

1.1 Nuclear Energy is No Solution to Tar Sands Development

The nuclear energy debate was renewed in Alberta in 2006 with the suggestion to use nuclear energy as a potential alternative to natural gas in the tar sands development.

Given the surge of the tar sands development in recent years, with even more expected in the coming years, the demand for energy required for the extraction and processing of the tar sands, namely in the form of precious natural gas, could soon be no longer fulfilled:

“Along with the use of water and reduction of emissions, the use of natural gas in the extraction and processing of oil sands represents one of the greatest challenges facing the industry... For example, Mr. Michael Raymont of EnergyInet feels that using natural gas as a fuel in oil sands development is ‘like turning gold back into lead.’ In fact, the natural gas ... is a relatively clean fuel... The need to find an alternative to natural gas is made all the more pressing by the belief that there might not be enough to produce the projected three to five million barrels a day from the oil sands.”¹

Not surprisingly, the nuclear industry saw this as a great opportunity. By the end of 2006 it was clear that “... the (nuclear) industry is keen to get a foothold in Alberta ...”²

At first glance, the prospects for the nuclear industry seemed enormous:

“... it is estimated that a plant of roughly 600 megawatts could supply a processing plant producing 60,000 barrels of synthetic crude oil a day. Given that, it would take almost 20 reactors to meet the forecast production needs as of 2015.”³

However, a closer examination revealed that

“... today's nuclear technology, which requires one big, central plant, is ill-suited to the oilsands with its long distance between projects, says Greg Stringham, a vice-president for the Canadian Association of Petroleum Producers. For instance, steam is pumped underground to soften up the bitumen up. But 15 kilometres from the nuclear plant, the steam turns to water.”⁴

¹ HOUSE OF COMMONS

CANADA

THE OIL SANDS: TOWARD SUSTAINABLE DEVELOPMENT

Report of the Standing Committee on Natural Resources

Lee Richardson, MP

Chair

MARCH 2007

FOURTH REPORT

<http://cmte.parl.gc.ca/cmte/CommitteePublication.aspx?COM=10803&Lang=1&SourceId=199664> (last accessed April 15, 2007)

² Gas for oilsands debate needed

The Edmonton Journal

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<http://www.canada.com/edmontonjournal/news/opinion/story.html?id=b7199589-3bda-410a-ac02-d0b877006acc> (last accessed June 10, 2008)

³ THE OIL SANDS: TOWARD SUSTAINABLE DEVELOPMENT

ibid

⁴ Gas for oilsands debate needed

ibid

“... the main problem is that classic nuclear plants are too big for oil sands development and that smaller plants would have to be considered, on the order of 100 megawatts, a size better adapted to the characteristics and needs of individual oil sands development projects.”⁵

Classic nuclear plants in the tar sands context will face “... limitations on the distribution of hot water or steam over great distances. Thus, hot water could be sent over roughly 75 kilometres, but steam over only 25 kilometres.”⁶

This is one of the reasons why “... smaller plants would have to be considered ...”⁷

Instead of the almost 20 reactors of roughly 600 megawatts mentioned above, about **120 reactors** on the order of 100 megawatts each would have to be built!

That is a lot of nuclear reactors. It should be remembered that currently Canada deploys around 20 nuclear reactors for electricity production, and the U.S around 100.

“Another concern is the long time it takes to get a plant up and running. The nuclear industry says it could take to 2014 to build a plant. By that time, oilsands production will likely be close to triple its current level.”⁸

According to the Report of the Standing Committee on Natural Resources, writing in the year 2007, the first nuclear power plant would not be up before the tar sands development was already in full progress:

“If the regulatory process to authorize a CANDU 6 plant began in spring 2008, it would take another eight years, or until 2016, before it was fully operational.”⁹

Nuclear power plants have been designed for electricity generation, not steam production for direct use. The capacities of nuclear power plants are currently around 600 megawatts and upwards. The deployment of smaller units - around 100 megawatts - would require new reactor designs, thereby creating additional uncertainties and further stretching the cost estimates and timeframes.

Consequently, the Report of the Standing Committee on Natural Resources stated:

“... the Committee recommends that no decision be made on using nuclear energy to extract oil from the tar sands until the repercussions of this process are fully known and understood.”¹⁰

Aside from these logistical and technical concerns, there are also significant security risks associated with the use of nuclear power in the tar sands. Since the bulk of the oil produced

⁵ **THE OIL SANDS: TOWARD SUSTAINABLE DEVELOPMENT**

ibid

⁶ ibid

⁷ ibid

⁸ **Gas for oilsands debate needed**

ibid

⁹ **THE OIL SANDS: TOWARD SUSTAINABLE DEVELOPMENT**

ibid

¹⁰ ibid

from the tar sands is for export to the United States, the tar sands is an attractive target for any nation or group aiming to disrupt US oil supply. The introduction of nuclear power would dramatically increase the risk of terrorist acts, and exacerbate the potential impacts of such an attack.

Any attack on these nuclear plants would not only jeopardize the assets of the tar sands industry but would put the whole tar sands development of Alberta at risk:

“It doesn’t make sense to me to put a reactor right in the middle of one of the world’s largest deposits of Oil. Should something go terribly wrong and there be an accident, or even a deliberate act of terrorism, we would contaminate all the potential oil in the that huge reserve, leaving us with nothing.

...’

-Malcolm Tuer Toronto¹¹

No wonder that the big oil companies in the area, like Shell Canada, say they're not interested in nuclear power.¹²

This article was written by Heinz-J. Peter, an independent nuclear physicist living in St. Albert, Alberta.

¹¹ **CBC news**

IN DEPTH

REALITY CHECK: Robert Sheppard

Is a Candu really the answer for Alberta's oilsands?

January 11, 2007

<http://www.cbc.ca/news/background/realitycheck/sheppard/20070111.html> (last accessed June 10, 2008)

¹² **Stelmach had duty to lead public debate on nuclear energy**

Questions not answered because they weren't asked

Sheila Pratt, The Edmonton Journal

Published: Sunday, September 02(, 2007)

<http://www.canada.com/edmontonjournal/columnists/story.html?id=3b5a5ca8-4967-493a-a809-ed904425277>

(last accessed September 5, 2007)