

Economic Potential of Stranded Natural Gas Hydrates

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Executive Summary

Natural gas that is trapped in hydrates has the potential to become a large source of energy when there is becoming a large shortage in conventional energy sources. This report addresses the supply of gas hydrates in Kamchatka, Russia. The model used to estimate the flow rate of each well was the Wiggins and Shah model. The natural gas that can be produced in Kamchatka can be sold to neighboring markets such as China and Japan. The two major transportation options are to either construct a pipeline to transport the natural gas to mainland Russia for transport to other markets or to use LNG tankers to transport the gas to Japan.

The both options have been shown that they can be profitable if pursued at the correct conditions. The larger facilities tend to yield a higher return, but those options cost more to pursue. At a flow rate of 390 million standard cubic feet per day, the total capital investment for the LNG is \$10.6 billion compared to the total capital investment for the pipeline which is \$12.3 billion. Both of these options lead to a positive net present worth, but the LNG NPW is \$10.9 billion and the pipeline NPW is \$545 million. The average return on investment for the LNG facility is 23.86% and for the pipeline it is 18.76%. Therefore, both of the options could be chosen, but if the largest profit is needed, then the LNG facility is the most profitable option to pursue.

In conclusion, the best option for the model used is the option to pursue LNG. Although, there are other cases contained in this report that also make economic sense, but an in depth analysis of the assumptions used needs to be completed.