Kenai Peninsula Borough, those communities and governments heavily reliant on heating oil include Seward, Seldovia, Homer, Nanwalek, Port Graham, Tyonek and the Kenai Peninsula Borough School District to name a few, as well as most of the unincorporated regions of the Borough.

Beyond the Kenai Peninsula Borough, there are literally hundreds of communities that are almost totally reliant on home heating fuel and fuel oil for heat and power. The ramifications of a sudden unexpected price increase or outright shortage would be severe. This is particularly true at this time of year just when many communities are preparing to place and receive their final fuel orders for the winter before weather conditions set in that will prevent or curtail additional deliveries.

As this analysis was being written, BP Exploration announced its intent to make sure there are no interruptions to the crude oil supplies of any in-state refineries. However, details are sketchy as to how this will be accomplished, other than to seek the redirection of State Royalty In Kind (RIK) oil production from elsewhere on the North Slope. This remaining RIK amounts to approximately 40,000 bbl/day, as compared to the lost RIK production from the Prudhoe Bay

¹² EIA website: <http://www.eia.doe.gov/steo>

¹³ EIA, “Short-Term Energy Outlook,” August 8th, 2006, page 3, <http://www.eia.doe.gov/steo>

¹⁴ EIA, “Short-Term Energy Outlook,” August 8th, 2006, page 3, <http://www.eia.doe.gov/steo>

¹⁵ State of Alaska, DNR, Division of Oil & Gas 2003 Annual Report, pages 6-1 thru 6-3

¹⁶ State of Alaska, DNR, Division of Oil & Gas 2006 Annual Report, Table IV.2

Field that totaled 60,000 bbl/day. Commissioner Mike Menge of the State of Alaska Department of Natural Resources has also offered assurances to me that the State will be aggressively pursuing solutions to the crude supply situation for all in-state refineries.

My office, at the direction of the Mayor, has notified all communities of the Kenai Peninsula Borough that are dependent on fuel oil about these concerns and has suggested that these communities consider placing immediate orders to top off their fuel oil reserves in anticipation of possible price spikes or shortages in the coming weeks. My office has also contacted several other Boroughs to share our information and our concerns with the suggestion that they follow a similar line of planning with their regional communities. Even in the event that these price spikes or shortages do not materialize, it is better to be safe than sorry. Especially since the fuel will be needed eventually in any case.

My office will continue to monitor this situation and will provide further updates as these issues and unknowns begin to begin to clarify themselves and better information becomes available.