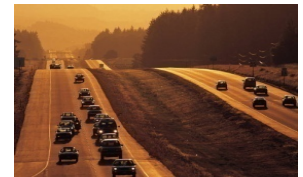




ANRTL PRESENTS AN ALASKA NORTH SLOPE GAS TO LIQUIDS (GTL) OPTION

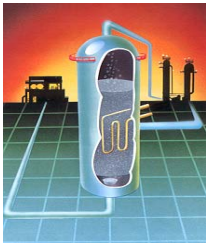
“A LEGACY DECISION for ALASKA”

PREPARED FOR LEGISLATIVE BUDGET & AUDIT COMMITTEE



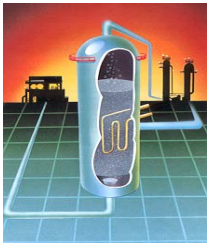
THE COMPETITION AGIA PROMISED BUT DID NOT DELIVER

June 20, 2008



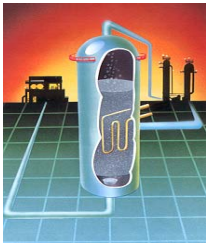
AGIA Response to GTLs

- Gas-to-Liquids (GTL) is a promising technology.
- However, various market, cost, and technological issues (as demonstrated in the Cook Inlet pilot project) make the future of GTL technology uncertain.
- Further evaluation will be needed as this technology advances.
- It is important to recognize that the AGIA process was designed as a commercial vehicle for getting Alaska gas from the North Slope to market.



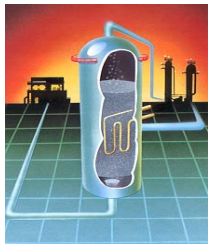
AGIA Response to GTLs

- Alaska Gasline Inducement Act does not dictate market destinations or the use of particular technologies, but allows for these issues to be decided by the market.
- Does anyone see the irony in this statement?
“The Alaska **GASLINE** Inducement Act does not dictate the use of a particular technology”.
- Then why not call it the Alaska Gas Development Inducement Act.



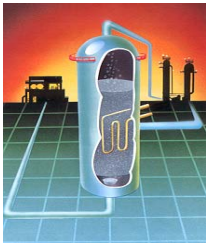
The main points we will make:

- It is important for the Legislature to know that there are other options for monetizing North Slope gas than with a gas pipeline, and that GTLs may well result in:
 - a much higher wellhead value for gas than a pipeline,
 - more long term jobs for Alaskans and
 - a larger tax base in Alaska.
- A GTL plant would most likely be built in stages, which has several important advantages.
- From the standpoint of Alaska employment and economic development the construction would be spread over a minimum of 14 years.



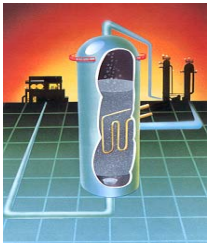
The main points we will make:

- The plant would require a substantial construction workforce. Although not as large as that needed for a gas pipeline, the construction workforce would be employed in Alaska for many more years.
- The GTL plant operations workforce would be much more substantial than that for a gas pipeline.



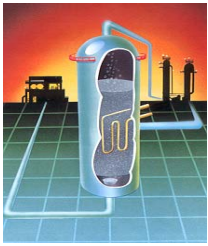
The main points we will make:

- All of the liquids remain in Alaska for marketing.
- Natural gas liquids can be transported through the TAPS pipeline along with GTL products.
- While a GTL project could use 2, 3, 4, 5, 6 billion cubic feet of gas/day or more if desired, the plant can be sized to use less gas, leaving gas production that could be transported south through a smaller “bullet” pipeline.



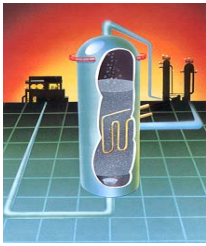
The main points we will make:

- If you are going to tax the Producers natural gas at a quasi crude oil price equivalent the Producers might as well convert their natural gas to a liquid product and actually receive a premium price above crude oil.
- We believe the GTL option gives Alaska high value transportation fuels badly needed in the U.S. along with economic benefits and flexibility not offered with a just gas pipeline.



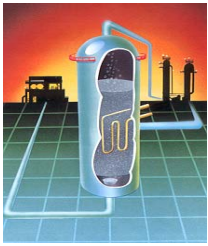
Abbreviations

- GTL - Gas to Liquids
- CTL – Coal to Liquids
- BTL – Biomass to Liquids
- F-T – Fischer-Tropsch
- NGLs - Natural gas liquids (C₃ +)
- LNG – Liquefied Natural Gas
- CNG – Compressed Natural Gas



Abbreviations

- KW – 1,000 watts of electric power
- KW-HR – 1,000 watts for 1 hour
- Heat Rate - Btu's needed per kilowatt hour of power produced
(example 8,500 btu's will produce 1,000 watts of electricity for 1 hour)
- Vapor Pressure – pressure a product exerts at a specific temperature
 - Butane (C_4H_{10}) has a vapor pressure of 47 psig at 110°F
 - Propane (C_3H_8) has a vapor pressure of 204 psig at 110°F
 - Ethane (C_2H_6) has a vapor pressure of 850 psig at 110°F



Abbreviations

- 1 cubic foot of natural gas has 1,000 Btus
- 1 MCF of natural gas has 1 million Btus
- 1 Barrel of Crude Oil has ~ 6 million Btus
- Crude Oil Price Equivalent
 - Multiply the value of 1 MCF of gas by 6 or
 - Divide the value of 1 barrel of crude oil by 6
- 1 Barrel of F-T products has ~ 5.3 million Btus
- F-T Price Equivalent
 - Multiply the value of 1 MCF of gas by 5.3 or
 - Divide the value of 1 barrel of F-T by 5.3

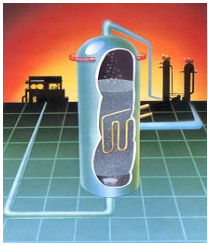


CONVERTING NORTH SLOPE NATURAL GAS RESERVES INTO

“PROVEN”

F-T TRANSPORTATION FUELS
&
PETROCHEMICAL FEED STOCKS
WHILE SEQUESTERING CO₂

”GREEN AS IT CAN BE”



A GTL/CTL PLANT PRODUCES FISCHER-TROPSCH (F-T) TRANSPORT FUELS

SOME OF THE CLEANEST FUELS IN THE WORLD

BUT WHAT IS THE F-T PROCESS?



The Fischer-Tropsch Synthesis



Okay, don't let the
chemistry scare you!

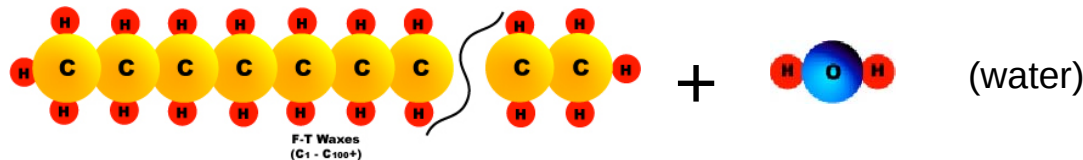
Let's take a look.....



Three Steps in GTL/CTL/BTL Refining to make F-T Fuels

GTL/CTL/BTL Processes use 3 distinct steps, all commercially proven to convert a gas, liquid or solid into synthetic transport fuels:

- Step 1 - Syn-Gas generation (H_2 & CO) 
- Step 2 - The F-T reaction (long paraffin chains $\Rightarrow$ wax)



- Step 3 - Product upgrading (hydrocracking of the long chain F-T paraffin to produce the desired end product – similar to a crude oil refinery)

- Kerosene – Diesel – Gasoline - Jet Fuel – Naphtha

C₁₀-C₁₃

C₁₄-C₂₀

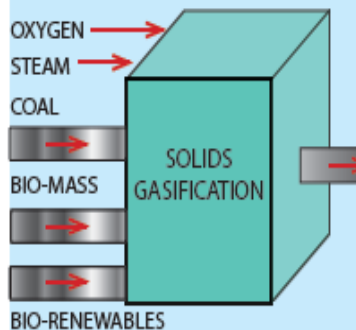
C₅-C₁₀

C₁₀-C₁₃

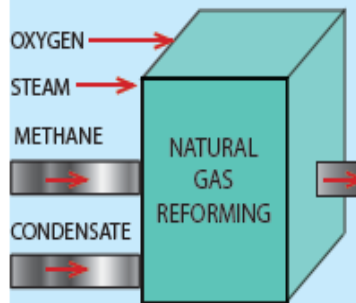
C₄-C₁₀

Note: Although the Sasol F-T reactor is illustrated here, the Shell F-T technology (SMDS) is also commercially proven

FISCHER-TROPSCH REACTOR



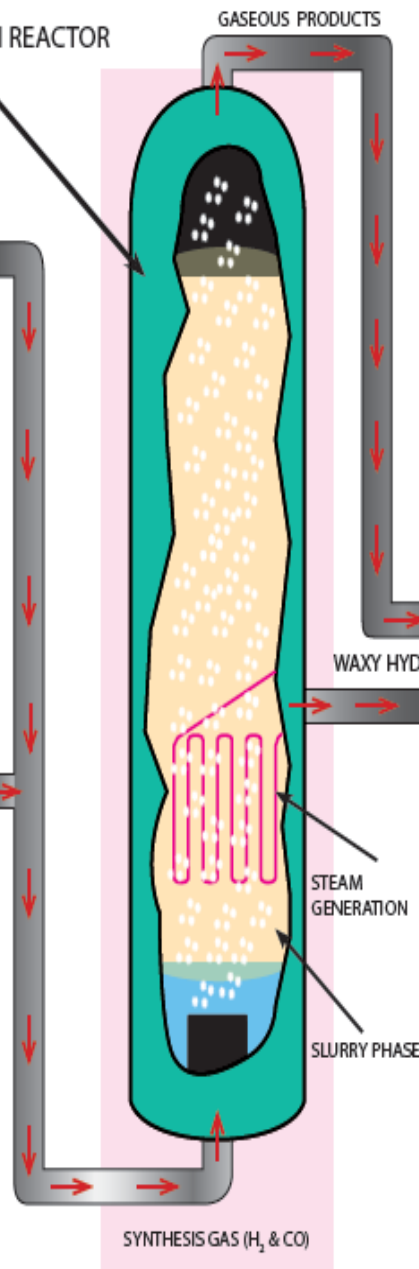
STEP 1 • SYN GAS GENERATION



The Fischer-Tropsch Process (F-T) has three main processing steps shown here, all of which are commercially proven.

STEP 1, SynGas Generation represents - 50+% of the total cost
STEP 2, F-T Conversion - 25% of the total cost
STEP 3, Product Upgrading - 15% to 25% of the total cost

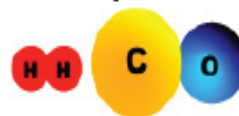
The type of SynGas Generation, gas reformation or gasification of solids, depends upon the raw material or feed stock available. Around the world stranded Natural Gas is the choice; however, in the US with the exception of North Slope Natural Gas, coal, bio-mass (garbage), bio-renewables (trees and plants) represent the majority of available feedstock for a US based F-T program!



STEP 2 • F-T CONVERSION

F-T FUELS THE ONE FUEL FOR OUR FUTURE

The first step converts natural gas, coal or bio-mass into synthesis gas, a mixture of carbon monoxide (CO) and hydrogen (H₂) - syngas.



This mature process technology has been used in many commercial facilities as the first step for producing ammonia, hydrogen, methanol.

Sasol and Shell, the recognized world leaders in F-T technology use both gas reformation and coal gasification to produce syngas for its F-T production, called Gas-to-Liquids (GTL) and Coal-to-Liquids (CTL) respectively

methane, alcohols and diesel

WAXY HYDROCARBON PRODUCTS - C₃ +

CHOREN, a German company has been operating a bio-mass gasifier to produce syngas for methanol and electric production since 1998. This plant is considered the worlds first bio-renewable energy gasifier and has the distinction of producing fuels and electricity with a net zero impact on the worlds CO₂ and called Biomass-to-Liquids (BTL)

Step two, the Fischer-Tropsch conversion, discovered by the Germans in the 1920's, upgrades the syngas into a waxy hydrocarbon. Simplified this reaction is :

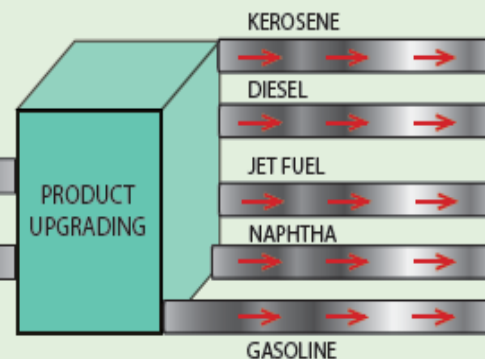


The length of the hydrocarbon chain (x) is determined by the composition (or ratio of H₂ to CO) of the syngas, the catalyst selectivity and the reaction conditions.

Sasol has pioneered several types of F-T conversion technologies to produce over 150 different products from their F-T plants in South Africa alone. The hydrocarbon stream (xCH₂) is sent to product workup and the water (H₂O) is sent to the water recovery unit.

F-T FUELS - THE SENSIBLE SOLUTION FOR A NEW GENERATION OF ULTRA CLEAN ENVIRONMENTALLY FRIENDLY DIESEL FUELS

STEP 3 • HYDROCRACKING - PRODUCT WORKUP



The third step, Product Upgrading:

Upgrading can produce a wide range of commercial products from gasoline to diesel to candle wax. For a US based F-T program we would recommend middle distillate fuels: kerosene, diesel and naphtha.

This process makes use of standard hydrocracking and hydroisomerisation processes commonly found in the refinery world. As with the First Step of syngas production, suitable technology is widely available from several licensors around the world.

The F-T process produces sulfur free fuels that contain essentially no aromatics or ring chain hydrocarbons that are toxic and harmful to the environment. The CTL/GTL/BTL process does produce CO₂ but it is in a pure stream and is easily contained for sale to third parties or can be sequestered for injection into underground wells.

F-T Fuels, clean fuels for our future that will reduce US dependence on foreign crude oil and products.



South African Secunda 150,000 BPD Coal to Liquids (CTL)



South African Moss gas 47,000 BPD Gas to Liquids (GTL)



Shell Bintulu 15,000 BPD Gas to Liquids (GTL)

THE F-T PROCESS IS COMMERCIAL

**260,000 bbl/d already proven and
operational in South Africa & Malaysia**

500,000 bbl/d coming soon to Qatar

230,000+ bbl/d coming soon to China

**China and India proposing 1+ million
bbl/d in new CTL plants**



SYNTHETIC DIESEL

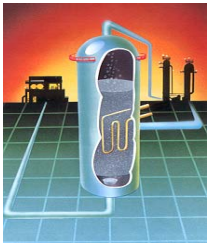
**F-T DIESEL
AS CLEAN AS CNG**

**U.S. EPA*
APPROVED
NON-TOXIC**



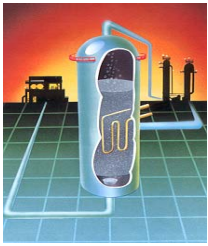
**ZERO SULFUR
ZERO AROMATICS
>70 CETANE
 $PM_{10} \leq CNG$**

*EPA Water Docket, EB 57 located at 401 M Street SW Washington DC, 20460 Reference Docket No. W-98-26 in UNOCAL data file 4.A.a.3, Vol 13



GTLs

Facts and Fiction



GTL FACTS and FICTION

- Majors not pursuing F-T technology
- F-T Process not Efficient
 - Value vs Efficiency
- Costs of F-T too high
- TAPS - Batching/Pigging can't be done
- American needs natural gas (market)
- Value of Alaska Natural Gas
 - Do the people know Alaska gas isn't going to be cheap?



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WHERE ARE THE MAJORS ON GTLs?

1. In December 2003 ConocoPhillips and in July 2004 ExxonMobil both signed agreements to build 160,000 bbl/day and 150,000 bbl/day GTL plants in Qatar.

They would not have made these commitments if they did not believe in GTLs and possess the skills to build world-scale GTL plants.

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2. Shell, a new player in Alaska, has a 15,000 bbl/d GTL plant in Malaysia, is building a 140,000 bbl/d GTL plant in Qatar as well as designing a 70,000 bbl/d CTL plant in China.
3. Chevron, Sasol's world wide GTL partner, is building a 34,000 bbl/d GTL plant in Nigeria and had proposed a 130,000 bbl/d GTL expansion with Sasol and a new 120,000 bbl/d GTL plant both in Qatar.
4. Marathon completed a pre-FEED study for a 120,000 bbl/d GTL plant in Qatar in 2003.
5. BP and Statoil are working on barge mounted GTL plants.

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Clearly, the North Slope majors possess all the skills necessary to build GTL (F-T) plants worldwide including in Alaska.



GTL FACTS and FICTION

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- F-T Process not Efficient
 - Value vs Efficiency
- Costs of F-T too high
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PROCESS EFFICIENCY

Some say the GTL process is not efficient with only 65% of the energy contained in the natural gas reaching the end market in the form of transportation fuels.

Like any manufacturing process that “adds value” to its products, the transportation fuels resulting from a GTL plant have a higher value.

Also of importance is that the “lost” 35% really isn’t lost.

It is captured as waste heat and is used to generate electricity, heat buildings and run other processes that need heat, saving valuable natural gas for other purposes.

GTL vs LNG

VALUE (\$) VS EFFICIENCY

IS THE LNG PROCESS MORE EFFICIENT - WITH 80 % OF THE WELL HEAD ENERGY REACHING THE MARKET ?

IS THE GTL PROCESS LESS EFFICIENT - WITH 65 % OF THE WELL HEAD ENERGY REACHING THE MARKET ?

TECHNICALLY, LNG IS A MORE EFFICIENT PROCESS IF YOU JUST LOOK AT DELIVERED ENERGY TO THE MARKET
IT IS HOWEVER TOTALLY FALSE IF YOU LOOK AT THE **VALUE (\$)** OF THE DELIVERED ENERGY IN THE MARKET

LNG BEGINS LIFE AS NATURAL GAS  AND ENDS LIFE AS NATURAL GAS 

GTL BEGINS LIFE AS NATURAL  AND ENDS LIFE AS A REFINED PRODUCT SUCH AS DIESEL 

WHILE BOTH ARE CARBON BASED, THEIR **VALUES (\$)** ARE TOTALLY DIFFERENT

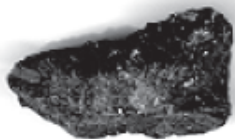
AS AN EXAMPLE:

A LUMP OF COAL AND A DIAMOND ARE BOTH CARBON BASED. UNDER TREMENDOUS PRESSURE AND HEAT (A MANUFACTURING PROCESS), A LUMP OF COAL CAN BECOME A DIAMOND. WHICH HAS MORE VALUE, A LUMP OF COAL OR A DIAMOND? DOES IT MATTER THAT A DIAMOND IS A FRACTION OF THE SIZE OR WEIGHT OF THE ORIGINAL LUMP OF COAL?

IF GTL PRODUCED DIESEL IS MORE VALUABLE THAN LNG DERIVED NATURAL GAS SHOULD YOU CARE IF THE GTL PROCESS IS LESS EFFICIENT IN CONVERTING ENERGY SO LONG AS THE VALUE RECEIVED FOR THE ORIGINAL ENERGY IS GREATER.

WHICH WOULD YOU PREFER ?

A LUMP OF COAL



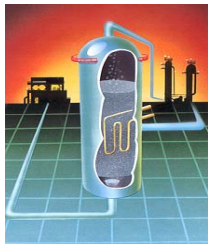
OR A DIAMOND



LNG PRODUCED NATURAL GAS 

OR GTL PRODUCED DIESEL 

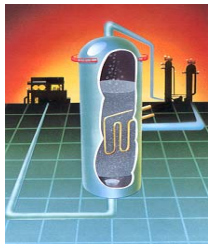
**THE CHOICE SHOULD BE SIMPLE
GO FOR THE HIGHER NETBACK VALUE (\$)**



GTL FACTS and FICTION

- Majors not pursuing F-T technology
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- **Costs of F-T too high**
- TAPS - Batching/Pigging
- American needs natural gas (market)
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GTL PROJECT COSTS?

- 2003 estimate \$25,000/installed barrel
- 2007 actual cost \$32,000/installed barrel
- 2008 Shell Pearl GTL plant \$60,000/ installed barrel (under construction today)
- ANRTL completed a \$1.5 million Pre-Feasibility study for an 80,000 bbl/d CTL project for the Cook Inlet in February 2008. Cost estimates have risen from \$4.6 to \$12 billion from 2005-08.
- The CTL project still pencils out because product prices have risen even more.

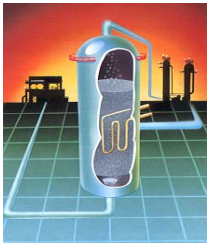


GTL PROJECT COSTS?

- Some of the estimated costs of this Cook Inlet CTL project were derived from the \$250 million Sasol/China engineering study completed in late 2007.
- North Slope GTL plant ~300% higher than the recently completed Sasol GTL plant in Qatar – we use a \$92,000/ installed barrel cost.
- If anything, we believe the projected costs of a North Slope GTL plant program are high.

MINIMUM INFORMATION REQUIRED TO DEVELOP ESTIMATES

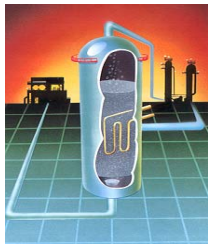
ESTIMATE CLASS	I	II	III	IV	
ESTIMATE TYPE	PRELIMINARY	FEASIBILITY	BANKABLE	DEFINITIVE	
ACCURACY RANGE	+40% To -40%	+30% To -20%	+15% To -15%	+10% To -10%	X = Info Required to Obtain Stated Accuracy Range
PURPOSE	Screen	Study	AFE	AFE	
GENERAL PROJECT SCOPE	X	X	X	X	Project Scope, Design Basis, and Execution Strategy
	X	X	X	X	General Geographic location and Site Requirements
	X	X	X	X	Special Considerations that Impact Project Costs
	X	X	X	X	Utilities and Other Infrastructure Requirements
			X	X	Detailed Project Schedule
PROCESS	X	X	X	X	Block Flow Diagrams w/Primary Flow Steams and Utilities
		X	X	X	Preliminary PFDs w/Heat & Material Balance
		X	X	X	Engineered PFDs w/Heat & Material Balance, and Preliminary P&IDs
			X	X	Engineered P&IDs



GTL FACTS and FICTION

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BATCHING / PIGGING

Facts and Fiction

- Batching –Won't work - You can't pig in TAPS
- Batched products will be contaminated
- NGLs with high vapor pressure can't be moved in TAPS
- Ethane – what do you do with it?



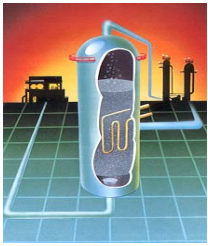
BATCHING / PIGGING

- **YOU CAN'T PIG IN TAPS**



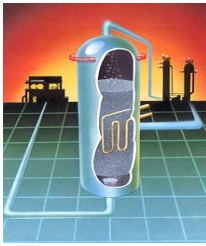
Typical cleaning Pig

- **THEY RUN PIGS IN TAPS TODAY**



BATCHING / PIGGING

- There is no question that the TAPS line can be operated as a dual/multi products/crude pipeline.
- Explorer Pipeline, owned by several major oil companies has successfully operated a 1,400-mile large diameter pipeline carrying a full slate of refined products and crude oil. In fact the Explorer Pipeline model is used in many pipelines in operation today.
- Explorer Pipeline has offered to bring their expertise to Alaska to assist with the design and conversion of TAPS.



BATCHING / PIGGING

- Batching F-T products and NGLs (Products) without a physical separation between the Products and the ANS crude oil will not work. Further batching of the Products without a physical separation between individual products is not recommended.



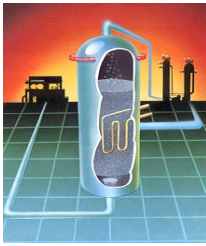
“THE PIG TRAIN”

- Physical Pigging will allow batch shipping of Products from the North Slope to Valdez.
- The outstanding question is how far can you batch/pig down the TAPS before you need to replace the pig due to wear?



BATCHING / PIGGING

- TAPS line can remain viable for moving crude oil produced on the North Slope to Valdez for 50 to 100 or more years.
- GTLs will provide the minimum throughput volumes to keep the TAPS line flowing.
- Incremental GTLs and NGLs will help lower the TAPS tariff resulting in a higher netback price and a higher revenue stream to the State.



BATCHING / PIGGING

- Once TAPS is modified to carry both crude oil and products, the currently recycled gas stream can be processed to extract additional NGLs for batching to Valdez.
- This allows for the receipt of this NGL revenue stream within a few years, certainly long before a GTL plant could be on line or a gas line to the lower 48 could be built.



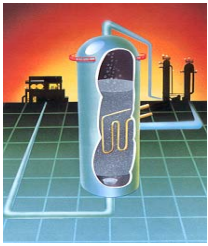
BATCHING / PIGGING

- It is our opinion that the market for North Slope NGLs will be considerably higher at Valdez than at ACEO in central Alberta if for no other reason than the tariff on TAPS is at least 1/3 of the cost to ship on the proposed AGIA gas line.
 - TAPS tariff \$5/bbl (83.3¢/million btu)
 - AGIA tariff \$3/million btu (\$18/bbl)
 - AGIA tariff \$4/million btu (\$24/bbl)



BATCHING / PIGGING

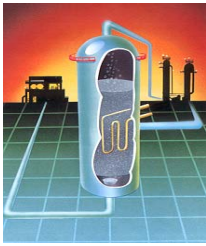
- The interior of Alaska operates on a liquid energy economy.
- Batching products down TAPS will provide Interior Alaska with the opportunity to receive lower cost fuels at new delivery points along the pipeline without having to replace their existing energy infrastructure.



BATCHING / PIGGING

Batched products will be contaminated

- One of the biggest advantages with a TAPS batching /pigging program is that butanes have been extracted from the gas stream and spiked into the crude oil stream since first flows.
- This same volume of butane will be placed in the front end of the pig train and used to clean the pipe walls of contaminants.



BATCHING / PIGGING

Batched products will be contaminated

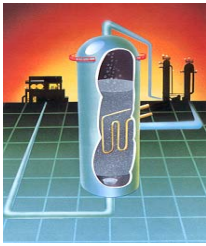
- The “dirty” butanes will be blended with the ANS crude oil at Valdez.
- If any batched products behind the “cleaning” butanes are also contaminated, the batching program will provide for additional processing at Valdez to remove sulfurs and color.



BATCHING / PIGGING

NGLs with a high vapor pressure can't be transported in TAPS

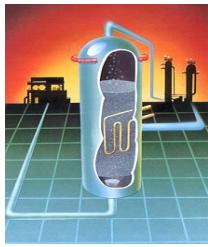
- The lightest products we would recommend for shipping on the TAPS would be propane C_3H_8 . Propane has a vapor pressure of 207 psig at 110°F. This is far below the operating pressure of TAPS.
- Keep ethane in the natural gas as there is no petrochemical industry on the US West Coast. Ethane will be converted into F-T products.



BATCHING / PIGGING

Batching / Pigging in TAPS could benefit the AGIA gas line if a gas line is the best option

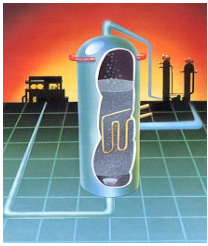
- Modifying the TAPS line to batch crude oil and products will eliminate the need to transport liquids in the gas line.
- This will reduce the cost of the gas pipeline and make its operation easier, plus make delivery of in-state gas less complicated as you are not dealing with a dense phase gas.



GTL FACTS and FICTION

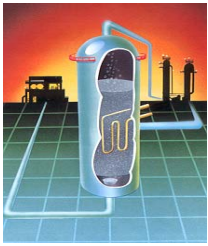
- Majors not pursuing F-T technology
- F-T Process not Efficient
 - Value vs Efficiency
- Costs of F-T too high
- TAPS - Batching/Pigging
- **America needs natural gas (market)**
- Value of Alaska Natural Gas
 - Do the people know Alaska gas isn't going to be cheap?





OIL & GAS NEEDS IN THE U.S.

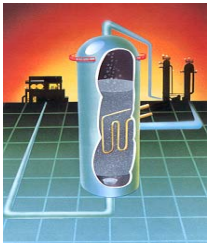
- The need for imported (additional) natural gas in the U.S. pales in comparison to the need for reducing imported crude oil and adding refining capacity.
- Natural gas has historically sold at a discount to the value of crude oil. Today that disparity is wider.
- Diesel has historically sold at a price at or below regular gasoline. Today diesel sells at a premium to gasoline.
- F-T diesel has in addition to the higher value of crude oil, the value of the refining margin plus a lower tax rate resulting in a market price premium of between \$33 to \$55/bbl over the value of crude oil. (*\$6.2 to \$10.3 / mcf*)



OIL & GAS NEEDS IN THE U.S.

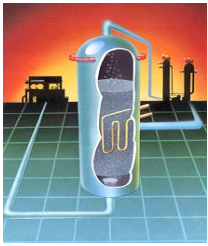
- Virtually anyone we talk to has a different opinion on the volumes of natural gas, crude oil and refined transportation products produced, consumed or imported in the U.S. For the purposes of this report, we use information gathered from independent two sources.
- U.S. Energy Information Administration (www.eia.doe.gov/); and
- The BP Statistical Review of World Energy June 2007 (www.bp.com/productlanding.do).

This latter document is an excellent summary of world energy and BP should be commended for providing this public service update each year.



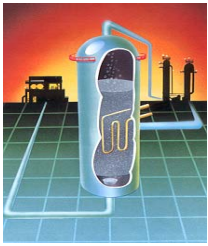
OIL & GAS NEEDS IN THE U.S.

- If we look at the six month period from August 2007 through January 2008 (the latest EIA numbers) the U.S. on average **produced** slightly more than 5 million barrels per day of oil. (note: the EIA data does not include NGLs in the crude oil).
- During the same time period the U.S **imported** over 10 million barrels per day of crude oil and another 3 million barrels per day of refined products.
- The significance of the latter number is that the nation lacks over 3 million barrels per day of refining capacity to meet current U.S. transportation fuel demands.



OIL & GAS NEEDS IN THE U.S.

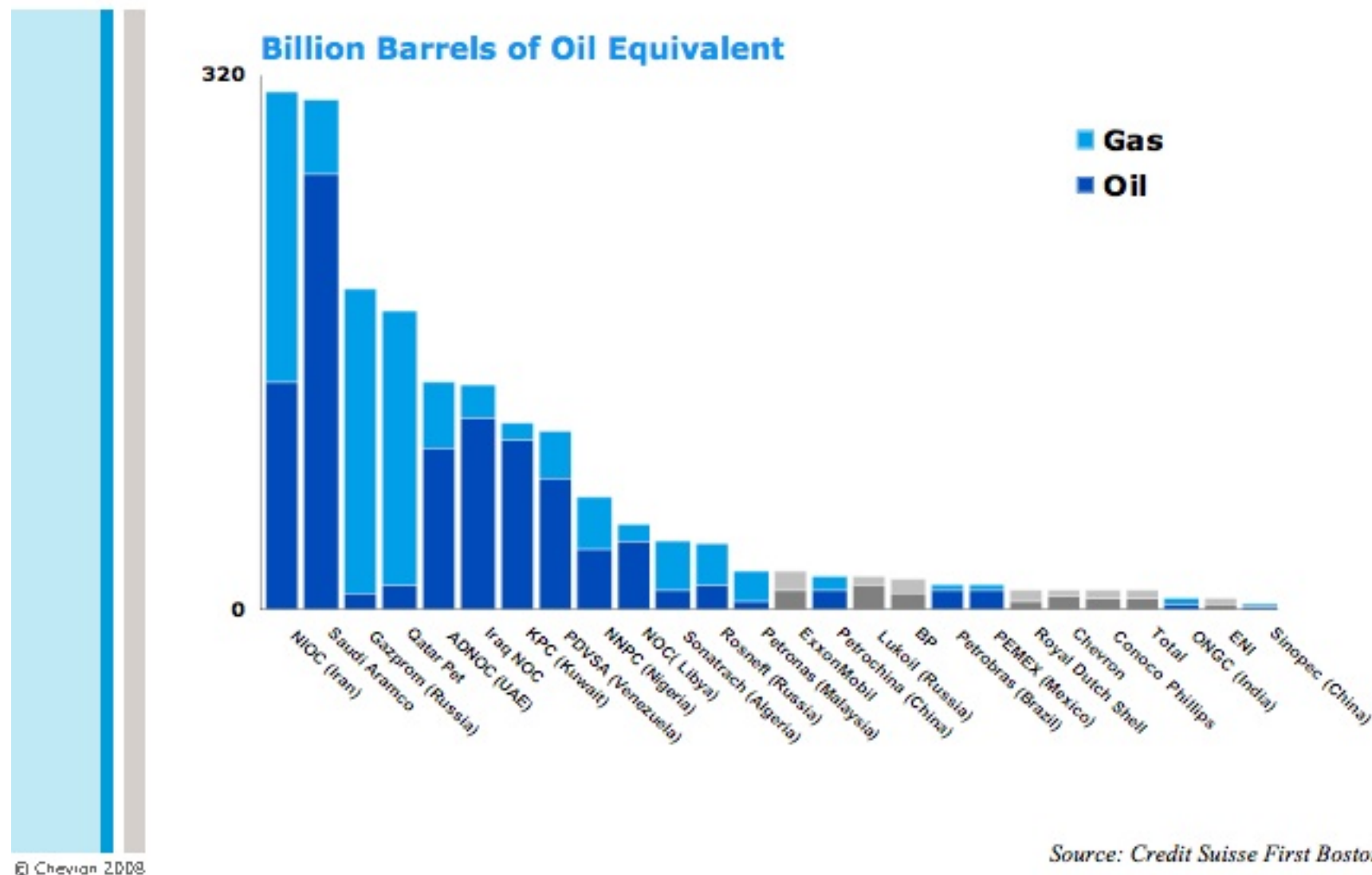
- While U.S. refiners have been adding capacity to existing refineries with process efficiency upgrades, no new refinery has been built in the U.S. since the 1970's.
- This could possibly be one of the reasons why refinery margins have crept up from the \$5 to \$6/bbl range in 1970 - 2000 era to over \$30/bbl in 2007.
- A North Slope GTL plant represents new refining capacity for the U.S. and a potential threat to these higher margins, especially on the U.S. West Coast.
- This is one potential reason GTL's are not be in the forefront of North Slope majors' gas development plans.

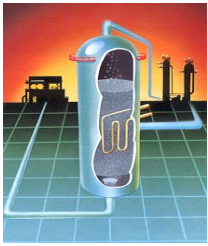


OIL & GAS NEEDS IN THE U.S.

- The U.S. currently (2008) imports roughly 70% of its crude oil/transportation needs. With approximately 13 million bbl/d of transportation fuel demand almost 29% of this demand (approximately 3 million barrels per day) is imported in the form of finished products.
- On an energy content equivalent scale this represents approximately 18 bcf/d of natural gas being imported just to meet the U.S. refinery shortfall.
- This is four times the volume of gas to be delivered through a natural gas pipeline.
- ~78 bcf/d for total transportation needs – 20 times

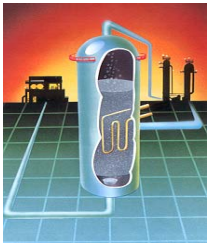
Chart 9: National Oil Companies Control 94 Percent of World's Reserves





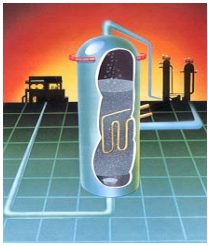
OIL & GAS NEEDS IN THE U.S.

- During this same time period the U.S. was **producing** approximately 64 billion to 65 billion cubic feet per day (bcf/d) of natural gas and importing approximately 9 to 10 bcf/d of natural gas, primarily from Canada.
- Of this, approximately 1.6 to 1.8 bcf/d of the total U.S. natural gas is being imported as LNG.
- Thus 14.7% of U.S. natural gas **consumption** is imported, with LNG representing approximately 2.4% of total U.S. natural gas needs.



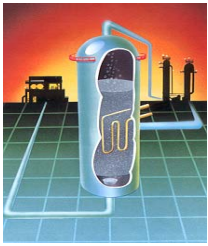
OIL & GAS NEEDS IN THE U.S.

- Historically natural gas HAS sold at a lower Btu equivalent price compared to crude oil.
- From 2002 to 2007, natural gas averaged 68% of the WTI price of crude oil (i.e. 32% below crude oil).
- In April 2008, the NYMEX closing price for May 2008 deliveries of natural gas was \$10.60/mcf or, a crude oil equivalent price of \$63.60, some 45% below the then crude price of \$115/bbl.
- We believe that there was a fundamental severing in the price of natural gas compared to crude oil once oil hit the \$60 to \$70/bbl range.



OIL & GAS NEEDS IN THE U.S.

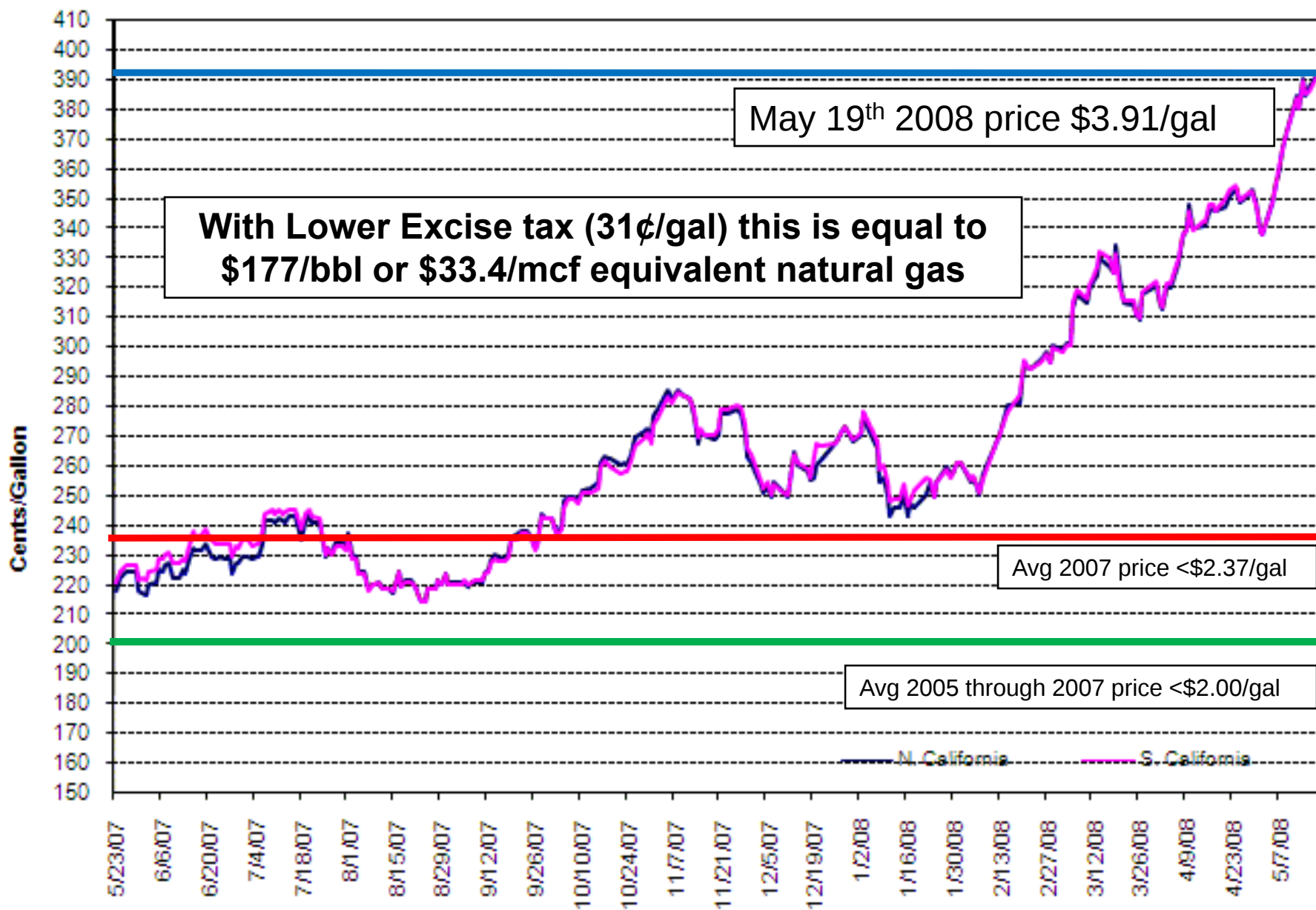
- All of the energy consumers who could have switched off crude-based products have done so but the gas industry is still able to meet demand.
- In fact, little LNG is currently being imported into the U.S. because markets elsewhere in the world, especially those linked to the price of crude oil, are paying much higher prices and few want U.S. dollars.
- If one compares a California ultra-low sulfur diesel price with an equivalent natural gas price one quickly sees a potentially greater return for Alaska in selling F-T products than selling natural gas.

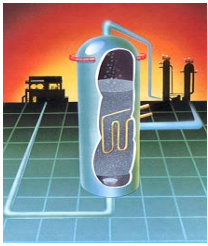


OIL & GAS NEEDS IN THE U.S.

- April 2008 California CARB diesel wholesale price of \$3.30/gallon (\$138.60/bbl) plus the tax advantage of selling a natural gas based fuel in the transportation market of \$13.02/bbl, one has a market gas equivalent price of \$28.6/mcf.
- Compare this to the April NYMEX number and one can see that the gas price would have to increase by 270% to equal that of diesel.
- On May 19th , the wholesale price of California diesel hit \$3.91/gal or a mcf equivalent price of \$33.4/mcf.

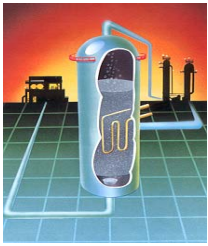
CARB Diesel Fuel Average Rack Prices (As of 5/19/08)





OIL & GAS NEEDS IN THE U.S.

- We point these facts out to show that the greatest energy need in the U.S. is not natural gas; it is replacing crude oil imports and more importantly adding domestic refining capacity.
- U.S. natural gas is not priced on a world crude oil equivalent as it is in many other parts of the world. U.S. transportation fuels are, however, priced based upon the world price of oil.
- Plus in some areas, such as the U.S. West Coast, transportation fuels are priced at a premium due to higher quality requirements.



GTL FACTS and FICTION

- Majors not pursuing F-T technology
- F-T Process not Efficient
 - Value vs Efficiency
- Costs of F-T too high
- TAPS - Batching/Pigging can't be done
- American needs natural gas (market)
- **Value of Alaska Natural Gas**
 - Do the people know Alaska gas isn't going to be cheap?





NETBACK FROM CALIFORNIA TO PRUDHOE BAY

THREE CASES TO CONSIDER:

- CASE A - Average California 2007 refinery wholesale rack price **\$2.37/gallon**
- CASE B – May 19th 2008, California refinery wholesale rack price **\$3.91/gallon**
- CASE C – Projected 2014 crude oil price of \$200/bbl and \$40/bbl refinery margin resulting in **\$5.71/gal**

Assume a \$2/bbl shipping cost Valdez to Market and a \$5/bbl TAPS Tariff
for a total \$7/bbl Prudhoe Bay to California

Assume 5.3 million btu/bbl of F-T and 1 million btu/mcf of natural gas

Assume a debt service / equity recovery cost of \$31.75/bbl

Assume a GTL plant operating cost of \$18/bbl

CASE A

2007 AVG Wholesale Rack Diesel Price in California (OPIS) RED LINE

\$2.37/gal = \$99.5/bbl

F-T diesel same as CNG for road tax \$99.5 /bbl+ \$13/bbl = \$112.5/bbl

Minus all costs (\$112.5/bbl-\$56.75/bbl= \$55.8/bbl @ Prudhoe Bay)

Mcf equivalent -- \$55.8 ÷ 5.3 = \$10.5/mcf (GTL Plant Outlet)

F-T Diesel treated same as CNG then transportation tax is reduced by 31¢/gal (\$13/bbl)

CASE B

May 15 Wholesale Rack Diesel Price in California (OPIS) BLUE LINE

\$3.91/gal = \$164.2/bbl

F-T diesel same as CNG for road tax \$164.2 /bbl+ \$13/bbl = \$177.2/bbl

Minus all costs (\$177/bbl-\$56.75/bbl= \$120.5/bbl @ Prudhoe Bay)

Mcf equivalent -- \$120.5 ÷ 5.3 = \$22.7/mcf (GTL Plant Outlet)

F-T Diesel treated same as CNG then transportation tax is reduced by 31¢/gal (\$13/bbl)

CASE C (Tomorrow)
Assume \$200/bbl crude oil price and
\$40/bbl refining margin in 2014
2014 Wholesale Rack Diesel Price
in California (OPIS) \$5.71/gal

$$\text{\$5.71/gal} = \text{\$240/bbl}$$

$$\text{F-T diesel same as CNG for road tax } \$240/\text{bbl} + \$13/\text{bbl} = \$253/\text{bbl}$$

$$\text{Minus all costs } (\$253/\text{bbl} - \$56.75/\text{bbl}) = \$196.1/\text{bbl} @ \text{Prudhoe Bay}$$

$$\text{Mcf equivalent} - \$196.1 \div 5.3 = \$37/\text{mcf} \text{ at GTL Plant } \text{Outlet}$$

F-T Diesel treated same as CNG then transportation tax is reduced by 31¢/gal (\$13/bbl)

THESE NEXT POINTS ARE CRITICAL TO UNDERSTAND AND IT IS A POINT THAT OPPONENTS OF CTL/GTL OFTEN USE

The F-T process converts carbon contained in the natural gas into finished transportation fuels and heat. Approximately 65% of the Btus contained in the natural gas will end up in the transportation fuels. Much of the Btu's contained in the natural gas will be captured either in the F-T fuels or waste heat to produce power. We further reduce the final number by 12% because all products don't receive the diesel price and have excise tax reductions.

Thus we reduce the mcf equivalent value of the F-T products to take into consideration the F-T (GTL) conversion process and not all the products are diesel.

Case A - $\$10.5/\text{mcf} \times .65 \times .88 = \$6.01/\text{mcf}$ natural gas at Prudhoe Bay GTL Plant Inlet

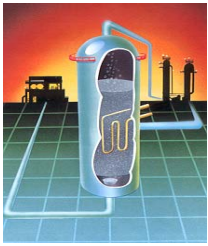
\$2.37/GAL IN CALIFORNIA - \$6.01/MCF NATURAL GAS AT GTL PLANT INLET

Case B - $\$22.7/\text{mcf} \times .65 \times .88 = \$12.98/\text{mcf}$ natural gas at Prudhoe Bay GTL Plant Inlet

\$3.91/GAL IN CALIFORNIA - \$12.98/MCF NATURAL GAS AT GTL PLANT INLET

Case C - $\$37/\text{mcf} \times .65 = \$21.16/\text{mcf}$ natural gas at Prudhoe Bay GTL Plant Inlet

\$5.71/GAL IN CALIFORNIA - \$21.16/MCF NATURAL GAS AT GTL PLANT INLET



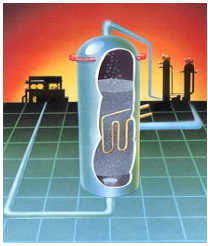
AGIA Gas Price Projections

- A Prudhoe Bay price approaching \$18 to \$27 per mmbtu over 25 years.
- 2017 to 2042. WOW
- What do Alaskan's think they will be paying for natural gas?
- These AGIA projected gas prices are 300% to 400% higher than the 2007 prices in the Cook Inlet. This isn't "cheap" gas!



WHO RECEIVES THE MOST VALUE FROM THE GAS SALES?

- Tax the Producers natural gas at a crude oil price equivalent and the Producer may only receive a fraction of the value of the natural gas.
- At today's \$120/bbl crude oil price the PPT on natural gas would be:
 - $.25 + ((97.5-30) \times .004) + (120-97.5) \times .001 = .543$ or 54%
 - With a 1/8 Royalty (12.5%) + 54% = 66.5% of the value goes to the State – the Producer receives 33% (+ pays other taxes to the state and federal government)



WHO RECEIVES THE MOST VALUE FROM THE GAS SALES?

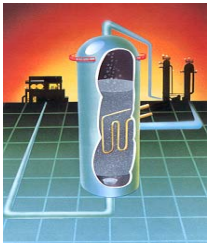
- At \$200 crude the % of value to the State would exceed 75%
- You can easily see why the Producer who is expected to take all of the pipeline risk isn't excited about AGIA
- Ask yourself, "Why isn't the market guaranteeing the gas line payout instead of the Producers"?



Who Should be Buying Firm Capacity Supply or Market?

If Natural Gas truly was in short supply or its projected short supply were real, then the people who need natural gas, have no other choice but to use natural gas (market) would be coming to Alaska to buy this “proven” gas resource. THEY would be contracting with TC Alaska for firm capacity to their market.

Do You See This Happening?



ENERGY CONSERVATION

Its Impact on a Gas Line

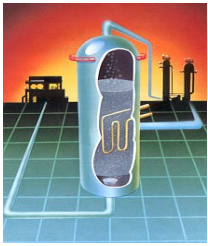


ENERGY CONSERVATION

Its Impact on a Gas Line

- 300 million people in America
- Take 1/3 or 100 million people
- Turn off two – 100 Watt light bulbs or
don't run a PC for half a day
- Save 480 billion watts per day or 20,000 MW-HR
- Assume a modern heat rate of 8,500 Btu/kw-hr
- Save 4.08 billion cubic feet per day of natural gas

**THAT'S THE ALASKA GAS LINE CAPACITY
IN A FLICK OF THE SWITCH**



ENERGY CONSERVATION

The Nuclear Threat

- We are told that Toshiba is looking at installing up to 5 of their small nuclear power plants in Alberta to supply the tar sands projects with heat and electricity that would be CO₂ free energy.
- Helps Canada meet its Kyoto obligations.
- There goes 1 to 2 bcf/d of gas market.
- Canadian supplied gas will have to flow into the U.S. market competing with Alaska AGIA gas.



MORE THAN JUST A GTL PROJECT

**HUNDREDS OF VALUE ADDED
BUSINESSES ARE POSSIBLE**

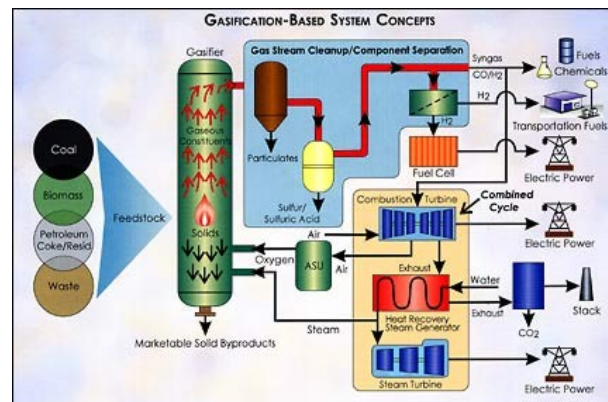
Manufacturing on a Grand Scale.

**The beginning of a new era for Alaska and Alaskans.
Supplying the world with high value finished goods
instead of basic natural resources.**



VALUE ADDED INDUSTRIES

- The Sasol CTL plants in South Africa produce over 150 different value added products from effluent streams.
- The North Dakota Gasification plant uses the Lurgi process to convert 6 million tons per year of lignite coal to syngas and liquids. The average daily production at Great Plains is about 160 million cubic feet of high quality pipe line natural gas.
- Many by-products are also produced at the plant, including: ammonium sulfate, anhydrous ammonia, carbon dioxide, dephenolized cresylic acid, krypton and xenon gases, liquid nitrogen, naphtha, phenol, and methanol.





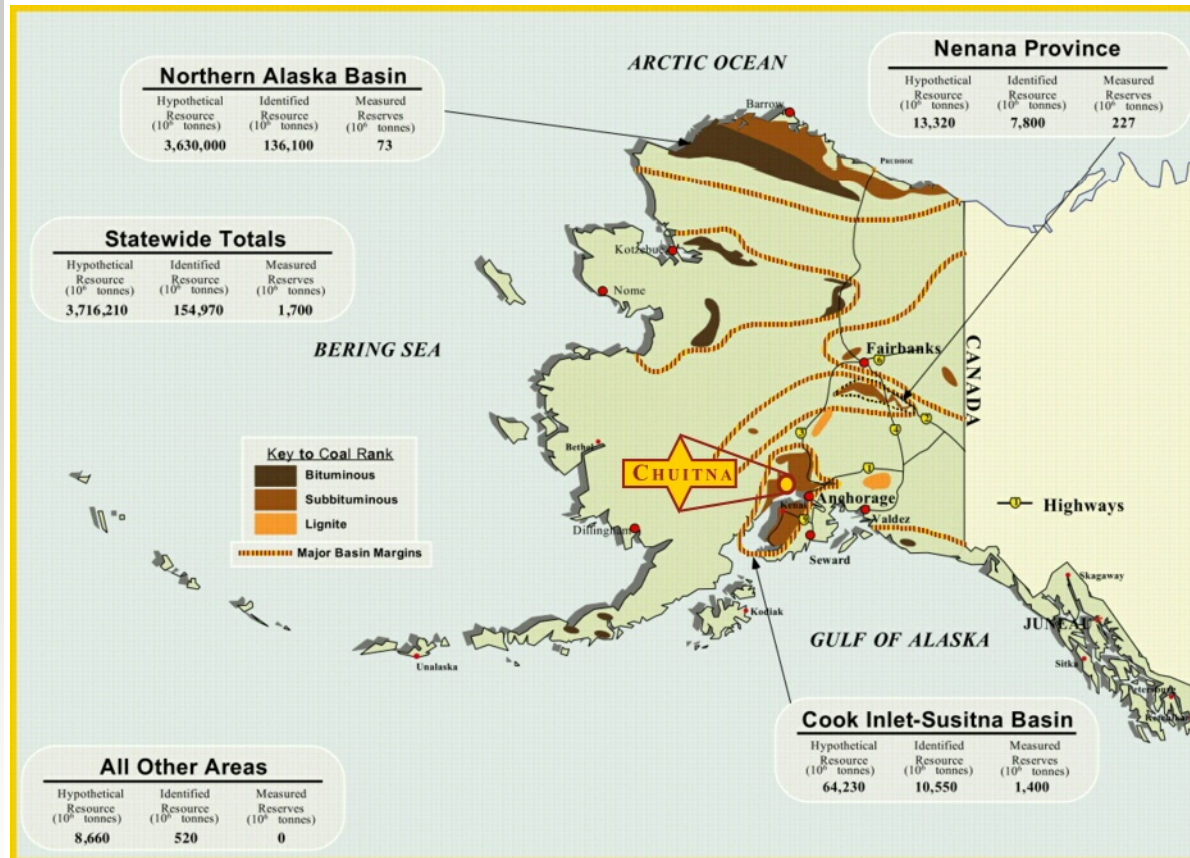
ADDITIONAL BENEFITS OF A NORTH SLOPE GTL OPTION

- Benefits of GTLs at Prudhoe Bay
 - CO₂
 - Electricity
 - Water for people and EOR
 - Synthetic drilling fluids
 - Batching NGLs – Lower TAPS tariff
 - Liquids in Fairbanks



THINK OUT SIDE OF THE BOX

Alaska's Coal Resources & Reserves



ALASKA LEGACY PROJECT

Estimated Recoverable Coal Reserves

(10⁹ tonnes)

World Total 1,038

North America 256

United States
246+Alaska

Alaska (measured) 2

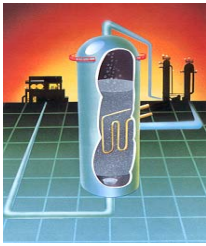
Alaska Estimated 200

CHUITNA (measured) >1

Note: The Northern Alaska Basin could potentially have upwards of 1.5 to 2.5 trillion tons of bituminous coal reserves – more coal than the total proven reserves in the world today!



**THANK YOU FOR LISTENING TO
THE GTL STORY**



CONTACT DETAILS

Alaska Natural Resources To Liquids, LLC
310 K Street, Suite 200
Anchorage, AK 99501
(907) 264-6709

Richard Peterson
Managing Member
rpeterson@angtl.com

Peter Tijm
Member
Tijmp@aol.com