



17th Legislative Assembly of the Northwest Territories

Standing Committee on Economic Development and Infrastructure

Report on August 2012 Hydraulic
Fracturing Study Tour: Toward a Policy
Framework for Hydraulic Fracturing in
the Northwest Territories

Chair: Mr. Robert Hawkins

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November 5, 2012

SPEAKER OF THE LEGISLATIVE ASSEMBLY

Mr. Speaker:

Your Standing Committee on Economic Development and Infrastructure is pleased to provide its Report on August 2012 Hydraulic Fracturing Study Tour: Toward a Policy Framework for Hydraulic Fracturing in the Northwest Territories and commends it to the House.

A handwritten signature in blue ink that reads "Robert Hawkins". The signature is written in a cursive style with a large initial "R".

Robert Hawkins, MLA
Chairperson

**STANDING COMMITTEE ON
ECONOMIC DEVELOPMENT
AND INFRASTRUCTURE**

**REPORT ON AUGUST 2012 HYDRAULIC FRACTURING STUDY
TOUR: TOWARD A POLICY FRAMEWORK FOR HYDRAULIC
FRACTURING IN THE NORTHWEST TERRITORIES**

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TOWARD A POLICY FRAMEWORK FOR HYDRAULIC FRACTURING IN THE
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INTRODUCTION

The emerging shale resource play in the Central Mackenzie Valley has the potential to bring unprecedented economic activity and prosperity to the Sahtu region and the Northwest Territories as a whole. These oil and gas resources must be extracted through the use of the horizontal drilling process and multi-stage hydraulic fracturing, used to extract hydrocarbons from deep subsurface shale. Hydraulic fracturing, or frac'ing, has attracted worldwide attention and continues to be the subject of much publicity and environmental concern. Northern regulators have recently received applications to hydraulically fracture exploratory wells in the Sahtu.

In August 2012, Members of the Standing Committee on Economic Development and Infrastructure, and Sahtu Member of the Legislative Assembly, Norman Yakeleya, traveled to Calgary with the territorial Minister of Industry, Tourism and Investment and departmental representatives on a hydraulic fracturing study tour. Members received presentations from the Minerals, Oil and Gas division of the Department of Industry, Tourism and Investment; the Canadian Association of Petroleum Producers; Husky Energy and all proponents in the Central Mackenzie Valley shale play; TriCan Well Services; the National Energy Board; the Energy Resources Conservation Board of Alberta (ERCB); and the British Columbia Oil and Gas Commission. The committee also visited a gas plant and well site in the Kananaskis area west of Calgary.

Prior to the study tour, the committee sought to establish a basic understanding of the hydraulic fracturing process and the status of drilling activity and regulation in the Northwest Territories and other jurisdictions. The committee met with the Departments of Industry, Tourism and Investment and Environment and Natural Resources, as well as the Pembina Institute, to discuss the possible implications of hydraulic fracturing in the Northwest Territories. The goal of this research has been to gain an understanding of the technical, environmental, and regulatory aspects of unconventional resource extraction in order to contribute to the development of a responsible policy approach to hydraulic fracturing in the Northwest Territories. The committee would like to take this opportunity to publicly thank all organizations and individuals for their significant time and effort

in meeting with Members, engaging in meaningful discussion, and sharing valuable knowledge and expertise. The committee has discussed the findings of its research and prepared this report and recommendations for the Legislative Assembly.

It is well beyond the scope of the committee's mandate and capacity to comprehensively address all aspects of hydraulic fracturing and its related regulatory processes. Although the committee highlights some areas of specific concern, the main intent of this report is to provide broad recommendations for policy direction.

REGULATORY CONSIDERATIONS

The Government of the Northwest Territories, as well as Aboriginal governments with settled land claims, have authority in areas such as air quality and wildlife. The Government of the Northwest Territories is currently negotiating increased management authority for land and water. The committee recognizes the current *Mackenzie Valley Resources Management Act* as a strong federal law, designed by northerners, that allows for control of the pace and scale of development. A policy on hydraulic fracturing is needed to supplement provisions in the *Mackenzie Valley Resources Management Act* that respect cultural and ecological values.

Until a devolution agreement is reached, the National Energy Board and federally legislated land and water boards will continue to regulate the Northwest Territories' oil and gas industry. Prior to devolution, it is important that the Government of the Northwest Territories have input into this process based on sound, publicly supported policy. There are strong signals that, post-devolution, the Northwest Territories will continue regulatory activities through a service agreement with the National Energy Board.

The future of the shale industry in the Northwest Territories largely depends on the regulatory system. The Northwest Territories' current regulatory process is frequently criticized for various reasons. Through meetings with the Energy Resources Conservation Board of Alberta and the British Columbia Oil and Gas Commission, Members learned how industry activities can be efficiently managed under robust regulations. Both British Columbia and Alberta demonstrated how single-window permitting accelerates regulatory timeframes without totally compromising thorough review, industry oversight, consultation with First Nations, and respect for cultural values. The committee recognizes the importance of requiring industry to disclose its activities, establishing regulations for each step of a drilling operation, and the benefits of developing a lifetime regulatory system, from the time land tracts are granted to the time the last well is capped and abandoned.

Recommendation 1

The Standing Committee on Economic Development and Infrastructure recommends that the Government of the Northwest Territories develop a policy framework on hydraulic fracturing that will guide interim input into regulatory processes and form the basis of a future regulatory system post-devolution, and further that the Government of the Northwest Territories consider the examples of other jurisdictions and adopt best practices where appropriate.

ENVIRONMENTAL AND TECHNICAL CONSIDERATIONS

As Members heard from proponents, the Central Mackenzie Valley resource play is considered 'frontier' not only because it is remote with little infrastructure to support development, but because specific drilling and production conditions for this shale formation are still largely unknown. The technical considerations and impacts of hydraulic fracturing vary from one shale play to another, depending on a wide range of environmental and geological factors. The success of an operation relies on sound knowledge of local geology and finely tuned engineering and drilling expertise. The committee insists that in order to protect ecological integrity and sustain this industry, a baseline understanding of the environmental and geological features of the Central Mackenzie Valley must be established before projects enter the production phase. Should companies choose not to advance to production in the near term, this data will remain a valuable starting point for future development.

In addition to geological mapping, the committee agrees that ground and surface water sources, permafrost conditions, seismicity, and proximity of drill sites to critical habitat are among the issues that must be specifically addressed in baseline information gathering, and that the Government of the Northwest Territories should pursue federal resources to enable this work.

Recommendation 2

The Standing Committee on Economic Development and Infrastructure recommends that the Government of the Northwest Territories include in its policy framework on hydraulic fracturing a strategy to gather environmental and geological baseline information, with federal support.

While many aspects of hydraulic fracturing are specific to a well's location, some technical features of this process are universal. Hydrocarbon-bearing shale is found at least one and a half kilometres below surface. A resounding message that the committee heard from all presenters on the study tour is that sufficient well casing, cementing and depth are critical to protecting ground water and human and environmental health during any horizontal drilling operation. Inadequacies in these areas are among the leading causes of groundwater contamination in shale plays in the United States. Wellbore integrity is also crucial during the drilling and fracturing process and the management of flowback and produced fluids.

In addition to sound wellbore construction, Members also highlight the importance of micro-seismic monitoring to ensure that fractures remain in their target zone, and to monitor, mitigate, and avoid any negative impacts of induced seismicity.

Hydraulic fracturing is, by its very nature, water intensive. Proponents may use propane or other hydrocarbon-based fluids to fracture a well; however, the majority of wells are fractured with large volumes of water, sand, and chemical additives. A typical well in the Central Mackenzie Valley may require 10,000 to 25,000 cubic metres of water; that is 10 to 25 times the amount in the large water tanks in many of our communities, or 10 times the volume of an Olympic swimming pool. Committee members recognize our northern waters as a treasure and a resource that must be preserved through carefully considered management tools. Any policy on hydraulic fracturing in the Northwest Territories must speak to water management. The committee encourages the Government of the Northwest Territories to support industry initiatives to protect water quality, use non-toxic additives to fracturing fluid, and reduce fresh and surface water consumption. The committee agrees full chemical disclosure is vital to environmental protection and public accountability.

The province of British Columbia presented a clear example of how it regulates, monitors, allocates, and reports industrial water use. Industry and provincial regulators felt strongly that provinces and territories should lead regional water monitoring. More baseline information is required for the Northwest Territories to develop effective water management tools.

During the exploration phase, industry will ship fluids and other drilling waste to Alberta for disposal. Transporting waste out of the Northwest Territories on the winter road system appears to be an adequate temporary solution; however, industry emphasized that in order to advance to production, a made-in-the-north water treatment or disposal system must be found.

Deep well injection, pumping waste water back underground, is the preferred disposal method. Certain jurisdictions regulate disposal wells to ensure

environmental protection. The committee learned that these wells must be located in areas where natural and technical barriers can create a secure disposal site. The layers of rock above disposal zones must be tested and monitored to ensure that contaminants do not migrate. Proponents highlighted that if a water treatment plant is established, it must be designed specifically for the oil and gas industry.

The Canadian Association of Petroleum Producers has introduced principles and guidelines for industry that include detailed requirements for fracturing fluid additive disclosure and management, baseline groundwater testing, wellbore construction, water sourcing and reuse, and fluid handling transport and disposal. Alberta and British Columbia also have well-established regulations for all phases of the drilling process.

Recommendation 3

The Standing Committee on Economic Development and Infrastructure recommends that the Government of the Northwest Territories adopt standards for all phases of the drilling process and include these in its policy framework, and strongly recommends these standards be incorporated into regulation at the appropriate time.

Meetings with industry helped the committee establish confidence that proponents will apply their best expertise to development in the Central Mackenzie Valley throughout the drilling process. However, the committee insists that environmental and technical challenges require made-in-the-north solutions, as presenters in Calgary also emphasized.

The Central Mackenzie Valley is home to many species of wildlife. Land consumption and disturbance, habitat fragmentation, and noise pollution are areas of serious concern for Members as well as for the people of the Northwest Territories. Strategies to monitor the impacts of industry on wildlife and habitat should include the development of independent and project-specific environmental monitoring. The committee highlights the need for comprehensive land-use planning in any area where oil and gas development is contemplated. In the absence of finalized land use plans, area management plans may facilitate both the protection of the natural environment and efficiency in the development of key infrastructure.

Recommendation 4

The Standing Committee on Economic Development and Infrastructure recommends that the Government of the Northwest Territories include in its policy on hydraulic fracturing the implementation of environmental monitoring and area management plans.

Absent from presentations during the Calgary study tour was discussion of a comprehensive approach to greenhouse gas emissions related to oil and gas production. These emissions are significant, and need to be managed. Best practices are available to limit air pollutants. The Government of the Northwest Territories has the authority to uphold provisions in its Greenhouse Gas Strategy, and should take into account greenhouse gas emissions related to oil and gas development in its emissions targets and management objectives. Both Alberta and British Columbia report and publish volumes of flared and vented gases, and the Northwest Territories could adopt a similar requirement and require mitigation.

Recommendation 5

The Standing Committee on Economic Development and Infrastructure recommends that the Government of the Northwest Territories include greenhouse gas monitoring and mitigation measures in its policy on hydraulic fracturing.

PUBLIC ENGAGEMENT

Northerners are concerned about the use of hydraulic fracturing, as evidenced by participation in public information sessions and frequent northern media coverage on this issue. Due to anti-fracturing activism and political controversy that surrounds shale resource development, the public has varying views and concerns about the unconventional drilling process. Regulators agreed that public concern and criticism provide opportunities to improve the regulatory system and promote good public policy. Along with proponents, they stressed the need for significant public engagement. British Columbia, with the support of the Canadian Association of Petroleum Producers, is moving toward requirements for full public disclosure of industry activities, including well sites and the chemical composition of fracturing fluids. The committee highlights the

province's fracfocus.ca initiative, a website designed to provide objective information on hydraulic fracturing, and related oil and gas activities and regulations across Canada. The committee agrees the Government of the Northwest Territories should support and consider future contribution to this valuable public resource.

Recommendation 6

The Standing Committee on Economic Development and Infrastructure recommends that the Government of the Northwest Territories undertake meaningful public consultation in the development of a policy on hydraulic fracturing.

The committee is of the view that the general public and residents in the area where hydraulic fracturing is planned need to be kept informed of industry's activities and afforded the opportunity to benefit from resource development taking place on our lands.

Recommendation 7

The Standing Committee on Economic Development and Infrastructure recommends the Government of the Northwest Territories include in its policy on hydraulic fracturing requirements for fair and transparent communication and opportunities for public engagement throughout all phases of the development of shale oil and gas projects.

CONCLUSION

In areas where legislated authority does not exist, it is the committee's view that the Government of the Northwest Territories must exercise its moral authority to represent and act in the best interest of the people of the Northwest Territories and promote sound management of our land and resources. The Government of the Northwest Territories has long experience in ensuring that residents' voices are heard in resource development initiatives, but the time has come for it to assume responsibility for more active policy development as well.

The Calgary study tour and preceding information-gathering helped Members better understand the challenges and opportunities for the further development of

the Central Mackenzie Valley shale resource play, and the high priority of addressing these issues. In its exploratory phase alone, oil and gas development is generating significant activity in Sahtu communities. The sustainability and success of this industry relies on how the Northwest Territories responds to the risks and opportunities at hand and the steps we take to ensure adequate environmental and geological information, public involvement, and regulatory processes before production. To facilitate production in the most socially, environmentally, and economically responsible way, the Northwest Territories must establish its own policy to guide the practice of horizontal drilling and hydraulic fracturing within its jurisdiction.

Recommendation 8

The Standing Committee on Economic Development and Infrastructure recommends the Government of the Northwest Territories provide a comprehensive response to this report within 120 days that includes a plan to develop a policy on hydraulic fracturing.