OIL RESOURCES

A CLOSER LOOK
Part Two
And Maybe Some Pleasant Surprises!

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In "Part One" of this report I gave some background and perspective about our oil resources. Now let's take a look at some specifics and their potential impact.

Recent Discoveries

In recent weeks and months I have noted several reports that, while not independently conclusive, seem to indicate that the United States is indeed "sitting on" much richer petroleum resources than ever thought. Here I want to "take stock" and in one place try to accumulate all that I have in my files about potential increases in domestic oil production.

The Green River Formation **–** I understand this to be a large and deep deposit of sedimentary rocks beneath parts of Colorado, Utah, and Wyoming. According to Anu K. Mittal, the Government Accountability Office's director of natural resources and environment, this contains the world's largest deposits of oil shale! This was included in written testimony to the House Science Subcommittee on Energy and Environment.

Some credible experts optimistically estimate recoverable oil from the area to be as much as four times the proven resources of Saudi Arabia! The total reserves are estimated to be about 3 trillion barrels of oil! The Rand Corporation estimates that 30 to 60 percent of this oil can be recovered. Think about that! At current consumption levels, perhaps this could support our current usage for more than 200 years.

Ms. Mittal herself wrote: "USGS estimates that the Green River Formation contains about 3 trillion barrels of oil, and about half of this may be recoverable, depending on available technology and economic conditions." **Here's the "rub"! About 75% of this lies under federal land,** and the Obama administration is generally opposed to drilling on public land.

Remember that virtually all of the recent increases in new production came from discoveries on private land and using private resources. 94% of federal onshore lands and

97% of federal offshore lands are off-limits to oil and gas drilling. I found a report stating that the Obama administration recently rescinded 77 oil and gas leases in Utah.

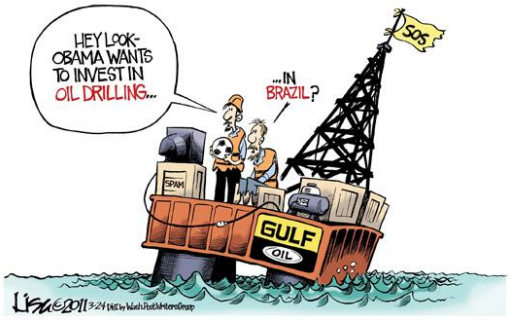
This discovery alone gives us probable recoverable levels that approximately equal the entire world's proven oil reserves. It truly has the "potential" to make us energy independent. Much of this oil would be extracted using "fracking" and this administration is generally opposed to that method. Gradually, the real environmental concerns about this method seem to be disappearing – so there's real hope.

The Bakken Formation - The Bakken Formation is part of the Williston Basin which covers parts of North and South Dakota, Montana and Saskatchewan in Canada. Bakken itself is in Williston's center and is divided between North Dakota, Wyoming and Saskatchewan.

According to energy expert Dr. David Kreutzer, of Heritage, the most reliable estimate of oil in Bakken is 24 billion barrels. That is almost double the amount of oil we can recover from Alaska's Prudhoe Bay! The proven reserves there total almost 5 billion barrels, and going up! This still is an incredible find and considering this is on private land and drilling is accelerating in the area, must be considered a major future source for energy. And think about the economic impact! North Dakota is booming and actually has now become the number two oil producing state in the U.S. Only Texas surpasses North Dakota on this measure.

Other Potential Centers of Oil Production – Recently discovered is the Utica rock formation which is mostly in Ohio. Estimates indicate that it contains oil, natural-gas liquids and natural gas equivalent to 25 billion barrels of oil. According to Ed Feulner of The Heritage Foundation, along with Utica, improved exploration and production technologies have shown that states such as Pennsylvania, New York, Texas, Oklahoma, Arkansas, West Virginia and Louisiana are now sitting on much larger oil and natural gas reserves than previously thought. Other newer fields I found reference to, and which show promise, include Niobrara which stretches under Wyoming, Colorado, Nebraska, and Kansas; the Leonard, in New Mexico and Texas; and the Monterey in California.

Let's not forget that other parts of the western hemisphere have promising discoveries similar to Canada's oil sands, and significant resources shared in the Bakken formation. And don't forget ANWR's 10 billion barrels! How about the impressive reserves discovered off Brazil's coast!? So impressive, in fact, that Obama agreed to help finance some of their drilling projects. Hey, what would be wrong with directing those resources to the U.S.? I guess I'll never learn!



Potential for Economic Recovery

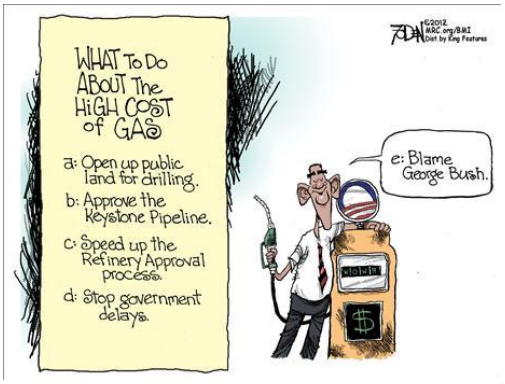
We have all read about the impact of oil exploration and drilling on the economy in North Dakota. It's an astounding story! Unemployment is just over 3%. You can't get lower than that! Fortunately some state governments have embraced the potential and support

exploration and drilling experts. Not all states support it enthusiastically and we know that the Obama administration gives little more than lip service to developing natural resources.

According to the energy consulting firm Wood Mackenzie, allowing access to domestic resources and imports of Canadian oil would generate more than 1 million jobs by 2018 and more than 1.4 million jobs by 2030. The federal government would stand to benefit tremendously as well, collecting more than $36 billion in tax revenue as soon as 2015 and more than $800 billion by 2030.

Joel Kurtzman wrote an article for the Wall Street Journal about "The Market-Driven Energy Revolution." He writes about the new oil wells, new technology, and the large increase in oil drilling activity (primarily on private lands). Domestic oil production has increased 12% since 2008 and imported oil has fallen to 45% of total consumption from 61%.

We have made progress. In 2008, we were on track to spend nearly $1 trillion on imported oil per year, yet this has since fallen dramatically to $350 billion this year due to lower demand, higher production, and lower prices particularly for natural gas. Kurtzman ties this all together by pointing out that high prices have driven the market to develop ways to satisfy the demand which still remains. This applies to oil as well as natural gas resources. New extraction technologies and recent discoveries would not have occurred without the dynamics of free market forces. We must make sure the free markets survive and thrive!



All of this information demonstrates how truly astounding could be the economic effects of oil and gas production. Ed Feulner of The Heritage Foundation said it best: "The good news … is that it appears we've barely tapped our energy potential. The answer to many of our needs, it turns out – both for energy and for economic recovery – may be right under our feet. **So let's get going!"**

Pulling It All Together

Summarizing this complicated topic is really tough. Obviously I'm not an expert, and am merely applying, to the oil reserve controversy, my ability to research and understand what has been reported in recent months. Anyway, I found some information that I can piece together to try to bring this into better focus. It combines findings and opinions from several sources.

Go back to the section on terminology in Part One. I am presenting information about oil reserves in the category "technologically recoverable" – i.e. those oil resources that are producible using current technology without reference to economic viability. Yes, it's a measurement that brings optimism into the evaluation (unlike "proven reserves") but it does not rely on future technological improvements – only efficiencies and economic improvements. I am comfortable assuming that we will experience some of those advances.

While the following doesn't deal with "proven reserves," it does present technically recoverable reserves, and the industry's experience is that the movement from "technically recoverable" to "proven" is predictable and sometimes rapid. I tend to be very analytical, while skeptical, but I feel very encouraged by this information.

Here is some information from the U.S. Government, the Institute for Energy Research, and the Rand Corporation (primarily):

Technically Recoverable Oil (in billions of barrels)		
Using conventional recovery techniques		218.9
Onshore	114.0	
Offshore	57.3	
Alaska	47.6	
Unconventional		240.0
Oil Shale		982.0
Total		1,441.8

That's over 1.4 trillion barrels of recoverable oil, folks! That's more oil than the entire world has consumed in the last 150 years. And, according to the Washington Times, if we add in an estimated 2.7 quadrillion cubic feet of recoverable natural gas, and 486.1 short tons (whatever that is) of recoverable coal, the result is a conclusion that the U.S. has more combined reserves than any other country on earth! Wow!

Impact on the "Peak Oil" Concept – It's Movin' "North," Ladies and Gents

As described in the "terminology" section in Part One of this report (5/27/12), peak oil refers to that point that production of oil necessarily decreases based upon reducing levels of reserves. It is often reported that the U.S. reserves have passed that point of diminishing returns. But NOT SO FAST! Pay attention to what has been presented so far and then consider some additional information.

The U.S. energy policy assumes that proven reserves is the most important and most relevant predictor of future events and therefore current energy policy. That is the path the current administration prefers to take. But many experts strongly preach that it is a serious fallacy to assume "proven reserves" is the best measure of future supply and therefore the basis for energy policies.

Many top experts disagree with the emphasis on "proven reserves," and this apparently includes the GAO, USGS, along with many others. Traditionally, the DOE and many in the oil industry have professed the belief that attention must be centered on the Mideast for future oil production. They did so for understandable reasons, but that's no longer the case! Just look at the information provided in earlier sections. Such measurements and predictions about Mideast prominence no longer can demand exclusive reliance.

Most new estimates concur that ultimately, most oil production will occur outside of the Mideast. The Mideast does not have the majority of future oil production – even though it has over 50% of "proven reserves." Much of this new optimism is focused on the U.S. and other areas in the western hemisphere – North and South America. But the U.S. seems to be prime territory.

Remember once again what President Obama said: "The easily accessible oil has already been sucked up out of the ground." He didn't point out that several hundred billion barrels

in “now easily accessible” oil has been made “impossible to access” by regulations and moratoria. As Dr. Kreutzer pointed out two years ago out: “The technology for getting the harder-to-reach oil deposits has been improving as fast or faster than our extraction of the easy-to-get stuff ……”

Traditional peak oil theories are losing favor! And that’s good news!

Ladies and gentlemen, I think all of this demonstrates that there is good reason to be optimistic! Yes, we need to learn more, but let’s all work to get the word out!