

Minutes of the
EMPOWER NORTH DAKOTA COMMISSION

April 10th 2014
Department of Commerce
1600 E. Century Avenue Suite 2 Bismarck, ND 58503

Members present:

Al Anderson, Jason Bohrer, Ron Day, Ron Ness, Chris VandeVenter, proxy for Dale Niezwaag, Mark Nisbet, Jay Skabo, David Straley, John Weeda

Ex Officio Members:

Julie Voeck, proxy for John DiDonato
Mark Bring, proxy for Chuck MacFarlane
Margaret Hodnik
Sandi Tabor

Others present:

John Harju, UND EERC
Gerald Groenewold, UND EERC
Kevin Sedivec, NDSU Extension
Mike Fladeland, Department of Commerce
Sherri Frieze, Department of Commerce
Justin Dever, Department of Commerce
Andrea Holl Pfennig, Department of Commerce
Justin Kringstad, ND Pipeline Authority
Todd Kranda, Kelsch, Kelsch, Ruff & Kranda Law Firm
Danette Welsch, ONEOK
Carlee McLeod, USND
Gaylon Baker, Stark Development
Karlene Fine, Industrial Commission
John Olson, John M. Olson, P.C.
Julie Fedorchak, Public Service Commission
Deana Wiese, Ethanol Council
Cal Thorson, NGPRL

**CALL TO
ORDER/WELCOME**

Chairman Anderson called the meeting to order at 10:00 a.m. and welcomed Commission members and guests.

APPROVAL OF MINUTES

A motion was made by Ness and seconded by Day to approve the minutes of March 13th, 2014. Motion carried unanimously.

EPIC

John Harju, UND EERC

John Harju, Associate Director for Research, Energy & Environmental Research Center at UND, gave two presentations, the first on Energy Polygeneration Industrial Complex (EPIC). A facility or plant that produces multiple energy forms and products; as opposed to just electricity.

Discussions focused around ND's electricity production and how much power is needed in the future, the production of clean power, liquid fuels and chemical products. **Presentation is unavailable due to Confidentiality.**

**Bakken Production Optimization Program
Waste Management**

John Harju

Harju, gave his second presentation on Bakken Production Optimization. Harju began his presentation with description of the five phases of hydraulic fracture treatments in a multistage horizontal well; he gave a brief update on Hydrocarbon Utilization.

Next he spoke about naturally occurring radioactive material (NORM) waste disposal progress. **Appendix A**

Harju discussed the waste management strategies, land reclamation and spill remediation. **Appendix B**

2014 Committee Breakout Sessions

No minutes were taken during the breakout sessions as each subcommittee had their own discussion groups.

Committee Reports

Breakout sessions reconvened with a recap from each subcommittee.

Workforce subcommittee

Weeda discussed key points:

- #11 - Provide funding to the HS education module.
- It was mentioned to have Kirsten Baesler, State Superintendent, Department of Public Instruction and Senator Mike Nathe come talk to the Commission on how funding should

happen for next session for the education module.

- #12 - Train ND to be developed, housing infrastructure worked on.
- Address workforce issue; Find the Good Life in ND Campaign.
- Housing Incentive Fund increase for next year; 50 million.
- Single family housing, currently funded at 25%, boost to 60%.

Federal Regulatory Subcommittee

Tabor discussed key points:

- #17 - Leave as is. Build a bridge to work with Region 8.
- #18 - Leave as is. Navigable waters; Jason Bohrer to take the lead and follow up with Dave Glatt of the Health Department to see if they need support. Governor's Office may file comments.
- #19 - Funding levels need to be raised for state regulatory agencies; key people will be retiring.

Infrastructure subcommittee

Ness discussed key points:

- #1 – Develop a new formula to provide adequate funding for local government investment in construction of infrastructure, but needs to be a master plan, a statewide plan and ties in with #9 more than just a transportation plan.
- #2 – Trigger mechanism to roll over more than \$100 million into the Strategic Investment Fund. When oil activity and production have exceeded, this will then eliminate the need for a special session each year.
- #3 - Housing Incentive Fund – Jolene Kline, Housing Finance Authority and Karlene Fine, Industrial Commission to come talk to the Commission to support HB 1029 and SB 2014.
- #5 - Eliminate the temporary housing and promote permanent housing.
- #6 - Right of Way Task Force come with recommendations, HB 1333
- #7 & #8 - Continue a strong focus on water. Todd Sando, Water Commission or Andrea Travnicek, Governor's Office to come speak to the Commission.
- #10 Monitor railroad capacity.

Research and Development

Straley discussed key points:

- #14 – Resource Trust Fund hasn't been used completely, \$3 million hasn't been used to date, appropriation, continued support to leverage more.
- IHS study, niche markets in ND, instead of generic numbers of competing on a worldwide market.
- Coordinate with the private sector to market its resources, policies, bring in the parties to develop ideas, neutral position. [Appendix C – spreadsheet](#)

IHS Value Added Market Study Update

Mike Fladeland updated the members on the status of the IHS value added market study report. Fladeland mentioned this is the 4th progress report. A draft copy of the final report will be available in May for the members to review. A report will be given to the Legislative Interim Energy Development & Transmission Committee in July and then the Final Report will be given to the Legislative session in January.

PUBLIC COMMENT

John Olson commented that Burlington Northern Santa Fe (BNSF) Railroad who recently purchased Next Generation Tank Cars and will be adding 5,000 employees to their system.

FUTURE MEETING

Next meeting will take place at the Northern Great Plains Research Laboratory in Mandan, ND on May 1st and 2nd.

ADJOURNMENT

The Chairman adjourned the meeting at 1:30 p.m. The meeting was adjourned unanimously.

_____	_____
Al Anderson	Date
Chairman	
_____	_____
Sherri Frieze	Date
Recording Secretary	



BAKKENSMARTSM

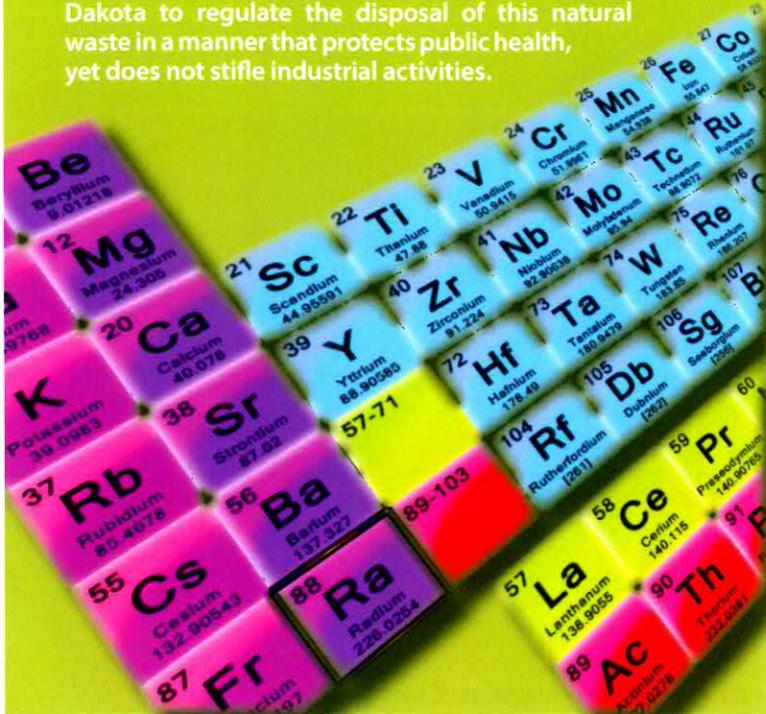
RESPONSIBLE • SAFE • SECURE • DYNAMIC



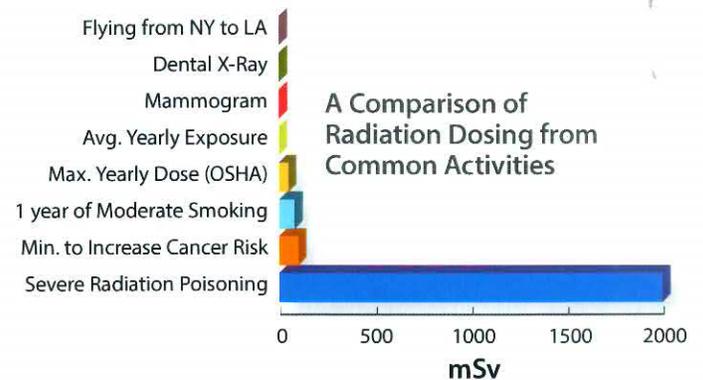
NORM
(naturally occurring radioactive materials)

NORM

NORM waste has received increasing levels of attention during the rapid increase in Bakken oil and gas activity. NORM is a new term to many. The Energy & Environmental Research Center (EERC) is working to apply science to rules being developed by the state of North Dakota to regulate the disposal of this natural waste in a manner that protects public health, yet does not stifle industrial activities.



Radiation is either ionizing or nonionizing, depending on how it affects matter. Nonionizing radiation (light, heat, radio waves) transfers energy to materials through which it passes but does not break molecular bonds. Ionizing radiation (x-rays, gamma rays, high-energy particles) cuts bonds that hold molecules together, thus leaving molecule pieces, known as ions, in its wake. These ions may cause changes in living tissues or may change physical properties of nonliving materials.



Radiation measurement is a confusing mix of terms and concepts. Radioactivity levels are measured in terms of total activity (emitted from source material), dosage (radiation absorbed), or exposure (e.g., millisievert [mSv]). Although dosage is often the most meaningful in public health discussions, most state rulings on NORM disposal regulate levels of radioactivity per unit weight.

What Is NORM?

Naturally occurring radioactive material (NORM) is present throughout the Earth's crust and can be concentrated by processes associated with the recovery of oil and gas. Also referred to as technologically enhanced NORM (TENORM), this material can be concentrated in oil production wastes such as sludge, drilling mud, used water filtration sleeves, and pipe scale. TENORM radioactivity levels tend to be highest in water-handling equipment.

Some Radiation Fundamentals

Radiation is energy emitted by matter in the form of rays or high-speed particles. Radiation is all around us. There is a natural background radiation level throughout the universe. Radioactive materials in the Earth's crust also contribute to terrestrial background radiation.

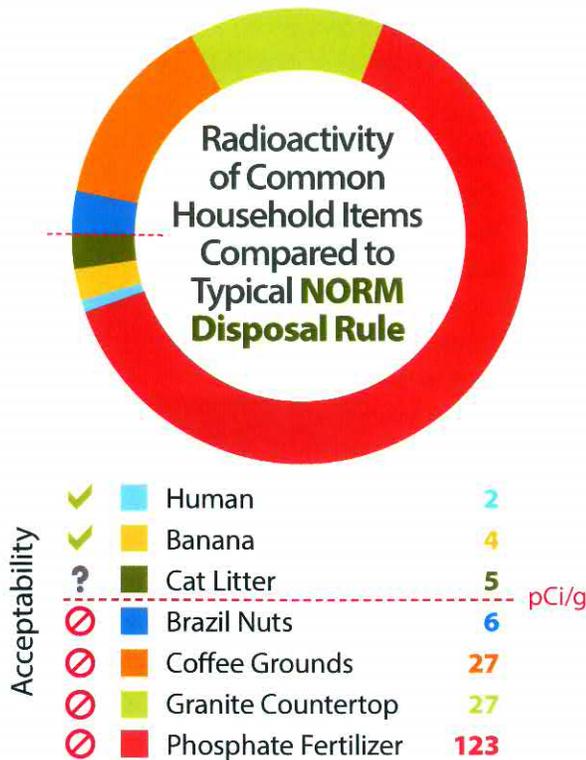
What Level of Radioactivity Is Hazardous?

To understand how much radiation is dangerous, we need to focus on equivalent dose numbers. Equivalent dosages accumulate over time of exposure, so intensity and duration are equal factors. More of either increases the risk of adverse health effects. A nuclear reactor core may trap huge amounts of total radioactivity, but because of engineered shielding between the reactor core and personnel operating the nuclear power plant, the personnel do not absorb hazardous levels of radioactivity. When the personnel must enter a zone of higher radioactivity, their exposure time is strictly limited. Comparing radioactivity with equivalent doses is like comparing apples and oranges.

Generally speaking, TENORM must be inhaled or ingested to pose a radiation health risk. This is because a vast majority of radiation emitted from TENORM is in the form of alpha particles, easily stopped by the outer layers of human skin. Because these wastes are typically landfilled or otherwise buried, there is little risk from external exposure.

How Is NORM Regulated?

Wastes containing NORM are not regulated by federal agencies. Instead, it has been left to states to regulate handling of NORM. Currently, 15 states specifically regulate NORM, while other states more generally regulate radioactive wastes. Of course, the language of these NORM regulations varies, but many states have similar regulations limiting disposal of NORM-containing waste in municipal landfills to less than 5 pCi/g above the normal background level of ^{226}Ra or ^{228}Ra , two radioactive isotopes of radium that can be found in oil field wastes. The table below suggests a comparison between common landfill wastes and their radioactivity levels against this common NORM rule. It is not suggested that these wastes fall under NORM disposal rules, but it does present an interesting comparison.



How Is NORM Disposed Of?

Disposal protocols differ greatly across states and across oil and gas producers. Generally, NORM-contaminated equipment is tagged, sent to a decontamination service, decontaminated, and then shipped to a landfill. Alternately, some companies opt to send low-level contaminated material directly to licensed NORM disposal sites, often out of state. Occasionally, companies unwittingly transport NORM-contaminated waste to local landfills not approved to accept this waste. Most oil patch landfills have their own radioactivity monitoring protocol in place to prevent this.

This, of course, leads naturally to the question of what threshold of radioactivity defines "NORM contamination" in the first place? Here is where science is currently working to provide answers. The oft-employed 5-pCi/g rule is extremely conservative, in the estimation of many. Work is ongoing to determine an appropriate threshold.

What Should the Public Know about NORM?

Radiation is everywhere around us and is emitted from a great many common household items.

NORM is not nuclear waste; it is naturally occurring waste with a very low level of radioactivity.

NORM does not pose a direct threat to public health when proper disposal protocols are followed.

North Dakota does not currently specifically regulate NORM-containing waste disposal but is looking into prudent rulemaking to ensure all producers live up to the responsible protocols currently employed by a majority of producers in the Williston Basin.

For More Information, Contact

John A. Harju

Associate Director for Research
(701) 777-5157, jharju@undeerc.org

Jay C. Almlie

Senior Research Manager
(701) 777-5260, jalmlie@undeerc.org

Energy & Environmental Research Center

15 North 23rd Street, Stop 9018
Grand Forks, ND 58202-9018

www.undeerc.org

North Dakota
oil & gas research program



Bakken Production Optimization Program

**A Briefing to the EmPower Commission
Bismarck, North Dakota
April 10, 2014**

**John Harju, EERC
Associate Director for Research
Energy & Environmental Research Center**



Energy & Environmental Research Center (EERC)...
The International Center for Applied Energy Technology®

Program Description

- *Pilot hole logs, core data, other data-gathering from multiple wells to create a 3-D picture of what happens during and after the hydraulic fracture treatments in a multistage horizontal well. Continental will analyze this data set to:*
 - *Assess total resource available in the second and third benches of the Three Forks Formation (separate and unique?).*
 - *Confirm whether these benches are distinct and independent of the existing Middle Bakken.*
 - *Predict areas of future sweet spots.*

- *Site logistics, waste management, on-site hydrocarbon utilization, water management, process optimization, and systems failure analysis with an eye on decreased environmental impact.*

- Phase I – Drilling 11 New Wells
- Phase II – Completions
- Phase III – Reservoir Engineering
- Phase IV – Expansion Applications via 3-D Seismic
- Phase V – Optimization of Wellsite Operations

Program Goals

- Maximize oil production from Bakken and Three Forks wells by employing an “all of the above” approach
 - Advanced reservoir characterization.
 - Improved drilling/stimulation/completion/production techniques and sequences.
 - Optimizing wellsite surface operations:
 - ◆ Reduce costs
 - ◆ Reduce development and operation impacts to surrounding landowners
 - ◆ Reduce demands on surrounding infrastructure and water sources

Program Budget Overview

- Commercial Partners

- Continental Resources, Inc. (CLR)
- Marathon Oil Co.
- Whiting Petroleum Corp.
- Oasis Petroleum
- XTO Energy
- ConocoPhillips
- SM Energy
- Hess
- Petro-Hunt
- Nuverra Environmental Solutions
- Hitachi Data Systems

Sponsors	Y1	Y2	Y3	Total
NDIC Share – Cash	\$3,137,350	\$3,208,525	\$2,208,625	\$8,554,500
Industry Share – Cash	\$850,000	\$850,000	\$850,000	\$2,550,000
CLR Share – In-Kind	\$40,989,233	\$40,989,233	\$24,051,534	\$106,030,000
TOTAL	\$44,926,583	\$45,047,758	\$27,110,159	\$117,134,500



EERC

Energy & Environmental Research Center®

Putting Research into Practice

The International Center for Applied Energy Technology®

Hawkinson Project Update

Borrowed from a Presentation Made on March 7 by

Stan Wilson

Manager, Resource Development, Northern Region

Continental Resources

Hawkinson Project Goals

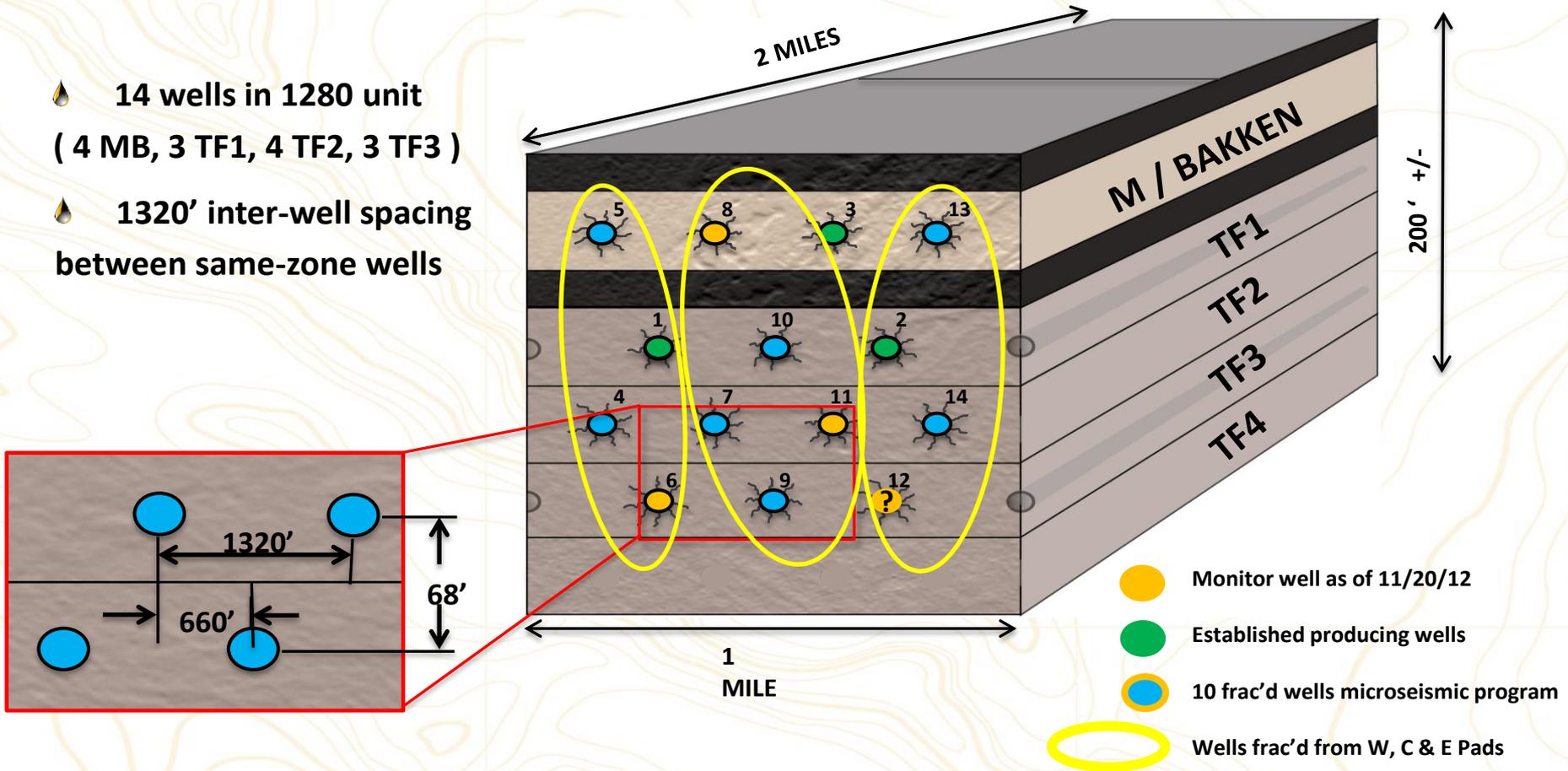
- Define reservoir drainage of the MBK, TF1, TF2 & TF3
- Confirm whether these formations are distinct and separate from each other
- Determine appropriate well spacing required for most efficient reservoir drainage
- Increase spacing unit ultimate recovery
- Predict areas of future reservoir sweetspots

Hawkinson Unit

Sec. 22 & 27-147N-96W

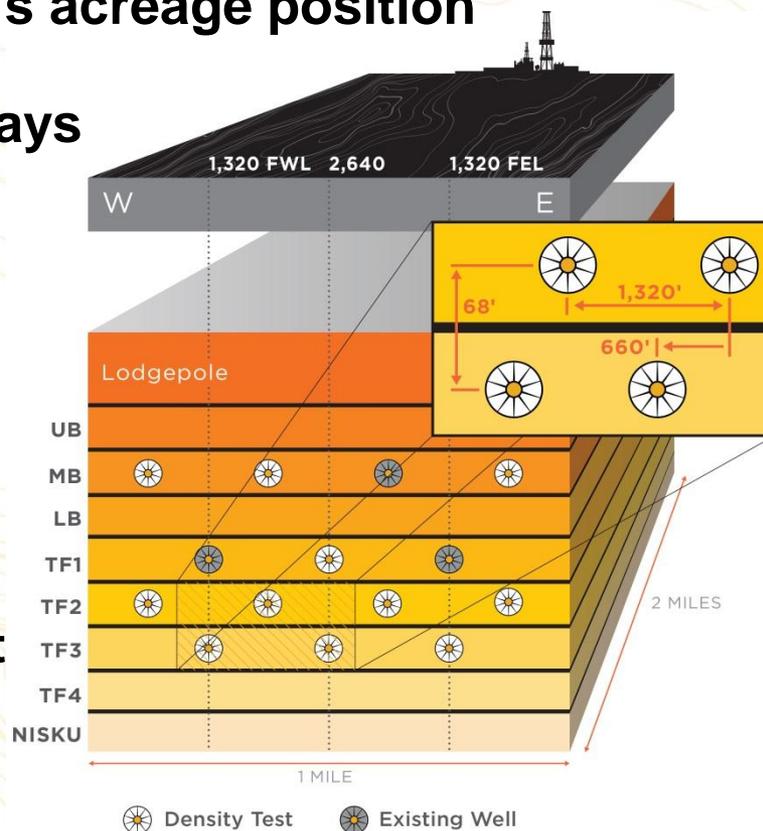
1,280 Acre Unit Full Development Project

- 🔥 14 wells in 1280 unit
(4 MB, 3 TF1, 4 TF2, 3 TF3)
- 🔥 1320' inter-well spacing
between same-zone wells



Strong Early Performance from Hawkinson Unit

- 🔥 **Industry landmark: unique production from 4 different producing intervals and spaced 1,320 feet apart**
- 🔥 **Validates CLR vision for full-field development & demonstrates the vast resource potential across CLR's acreage position**
- 🔥 **Strong initial performance in first 120 days**
- 🔥 **14,850 Boepd of initial combined production from 14 wells (Oct. 2013)**
 - 13,400 Boepd from 11 new wells
 - ✓ 1,480 Boepd avg. 24-hour IP: MB & TF1 (4 wells)
 - ✓ 1,070 Boepd avg. 24-hour IP: TF2 & TF3 (7 wells)
 - 1,450 Boepd from 3 pre-existing wells
- 🔥 **55% working interest in Hawkinson unit**





EERC

Energy & Environmental Research Center®

Putting Research into Practice

The International Center for Applied Energy Technology®

Hydrocarbon Utilization

Flaring Task Force and Remote Capture

Brief Update on Progress Hydrocarbon Utilization

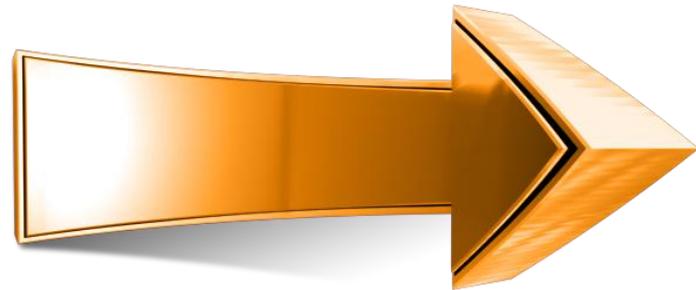


- Ongoing support of NDPC Flaring Task Force.
- Created a database of remote capture alternatives.
- Ongoing evaluation of remote capture options.
- Seeking field demonstration locations and technology priorities.



Next Steps

- Many deployable technologies exist.
- Each technology, if deployed widely, can provide an incremental benefit to gas utilization and flare reduction.
- 60% of the total flared gas is coming from 216 locations flaring at a rate of 300 Mcfd or greater.
- Deploying remote capture to those locations flaring >300 Mcfd for several months may provide the greatest impact.
- The EERC is currently in discussions with NDPC Flaring Task Force members to determine path forward.





EERC

Energy & Environmental Research Center®

Putting Research into Practice

The International Center for Applied Energy Technology®

Hydrocarbon Utilization

Associated Gas for EOR

The Goal and the Challenge of Using Associated Gas for EOR

Background:

Present production methods leave $\approx 95\%$ of Bakken oil in the reservoir

Good news:

In lab studies, $>90\%$ oil recovery from upper, lower, and middle Bakken rock using only CO_2 (and maybe associated gas)

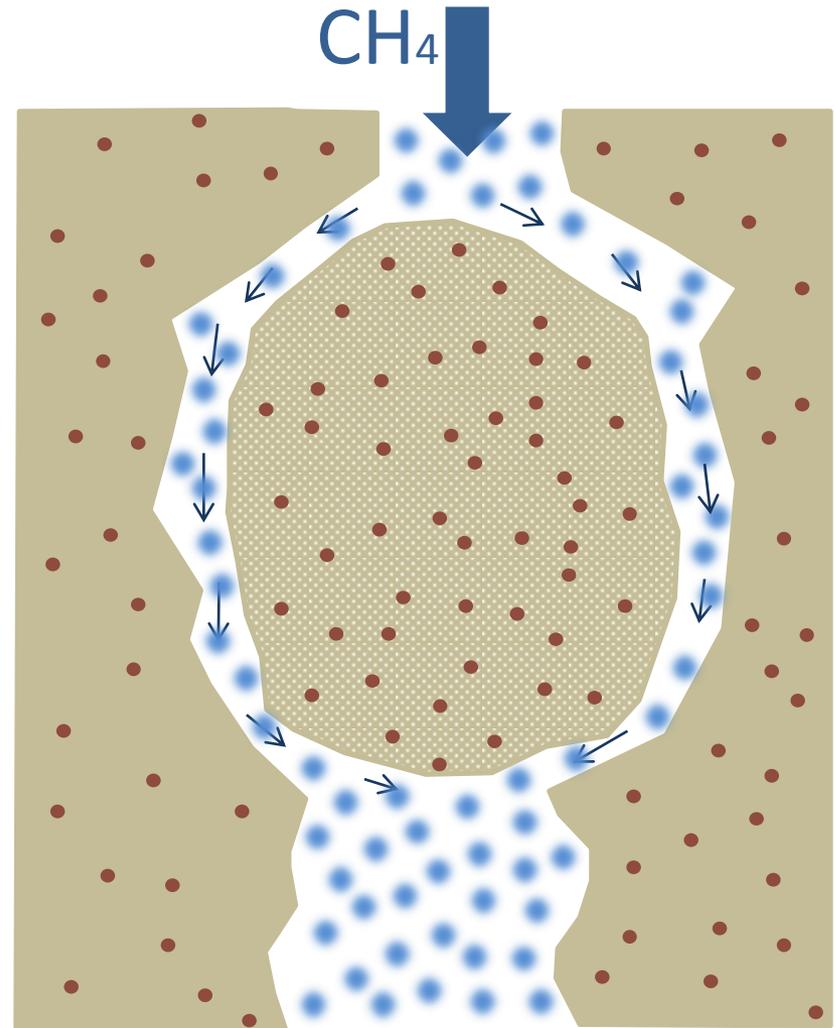
Bad News:

Need to understand the controlling mechanisms better to make it cost-effective.

(Even a 1% increase in recovery could be ca. 2-9 billion barrels.)

Hypothetical Step 1

Initial injection: CH_4 flows rapidly through fractures.



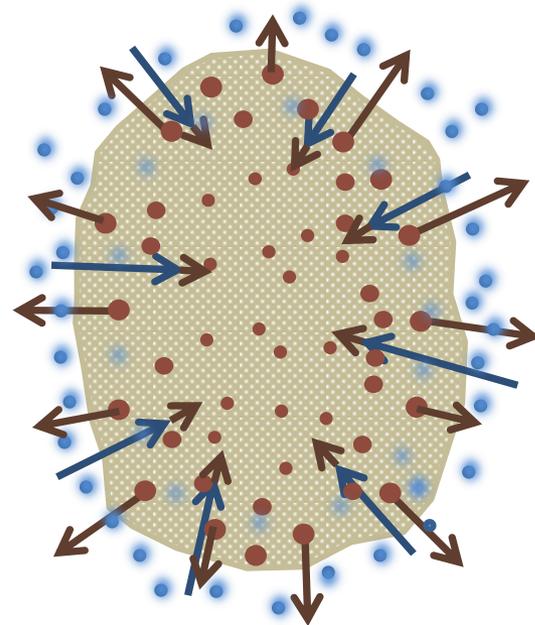
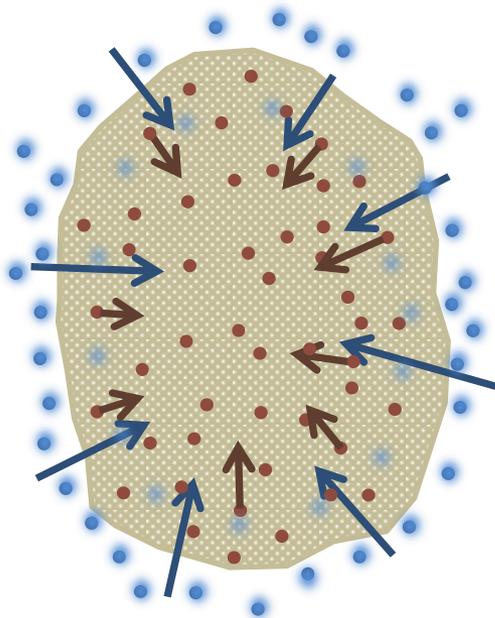
Hypothetical Step 2

CH_4 starts to permeate rock based on pressure gradient.

CH_4 carries oil into the rock (bad).

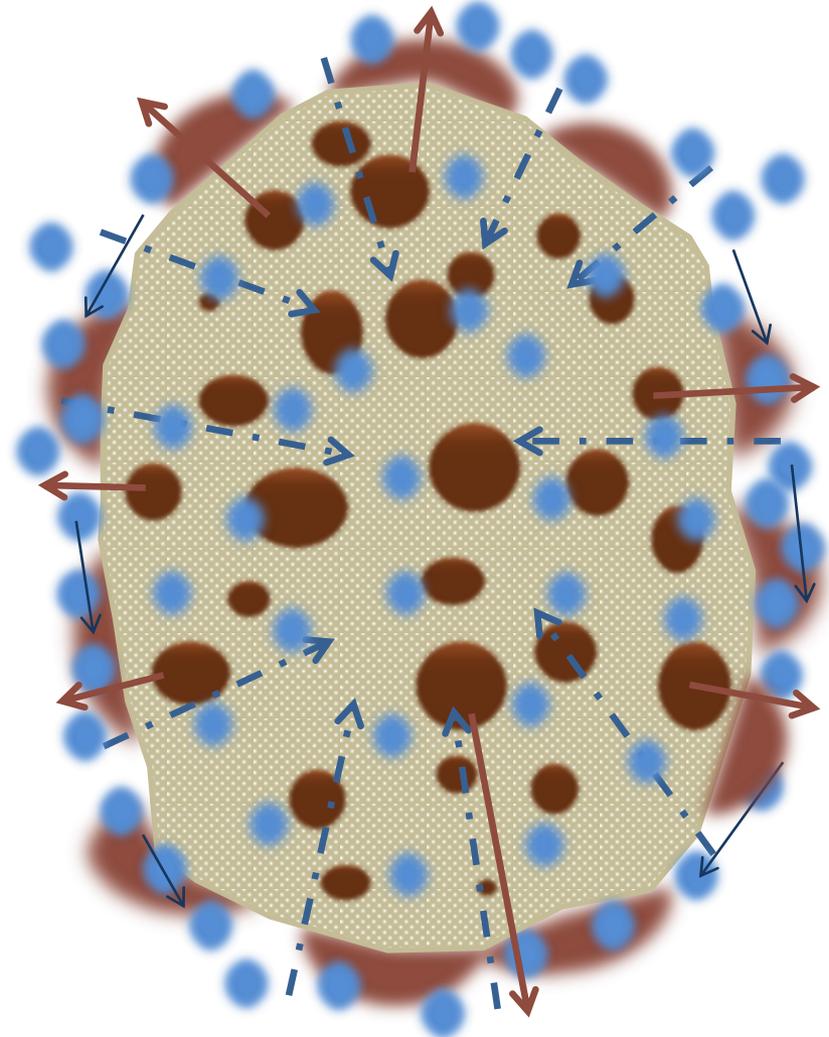
*and
or*

CH_4 swelling pushes oil out of the rock (good).



Hypothetical Step 3

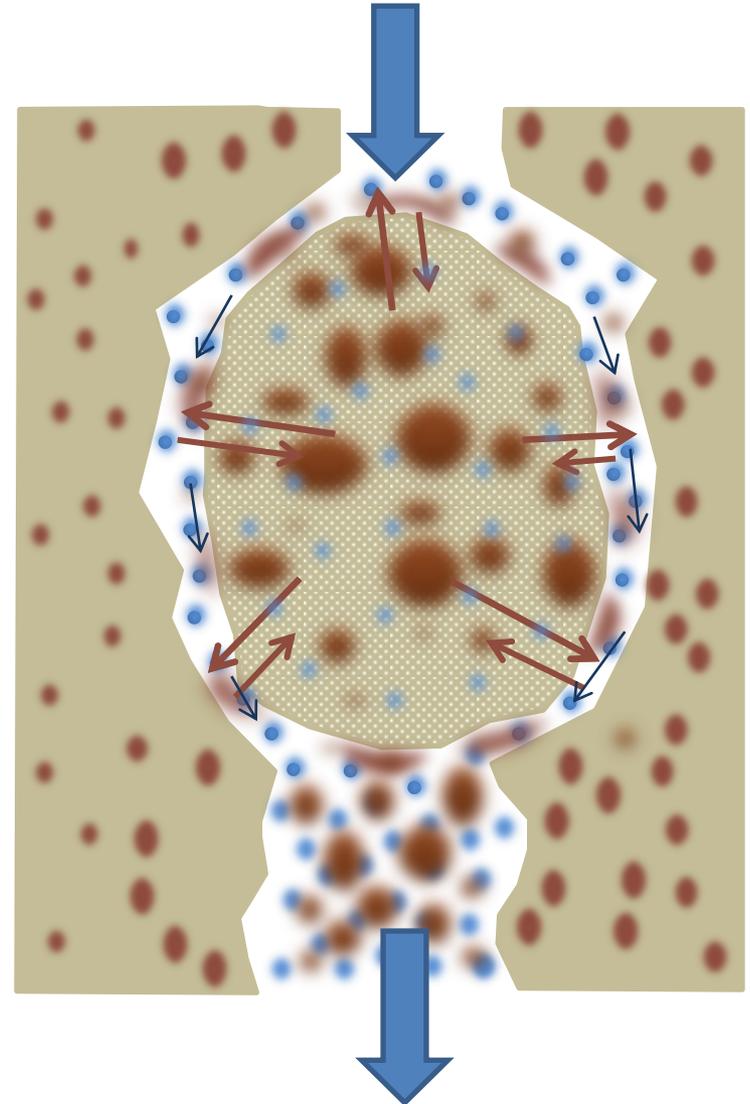
As CH_4 permeates into the rock, oil migrates to bulk CH_4 in fractures based on swelling and lower viscosity.



Hypothetical Step 4

CH_4 pressures equalize inside of rock.

- Oil production is now based only on concentration gradient driven diffusion.
- Oil in bulk CH_4 is swept through fractures to production well.



Summary of Observations

- CO₂ and associated gas are capable of mobilizing oil from upper, middle, and lower Bakken, but we need to work on increasing the rate of the recovery processes.
- Since nearly all of the oil can be extracted from 1-cm rods, even upper and lower Bakken shales have sufficient connectivity to be accessed by CO₂ and associated gas.
- All samples show an initial “fast” recovery of ca. 20-70% of the oil, followed by an exponential decline.

Since even a 1% incremental recovery is significant, perhaps research should focus on the first few percent of the recovery curve



The International Center for Applied Energy Technology®

Waste Management

NORM Waste Handling and Disposal

Scope Defined in Proposal

- The waste management area of work is focused on developing improved means of handling drilling and production wastes, including those that may contain NORM.



Current Regulatory Predicament ...



- Adequate characterization of NORM waste has been a major limitation of NORM risk assessments conducted to date.
- Most state regulations focus on specific activity level (pCi/g) of specific isotopes
 - Cannot be directly measured in the field
 - Appropriate protocols are difficult to responsibly employ.
- Producers and state regulators may benefit by promoting better science behind future North Dakota NORM-specific regulations.

Progress

NORM Waste Disposal

- Serving as consultant for the NDPC NORM committee
- Creating education material for the general public, industry and regulators
- Coordinating NORM sampling and analysis efforts
- Providing guidance for next steps





EERC

Energy & Environmental Research Center®

Putting Research into Practice

The International Center for Applied Energy Technology®

Water Management

Optimization of Bakken Water Use and Reuse

Previous EERC Bakken Water Research

- The key water issue in early Bakken development was availability of freshwater to meet demands for hydraulic fracturing.
- The EERC's Northern Great Plains Water Consortium completed two early studies
 - Bakken Water Opportunities – Phase 1
 - ◆ Assessed flowback water timing and characteristics
 - Bakken Water Opportunities – Phase 2
 - ◆ Assessed potential to upgrade marginal-quality, nonpotable groundwater (Dakota Formation) for use in fracturing.

Bakken Developments Affecting Water Use/Reuse

- While highly relevant at the time (2008–2010), the previous Bakken water research is outdated because of new developments
 - Multistage fracturing
 - Salt-tolerant fracturing fluid systems that do not require freshwater for fracturing
 - Multiwell pads
- The dynamic nature of Bakken production and recent technology improvements have created new opportunities in Bakken water management.

Project Pursuits

- Investigate differences in oil production between wells fractured with freshwater versus saltwater.
- Evaluate flowback water characteristics and treatability given the potential use of salt-tolerant fracturing fluid systems.
- Assess future maintenance water needs and availability of freshwater supplies.
- Develop a database of applicable treatment technologies and technology vendors to provide treatment alternatives.
 - Where appropriate, conduct field demonstrations and independent technology evaluation.



EERC

Energy & Environmental Research Center®

Putting Research into Practice

The International Center for Applied Energy Technology®

Program Expansion

***Waste Minimization, Site Reclamation
and Spill Remediation***

Scope Defined in Proposal

- The expanded work scope includes task areas not previously proposed and targets efforts to mitigate land impacts from Bakken oil production activity.
 - Waste minimization and utilization
 - Spill remediation
 - Land reclamation
- Teamed with North Dakota State University (NDSU) range science and soil science experts.



Expansion Topic – Waste Minimization

- Anticipating increases in waste production from well sites as the number of wells on each site multiplies during and after infill drilling activities, investigate the following areas:
 - Improved waste management strategies
 - Waste minimization techniques
 - Waste reutilization technologies



Expansion Topic – Spill Remediation



- Investigate improved techniques of spill remediation (both hydrocarbon and brine spills) to return the affected land to productive use.
- Develop best management practices guidelines.
- Site-specific demonstrations of improved practices with producer assistance.

Expansion Topic – Land Reclamation

- Investigate strategies to accelerate the return of land to productive use after:
 - Drilling activities have ceased.
 - Production ceases and wells are plugged and abandoned.
 - Access road and pipeline rights of way are remediated.
- Develop best management practices guidelines.
- Site-specific demonstrations of improved practices with producer assistance.



EERC and NDSU Capabilities

- Expertise from both entities in soil remediation and land reclamation:
 - Soil science
 - Seed selection
 - Range science
 - Civil engineering
 - In situ hydrocarbon reduction
- Mobile, in situ remediation trailers
- Soil laboratories
- Inorganic chemistry laboratories
- Field sampling teams





Putting Research into Practice

The International Center for Applied Energy Technology®

**THANK YOU FOR THE OPPORTUNITY
TO DISCUSS THIS PROGRAM**

#	Topic Area	Action	Cat.	Type	Agency	Comments
1	Infrastructure	Develop a new formula to provide adequate funding for local government investment in construction of infrastructure necessary to address significant funding shortfalls for roads, wastewater treatment facilities, water supply facilities, and other needs normally funded by local government entities.	1/2	Legislation		HB 1358 provides an estimated \$593 million in distributions and transfers to counties, cities, and school districts
2	Infrastructure	Provide oil impact grant funds for regional or local community development and infrastructure planning in the Bakken area.	2	Funding	Trust Lands	HB 1358 includes \$240 million in oil impact grant funds
3	Infrastructure	Remove the sunset on the Housing Incentive Fund, expand program funding and consider broadening the application to provide alternate or direct funding source.	1	Legislation	Housing Finance Agency	HB 1029 and SB 2014 provide \$35.4 million in HIF funding
4	Infrastructure	Provide funding to the North Dakota Housing Finance Agency for the Down Payment Assistance and Construction Loan Guarantee Programs and provide guarantees to local lenders for incentives to borrowers who have participated in "financial counseling programs."	3	Funding	Housing Finance Agency	
5	Infrastructure	Promote the importance of temporary workforce housing.	3	Executive Branch Action		
6	Infrastructure	Promote the long-term benefits and reduced impacts for providing easements on property for energy infrastructure. This effort could include: <ul style="list-style-type: none"> o Encouraging energy companies to focus on the importance of on-going positive landowner relations and ensuring reclamation efforts are satisfactory to the landowner. o Encouraging landowners and energy companies to use the North Dakota Agriculture Department's mediation service to reach mutual agreement on terms of the easement. 	3	Executive Branch Action	Ag. Department, Pipeline Authority	HB 1009 includes \$50,000 in additional funding for Agriculture Department's mediation services
7	Infrastructure	Study existing water systems throughout the state and take action to provide expansion of capacity to meet growing community and commercial needs.	2	Study	Water Commission	
8	Infrastructure	Coordinate with the U.S. Corps of Engineers to increase access to Lake Sakakawea for industry and community needs to alleviate pressure on other water sources, reduce local truck traffic and improve road safety.	3	Executive Branch Action		
9	Infrastructure	Maintain a comprehensive long-range forecast for energy production and supply across all sectors, specifically looking at needed infrastructure to support growth.	1/2	Legislation/ Study	Commerce/ NDIC	§18 of SB 2014 provides \$150,000 for updates and refinements of employments models related to oil & gas
10	Infrastructure	Monitor the railroad capacity within North Dakota to ensure there is adequate ability to export all commodities to market.	3	Study	Pipeline Authority	
11	Workforce	Increase efforts to educate North Dakota's youth, as early as grades 4-5, about North Dakota's natural resources by developing curriculum to encourage interest in energy careers.	2	Legislation		
12	Workforce	Encourage and enable the energy industry to collaborate with the North Dakota University System, Governor's Workforce Development Council, Job Service North Dakota and other agencies to: <ul style="list-style-type: none"> o Fund enhancements to Job Service North Dakota's systems and data collection processes to provide analytical data related to workforce skills and employment to better identify energy industry needs. o Develop and enhance core curriculum related to high-demand energy industry careers. o Encourage industry interaction with teachers and guidance counselors to grow youth knowledge and interest in energy careers and to better retain youth for high-demand career options. o Provide greater accessibility to career and technical education programs, especially through adequate training facilities. § Examples of the above include, but are not limited to: <ul style="list-style-type: none"> · science, technology, engineering, and mathematics (STEM) education · original equipment manufacturer (OEM) supported programs · commercial driver's license (CDL) training sites · emergency medical services · technical trades/internships · energy careers 	1	Funding/ Legislation		HB 1358 includes \$120,000 for Job Service North Dakota to improve oil and gas employment data \$2.05 million is provided for STEM-related programs

#	Topic Area	Action	Cat.	Type	Agency	Comments
13	Workforce	Support legislation which recognizes the role distance learning will play in the future of education and improve access to technology for students using distance learning programs	3			
14	Research & Development	Allocate a portion of the Resource Trust Fund and set a target funding level for the renewable R&D program of \$3 million to enable planning for the future and to encourage the development of renewable resources, including ideas on how to foster cooperative efforts with traditional fuels.	1	Legislation		SB 2014 includes \$3 million in ongoing funding for the Renewable Research Program
15	Research & Development	Continue to support existing R&D programs which will ensure the development and implementation of new technologies to promote new growth for all energy resources.	3	Continuation		SB 2014 increasing Oil & Gas Research program to \$10 million
16	Research & Development	Coordinate with private industry to identify the steps necessary to create a viable chemical industry related to energy resources. o Fund a study to evaluate value-added market opportunities for energy resources. o Increase funding to the oil and gas research program by \$1 million to explore opportunities related to value-added processing of natural gas.	1	Legislation	Commerce/ NDIC	SB 2014 includes \$500,000 for a value-added market opportunities study.
17	Regulatory Environment	Encourage federal agencies to recognize environmental issues unique to North Dakota and work with the agencies to develop regulations that make sense for the state and its companies. o Establish new venues for state and federal regulatory agencies to collaborate on federal rulemaking efforts in ways that address individual state issues.	3	Executive Branch Action		EmPower ND Commission will explore methods of collaboration
18	Regulatory Environment	Use the EmPower North Dakota Commission to better understand the economic impact of federal regulatory proposals on North Dakota. o Comment on proposed federal regulations with significant potential impact on the state's economy and engage the North Dakota Congressional delegation to actively challenge the implementation of final regulations posing a threat to North Dakota's economy.	2	Legislation/ Funding		
19	Regulatory Environment	Recognize the additional burdens new energy developments are placing on state regulatory agencies and provide adequate funding and staffing levels for North Dakota Department of	2	Funding		Support agency requests for additional resources: Health: 8 FTE - \$2 million (SB 2004) Mineral Resources: 23 FTE - \$4.2 million (SB 2014) PSC: 2 repurposed FTE (HB 1008) Water Commission: @ FTE - \$308,456 (HB 1020)