

# Oil and Gas Division

Lynn D. Helms - Director      Bruce E. Hicks - Assistant Director

**Department of Mineral Resources**

Lynn D. Helms - Director

**North Dakota Industrial Commission**

[www.dmr.nd.gov/oilgas/](http://www.dmr.nd.gov/oilgas/)

On Dec. 9, 2014 the North Dakota Industrial Commission unanimously approved an order that requires all oil producers in North Dakota install and utilize oil-conditioning equipment to significantly reduce the vapor pressure of all Bakken crude oil beginning April 1, 2015.

Oil Conditioning has been a highly debated topic in the news, often with technical terms or answers that can be easily misunderstood or not entirely explained. The following question and answer document takes some of the more commonly asked questions and breaks them down in the simplest form.

We hope this helps you, as a North Dakota citizen understand why and how the North Dakota Industrial Commission requires Bakken producers to condition oil.

## **Question: What is Oil Conditioning?**

A: Oil Conditioning is a process that is performed at the well site. It uses commission prescribed temperatures and pressures to produce a consistent product prior to shipment. It can be done with no additional footprint to the surface, and the excess gas that is conditioned off the oil can be transported in existing or planned pipelines to existing or planned processing facilities.

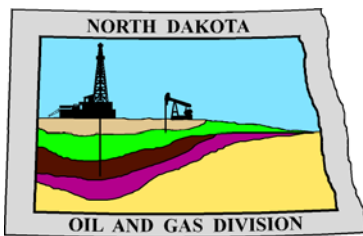
## **Q: Why did the Commission take action on this topic?**

A: The Oil Conditioning order was written as a matter of safety. Rail accidents across the country have drawn attention for the need to better understand how Bakken oil is produced and processed at the well site. The commission initially received 1,114 pages of testimony from 33 groups or individuals, all providing input on how Bakken crude oil is produced and how to make it as safe as possible to transport. Subsequent to the November 13, 2014 Industrial Commission meeting the record was opened and an additional 141 pages of testimony from 25 groups or individuals were provided on the working draft order.

## **Q: What is the goal of Oil Conditioning?**

A: The resulting order was based on science from the testimony received. The goal is to produce crude oil that does not exceed a Vapor Pressure of 13.7 pounds per square inch (psi). National standards recognize oil with a Vapor Pressure of 14.7 psi or less to be stable. Allowing for a Vapor Pressure of 13.7 psi or less, adjusts for an error margin of one psi in the sampling procedures and measurement equipment. It's important to note that winter blend gasoline has a Vapor Pressure of 13.5 psi. Gasoline is a product we all encounter every day, and is safe when properly stored and transported.

Continued



# Oil and Gas Division

Lynn D. Helms - Director      Bruce E. Hicks - Assistant Director

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

[www.dmr.nd.gov/oilgas/](http://www.dmr.nd.gov/oilgas/)

---

## Question: What is Vapor Pressure?

A: The pressure exerted by a vapor escaping from a liquid. It quantifies the tendency of molecules to enter the gaseous phase.<sup>1</sup> In North Dakota, Bakken oil and gas are produced together. You can't produce one without the other. For the purposes of this order, vapor pressure is measured at the point when the gas has been stripped or "conditioned" out of the oil.

## Question: I've heard about Stabilization. What is that?

A: Stabilization is a process developed for condensate that is produced along with natural gas from gas wells.

## Question: Does Texas require stabilization?

A: Texas does not require stabilization, but there are some parts of the Eagle Ford shale, where they produce condensate that use the method. This part of Texas is nearby the large, industrial facilities. They already have the pipelines needed to get the removed gases to market. The market, pipelines and stabilization facilities do not exist in North Dakota currently, and would take significant time to implement.

## Question: If Texas doesn't require stabilization, what are they doing?

A: The same thing as North Dakota. The oil producing parts of Texas are using temperatures and pressures at well sites to separate the natural gas from the oil.

## Question: The crude oil after the accident in Quebec had a vapor pressure of 9.3 psi. Why doesn't the Commission require a vapor pressure of 9 or less?

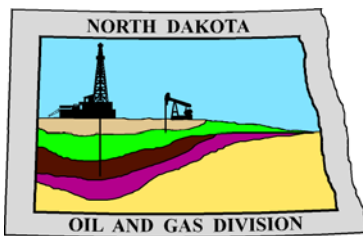
A: Evidence in the record shows that the Transportation Safety Board of Canada questions the validity of the sample taken from the tank cars. The Transportation Safety Board of Canada has stated that any product samples from the derailed tank cars would not be representative of the cargo prior to shipment<sup>2</sup>. In addition, the timing, source, sampling, and analysis of the samples used have raised numerous questions about the results. No evidence supporting a lesser standard was presented in Industrial Commission hearings on the subject.

Continued

---

<sup>1</sup> Schlumberger Oilfield Glossary; [http://www.glossary.oilfield.slb.com/en/Terms/v/vapor\\_pressure.aspx](http://www.glossary.oilfield.slb.com/en/Terms/v/vapor_pressure.aspx)

<sup>2</sup> National Transportation Board of Canada; <http://www.tsb.gc.ca/eng/lab/rail/2013/lp1482013/LP1482013.asp>



# Oil and Gas Division

Lynn D. Helms - Director

Bruce E. Hicks - Assistant Director

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

[www.dmr.nd.gov/oilgas/](http://www.dmr.nd.gov/oilgas/)

---

**Question: Why didn't the commission consider other factors when choosing vapor pressure limits?**

A: The answer is simple, there is only one definition of stable crude oil, and that is 14.7 psi. All other ratios, test methods, values and readings are unstable and unrepeatable techniques that don't include a standard for stable crude oil.

**Question: Is there a cost to oil conditioning?**

A: All regulations have a cost, so the answer is yes. Our estimate is about ten cents per barrel. However, cost is not a factor that weighed into this decision, the primary focus of this order is safety. When asked the day the order was signed what the costs would be, it took additional research from the department to be able to produce an answer.

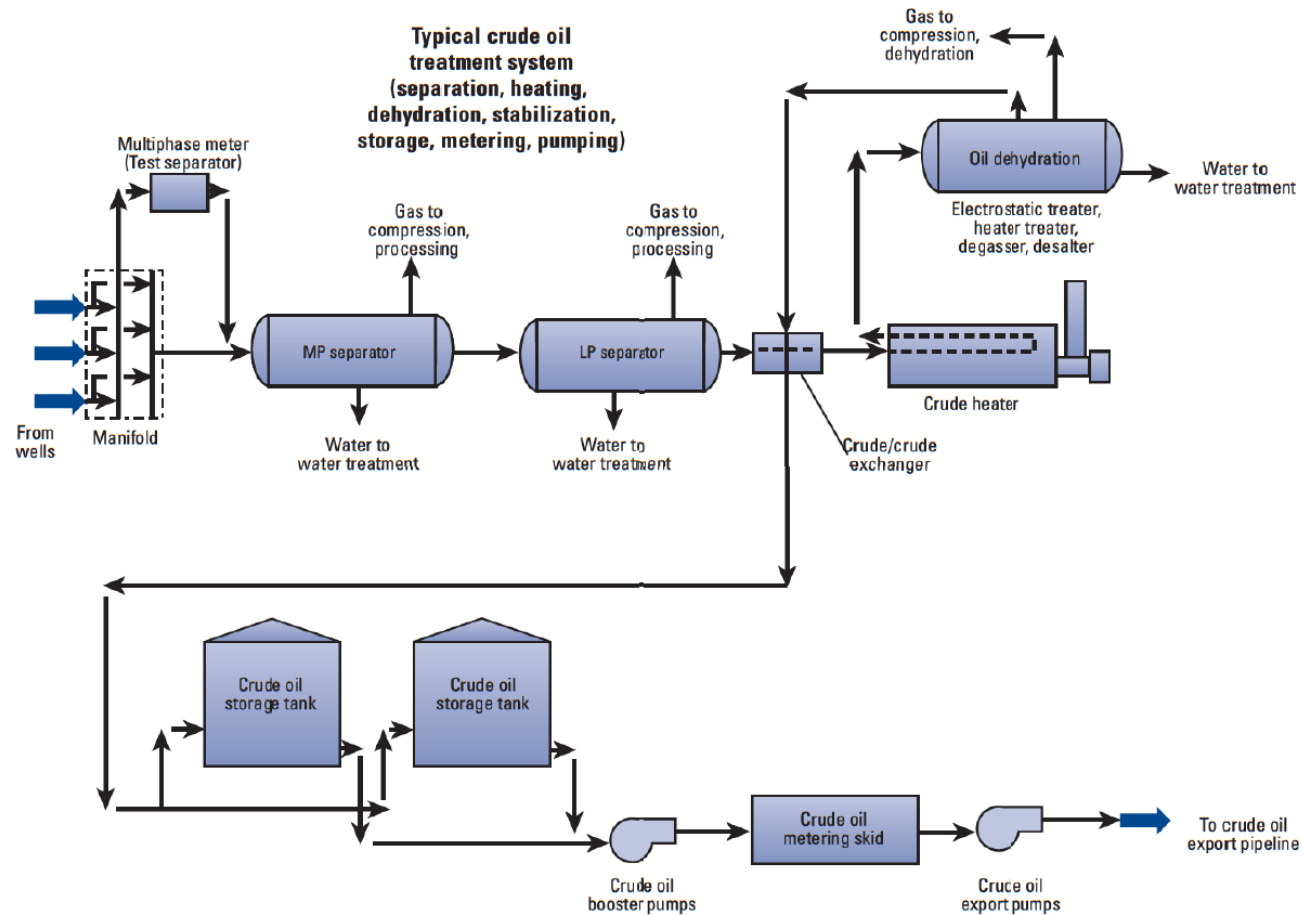
**Question: How will conditioning be enforced?**

A: Utilizing the best inspector to well ratio in the country, North Dakota inspectors will spot check pressure and temperature at producing well sites. If an operator chooses to utilize a pressure and temperature different than described in the commission order they must demonstrate through field testing that the vapor pressure of the produced oil does not exceed 13.7psi. Failure to comply with the commission order could result in a fine of up to \$12,500 a day.

**Question: Can conditioning make crude oil safe?**

A: Yes. But conditioning is not the only answer. It will take continued improvements to railway systems and tank car upgrades, including improved pressure relief valves, to ensure proper transport throughout the nation.

# CRUDE OIL CONDITIONING



# CONDENSATE STABILIZATION

