The 2002 imperatives of Arctic natural gas - by Rich Seifert, Professor UAF

On January 18th 2002 Dr. Ron Oligney of the University of Houston, an oil consultant who has written a book along with former UAF Economics Professor, Michael Economides called *The Color of Oil*, was invited to give a presentation on the situation regarding Arctic natural gas and particularly pipeline development to deliver gas to the Lower 48. Dr. Oligney was brought to the University of Alaska Fairbanks by the Petroleum Engineering Department. This event was pivotal because of some unexpected revelations by Ron Oligney. He turned a lot of Alaskans' perceptions about the appropriate directions to go with gas pipeline development on their head. What I relate here is taken mainly from a paper by Professor Oligney entitled *The imperatives of Arctic natural gas development*.

Demand for natural gas in the United States is expected to grow 40 to 50 percent from its current level of 22 Tcf (Tcf = 10^{12} trillion cubic feet) over the next decade. Ranges among other estimates are that natural gas consumption in the U.S. will reach between 31 Tcf and 33 Tcf by 2015. This means that within 10 years, half of our domestic supply of natural gas must come from sources that are yet to be developed. Although efforts are now underway in the Gulf of Mexico and attempts are made at recouping unconventional resources and natural gas hydrates, Arctic gas remains the most identifiable new source of domestic supply. The North Slope of Alaska holds an estimated 36 Tcf of natural gas, and fields in the Mackenzie Valley another 9 Tcf. Although these are the commonly reported reserve numbers, they are likely to grow by several multiples as the market develops and the product rises to premium fuel status and becomes desirable and marketable.

Oligney estimates that Arctic natural gas will supply 12 billion cubic feet per day (4.4 Tcf per year) to the U.S. market, far more than the 4 to 6 Bcf per day contemplated by the current set of proposals. And Oligney stresses America will need the gas. He also points out that a $3 per Mcf natural gas price floor is needed to justify the huge investment (approximately $10 billion, ultimately rising to $30 to $40 billion) over the 20 years as additional pipelines are brought into the system and that that price will emerge over the next 24 months.

Until this lecture, this writer was convinced that the over-the-top gas pipeline was simply a power ploy and a profit motivated choice of the big 3 oil producers on the North Slope. However, with other elements of the picture filled in by Dr. Oligney, it now seems that the Mackenzie Valley will develop as a pipeline "corridor" under almost any political, financial or price scenario. Although in usual economist fashion, Oligney represents this as simply a matter or market forces driving their imperative path, it also now has another element of worthy consideration, that of the Alaska developments that could occur from new discoveries in the Cook Inlet Region.

Personally, I am much less concerned than Oligney about construction employment peaks and the political virtue of new jobs. Rather my interest is in establishing an infrastructure in Alaska for the distribution of gas based energy utilization, which will serve the state well and without which the state is unlikely to construct or afford to build a distribution infrastructure for ultimate hydrogen-fueled renewable energy utilization.

Development of the Mackenzie Valley corridor clearly portends access to North Slope reserves via the over-the-top route. In their paper, in order to further justify and to convert Alaskans from being so negative on this proposed gasline, Oligney and his co-author Jim Longbottom, point up the job issues related to pipeline development and also predict the Permanent Fund income to Alaska expected from this development.

Other worthy considerations are also pointed out. For instance, both the highway version of a gas line from the North Slope and the over-the-top version, result in a pipeline that is 60 percent or more in Canada. Routing decisions and Alaska construction jobs have to be heavily discounted. It also means that Canada will have a dominant say in routing decisions. Oligney also points out that parochial and non-competitive Alaska pipeline projects have been promulgated in the name of construction jobs for decades and we still don't have a gas pipeline.

But the third piece of information is the most newsworthy and definitely one of the most compelling for accepting Oligney's arguments. Alaskans should focus on Kenai Peninsula/Cook Inlet gas development. This, Oligney points out, is an overlooked bright spot for the state. Apparently now there are seven to eight years of excess supply in Cook Inlet, but the lack of exploration activity in Cook Inlet does not suggest a lack of resource. Rather there's a lack of market incentive because the local value of the gas is only $1 to $1.50 per thousand cubic feet and has been that way for the past decade. In his presentation, Oligney pointed out that the exploration/production sector activity has already led to a spate of new discoveries in Cook Inlet. Cook Inlet exploration activities are currently underway by Phillips, Forrest Oil, Unocal and Escopeta Oil and Gas.

In his paper, Oligney includes the following press release:

Escopeta Oil & Gas and B.B.I., Inc.
Announce Exploration Results in Cook Inlet Basin, Alaska
Estimated 12 Tcf of Recoverable Natural Gas Reserves Located

FOR IMMEDIATE RELEASE
September 26, 2001

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Houston, TX - Escopeta Oil & Gas and BBI, Inc. of Houston, Texas, today announced new seismic reprocessing results that show estimated recoverable reserves of 12 trillion cubic feet (Tcf) of natural gas near the East Forelands area of Alaska's Cook Inlet Basin, at depths of 18,000 to 21,000 ft. Known producing

horizons in the same structural trend would likely recover 1.35 billion barrels of oil and an additional 6.1 Tcf of gas.

The reprocessed seismic data reveal the presence of a significant complex fault system on the east flank of the Middle Ground Shoal Field (200 million barrels reserves), forming an immense trapping mechanism, possibly the largest untested structural fault block in the Cook Inlet Basin. Geophysical and geological mapping reflect approximately 9000 feet of vertical closure against this fault system representing approximately 69,000 acres of structural closure. The depth of the main targets suggests accumulations of thermogenic gas.

Oligney and Longbottom, Nov. 2001

Right now the remaining reserves in the Cook Inlet Basin stand at 2.56 Tcf but Oligney and his co-author anticipate 20-plus Tcf, an amount equal to or greater than half the entire known reserves on the North Slope of Alaska will be announced in Cook Inlet over the next 24 to 36 months. These reserves will support local residential, commercial demand, natural gas and power needs in Fairbanks, extended and expanded LNG export to Asia, and the supply of natural gas, gas to liquids and other product exports to the U.S. West Coast. And certainly this is great news for Alaska.

While you could do the over-the-top pipeline and maximize revenue to the state through it, the construction jobs there peak at 2008. But more important, a vibrant gas industry would add 35,000 permanent new jobs by 2020 and the Permanent Fund balance would grow by an incremental $5 billion over the same period, owing to natural gas activities. And I presume, although it is not totally clear in Oligney's paper that this $5 billion is from both the North Slope and the Cook Inlet production.

Finally, Oligney criticizes Congressional action to incentivize an Arctic natural gas pipeline. He says specifically that Congress should:

- Remain route neutral.
- Streamline the permitting process and set deadlines for action on environmental and other review by FERC and all other relevant agencies.
- Address with Canadian lawmakers the labor, finance, environmental and other issues that are of mutual concern to the United States and Canada.

Congressman Don Young has introduced a bill, which in light of the information Oligney presents, seems like a preposterously unwise approach. His bill maintains that the United States shall build no pipeline north of 68° latitude that crosses the border between the United States and Canada, which is clearly aimed at preventing any 'over-the-top' gas pipeline.

In light of this incredibly important new development in Alaska, most of the other arguments for gas line development on this web page wither to insignificance. Here are some prognostications and anticipations regarding these

new developments and how they change what might be the best approach for Alaska to take in gas development.

Suddenly with Cook Inlet in the picture, most of our instate use and infrastructure development would have to occur with instate capitalization. Listed on this web page in another section is a concept known as the Alaska Energy Futures Trust. It is time to raise the profile of this concept. It could function as a major funding mechanism for infrastructure, and as a renewable energy-financing tool for state development. Previous ideas put forward about what this energy futures trust could do were limited by the anticipation that there would be a pipeline through Fairbanks and perhaps to Tidewater at Valdez, and perhaps even a spur either from Glennallen to connect with the Matanuska Valley gas lines, or down the rail line to Anchorage. Much of that seems very much less likely to occur under a Cook Inlet development scenario. Consequently the role for how one might achieve gas infrastructure would need to be taken on by instate development and financed by state mechanisms.

Enstar, a major player in gas in the Anchorage area, may be interested in developing this infrastructure, but as a Fairbanksan it seems imperative for Fairbanks to take a very, very aggressive role in seeing that the gas distribution gets to Fairbanks. Certainly supply would seem to be no issue if 20 Tcf of gas is available in Cook Inlet. That is very likely to be enough gas for Alaska instate use, even at the world price, for perhaps 50 years.

Presuming that we anticipate the need for instate capitalization, there are several ways we could go about this. I suggest at least two. First, we can use and perhaps raise the severance tax and corporate income taxes on resource production. The state constitution requires by policy, that Alaskans shall reap maximum benefit from the use of our natural resources. Consequently we should do everything we can to maximize the revenue stream from North Slope production if and when the over-the-top route is in production. Corporate income taxes are now 9% in Alaska and it should be very easy for us to measure the profit of that production, and use the corporate income tax, perhaps levy additional corporate income taxes, for the Energy Futures Trust. Past conceptions of the Energy Futures Trust were aimed at financing infrastructure. By financing I mean, crediting it for capitalization with payback to the trust. The trust could operate like a state development bank in that regard, allowing for capitalization of our necessities. It should also focus on renewing, revitalizing and weatherizing the existing housing stock all across the state.

Another use for the Alaska Energy Futures Trust that was previously anticipated, is to help finance energy transitions to renewables wherever possible in Rural Alaska. It is very unlikely that even with massive instate production capabilities, that gas could easily be transported to Rural Alaska. All of these resources and housing improvements are simply ways of taking the maximum resource benefit and distributing it through a financial mechanism, the Energy Futures Trust, to Alaskans who will otherwise not have access to the major infrastructure development. This also holds for Southeast Alaska. However, Southeast Alaska is less stressed because of the availability of renewable

hydroelectric power for electricity, and there will still be fossil fuels transportable from instate production for the foreseeable future.

This new situation, with gas availability emerging from the Cook Inlet region, makes it imperative that at least some of the other major energy needs of the railbelt be met with a pipeline to Fairbanks. In fact on January 22nd, 2002 Unocal suggested that they would build a pipeline to Homer, completing the southward expansion of natural gas infrastructure. This is an example of infrastructure that could be financed from the Alaska Energy Futures Trust.

By creating a financing vehicle related to energy resource development, the Energy Futures Trust could encompass a wide range of public constituents, all of whom receive some benefit from a diverse and accessible financing regime. It could enable Alaskans to maximally benefit from North Slope gas production and instate gas utilization. Where those two energy sources were not deliverable, maximum development of local renewable indigenous energy sources and improved housing stock and conservation to lower demand could be financed. All of these things are much more likely to keep Alaska economically competitive and alive, and would secure our future by developing our infrastructure with the natural gas transition to a time when natural gas ultimately will be spent and we will have to rely more on indigenous renewable resources. At least with this type of development the infrastructure for distributing renewable resources will have been purchased when money and financing was available from the Energy Futures Trust. The logic is to build the future infrastructure with gas revenues while we have them.

The Energy Futures Trust should be managed on a sustained yield basis so that we don't "over-leverage" it and cause it to be depleted of capital reserves. It could provide for an energy future in the same way that the fiscal and service future of the state will be afforded by the Permanent Fund: on an equal basis to Rural Alaska. There is no reason why some sort of major connection could not be accommodated with the management of energy futures trust capital and the Permanent Fund.

I invite any economic analysis of these ideas including the means whereby we could use part of the revenue stream from the North Slope gas production for an energy futures infrastructure development fund, which contains all the aspects mentioned in this paper. Lets go over those again just to be certain that they are all clear. The first is: financing of gas infrastructure development for instate use and possible export in Cook Inlet. Second, use and development of renewable energy resources wherever feasible and economic to do so in rural areas, and anywhere off-grid where gas cannot be easily delivered and electricity is unavailable from any grid. And third, in order to lower demand and maximize efficient use of instate resources, to improve the housing stock with weatherization and subsidy for high quality, energy efficient construction in Alaska. We must not build an infrastructure that we cannot maintain without low cost energy. These are simply wise actions, and we should do them even if we didn't have the Energy Futures Trust. But the Energy Futures Trust makes it

imperative that we shall do them, and we can do them because we can afford them. We can prepare ourselves for a conserver society, a peaceable economy.

I welcome again all economic and political commentary so that we may increase the level of dialogue about this concept around the state. New opportunities and new resource developments seem to be emerging constantly and in two years things could be different and worthy of revision. But for now these seem to be the paths that are opening to us and we should proceed down them with boldness.

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