

Daily Oil Bulletin

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Northern Oil And Gas Development Starts With Understanding The Geologic Framework: Hayes

BY [CARTER HAYDU \(/AUTHOR/CARTER-HAYDU/\)](#) – MARCH 18, 2016 – [VIEW ISSUE \(/HEADLINES/2016-03-18\)](#)

What is “really cool” about understanding the geologic framework of the Northwest Territories and Yukon is that it is just an extension of the Western Canadian Sedimentary Basin, says **Brad Hayes**, president of **Petrel Robertson Consulting Ltd.**

“Even though we have a small number of wells, roughly speaking in the North, we have a lot of stuff from the south that we understand, which we have learned that we can take northward for our assessment of the resources,” he told the **Canadian Institute’s** Arctic Oil and Gas Symposium this week. “The geology and types of rocks that point out in the plains to the south and into the Northwest Territories are pretty similar stuff.”

According to Hayes, there are enough wells drilled in the territories to understand the distribution of various rocks, whether shale or conventional reservoirs. There also is enough well control for an understanding of how they all relate to one another and industry has a fairly reasonable regional framework for the distributions of the rocks, although there is still much work to be done.

“From that framework, we still have pretty limited modern data to assess our unconventional reservoir. We have the starting point, but we are a long ways from having a really good understanding.”

Shale oil and other tight formations on land in the N. W. T. and Yukon appear to be the “big prize” for industry, Hayes said. “We have enough data right now in [N. W. T.] to suggest the shales are highly prospective for oil and gas production. That being said, we need to build on that data to understand better exactly what we are going to get out, how quickly we are going to get it out, and how to design our infrastructure to capture it.”

Government agencies, geological surveys and associated organizations are busy with sampling and analysis mapping projects to more fully appreciate resources in the North, Hayes noted. While industry is focused on promising shale packages, there are also constraints in terms of human and financial resources so companies, agencies and government have undertaken some elaborate projects to maximize efficiencies.

“What is absolutely critical is the activity and expenditures of industry to gather new data with drilling,” said Hayes. “We are not going to know what is under these wells until we drill the horizontal wells, frac (fracture) them and see what flows back at us, and do that a few times.”

He added: “We will need more exploratory and appraisal work, and it is going to be tough in the current economic setting, but the stage is set and we are finding out more, and we just need to keep plugging all this information into the framework to work together and support the time for infrastructure, transportation and so on going forward.”

Doug Matthews, an energy analyst and writer with **Matthews Energy Consulting**, said that while there is a substantial growing resource base in the North, it requires hydraulic fracturing and/or offshore exploration, both of which face substantial public opposition. He noted there are other challenges for development north of 60.

“We have infrastructure challenges in the North, we know that, and there is a high cost of getting it done, and of course for getting the resource out,” he told the symposium. “There really is no way to move our substantial resources to market. We know we have regulatory challenges, there is frustration felt by industry, and there is apparent lack of faith in the regulatory process by many members of the public; whether that is deserved or not is an issue for another day.”

The good news, said Matthews, is that Yukon and N.W.T. can do many things on their own when it comes to their energy sectors. To accomplish big things, he suggested, the people of the North need to think big. The federal government also is looking to do its part to better support northern development, added a government bureaucrat.

“Over the coming months, work will begin to refresh our federal Arctic policies and strategies to recalibrate priorities and approaches to advance Arctic sustainable development,” said **Stephen Van Dine**, assistant deputy minister of Indigenous and Northern Affairs. “Details on moving forward are far from known today, but you can expect that engagement will occur, and we will build on our Arctic leadership model that we have established.”

Geology groundwork is key

The **Northwest Territories Geological Survey** (NWTGS) plans to publish a lot of geological data regarding shale resource assessment for the Mackenzie Plain, Hayes noted. If companies and other academics understand the geology better, then perhaps they can use their data and methodologies to determine the best spots for development.

“When they look at all those data points that are plotted out, where is the very best spot? We know that for some of the very productive plays in the U.S. — the Marcellus, the Eagleford and so on — people are still making money drilling those plays, because they understand the geology quite well and they are putting their wells into what they call ‘sweet spots.’ It is the very, very best stuff and it is still economic when world oil is at \$30 or \$40 per bbl.

“You don’t drill all the other stuff on the outside that is not as good until oil gets back up to \$100 per bbl. Similarly, in [N.W.T.] you need to know where the sweet spots are, and that is where you are going to go first, establishing productivity that is going to make your play work.”

Aboriginal groups are also using some of the new and existing regional mapping for their own assessment work to grow activities on their lands, Hayes added.

Following Wednesday’s release of an inter-jurisdictional [resource assessment](http://www.neb-one.gc.ca/nrg/sttstc/ntrlg/rprt/lmtptntlbcnwtkn2016/index-eng.html) (<http://www.neb-one.gc.ca/nrg/sttstc/ntrlg/rprt/lmtptntlbcnwtkn2016/index-eng.html>) showing the Liard Basin’s Besa River formation contains 219 tcf of marketable

unconventional natural gas ([DOB, March 16, 2016 \(http://www.dailyoilbulletin.com/article/2016/3/16/new-study-estimates-liard-basin-unconventional-mar/#axzz42szfiyN6\)](http://www.dailyoilbulletin.com/article/2016/3/16/new-study-estimates-liard-basin-unconventional-mar/#axzz42szfiyN6)), N. W. T. Premier **Robert McLeod** told the symposium that if pursued properly the Liard Basin findings could equate to trillions of cubic feet in natural gas and billions of dollars in revenue, as well as plenty of jobs in the North ([DOB, March 17, 2016 \(http://www.dailyoilbulletin.com/article/2016/3/17/nwt-preparing-next-energy-sector-upturn-and-promis/#axzz42szfiyN6\)](http://www.dailyoilbulletin.com/article/2016/3/17/nwt-preparing-next-energy-sector-upturn-and-promis/#axzz42szfiyN6)).

Offshore opportunities afloat

Local jobs from oil and gas development in the North are not only to be found onshore. In a presentation on the offshore, **Chris Hill**, president of **Canatec Associates International Ltd.** said there are opportunities for local residents near the coastline of the territories to find work as offshore development unfolds in the Arctic. Those include persons with knowledge of the seascape to help maintain safe and productive activities.

“The first thing to keep in mind is the need for ice observers and advisors. To get someone up to standard, you don’t start from zero. The ideal way is to select people you need, and one element we need (along with education) is a need for experience — we need experience in a particular environment.”

Ice, he said, is a constant worry for offshore exploration and production in the Arctic, as companies want to avoid damage from icebergs or becoming trapping in the ice. Hill said industry must work to maximize safe operating seasons, monitor ice movements, support navigation in and out of ice zones, and figure out how to keep operations going longer, among other measures.

Newfoundland and Labrador’s energy sector is a “bit luckier” than in the northern territories regarding offshore oil and gas development, simply because East Coast offshore developments are much further progressed, according to **Craig Rowe**, director of exploration and information resources at the **Canada-Newfoundland and Labrador Offshore Petroleum Board** (C-NLOPB).

If there is an emergency requiring immediate attention, then the necessary infrastructure is available for the offshore NL industry which typically has full capabilities for 365-day-a-year drilling. “We are in a situation now, and have been for the last few years, in that there are actually a couple of rigs in the area that can give that support,” he said.

In a true Arctic situation where an operator is drilling its first well in the same season it might be required to contract a second rig, said Rowe.

“One of the positives of stepping offshore is the further you go offshore into the continental shelf is that you actually begin to step outside some of the ice pathways as well.”

Interest remains for offshore NL despite downturn

Although the significant downturn is proving extremely difficult for the oil and gas sector, offshore NL has been able to maintain and often grow some activities over the first 12 to 18 months of the current low cycle, with regulator expectations that exploration could continue to progress through the current year, suggested Rowe.

“We believe that over the upcoming licensing rounds we will be able access to world-class prospects and play types in a safe and stable regulatory environment,” he told the symposium.

“Key takeaways for offshore Newfoundland and Labrador in the near-term include the continuation of the Hebron Project, with anticipated first oil in 2017, continued calls for nominations, and the substantial \$1.8 billion in exploration commitments between 2014 and 2015. Notably, companies are required to spend that money within the first six years of the exploration license, or they risk forfeiture of the bid deposit for the unspent amounts.”

According to Rowe, 2017 will mark a “relatively important year” within the four-year cycle for low-activity bids made in 2013 as they also reach their initial deadlines. Introduced in December 2013, the province’s new offshore tenure and licensing system was the culmination of an extensive project led by C-NLOPB and which included both provincial and federal governments.

Regions are classified as either ‘low,’ ‘high’ or ‘mature’ based on activity levels, which carry respective associated timeframes four, two and one years for exploration, data acquisition and scientific assessments respectively. In 2014, C-NLOPB introduced into the new system an offshore Labrador sector of low activity, and an offshore eastern Newfoundland sector in a high activity region.

In 2015, C-NLOPB introduced three new sectors — one offshore Labrador, one near southeastern Newfoundland, as well as a second sector in offshore eastern Newfoundland. Last year was also the first instance of C-NLOPB's call for bids resulting from its new schedule and tenure system. The licensing round closed in November 2015 and resulted in a bid total at that time of more than \$1.2 billion, Rowe said.

As for this year, he added, key items include new exploration licenses in the Flemish Pass, new exploration licences resulting from the successful 2015 bid round, as well as introduction of a second call for bids in the eastern Newfoundland region and the introduction of a call for bids in offshore Labrador.

“In 2016, we did introduce two new calls for nominations for areas of interest in northeastern Newfoundland and southern Newfoundland [offshore], and we also introduced a call for nominations for parcels over Labrador,” he said. This year, there also will be the introduction of calls for bids for the Jeanne d'Arc basin and eastern Newfoundland, as well as a call for bids for offshore Labrador, which will close in 2017.

ARTICLE SECTION: [MARKET INTELLIGENCE \(/SECTION/MARKET-INTELLIGENCE/\)](#)

ARTICLE CATEGORIES: [DRILLING \(/CATEGORY/DRILLING/\)](#), [GOVERNMENT \(/CATEGORY/GOVERNMENT/\)](#)