Applicant: North Dakota Petroleum Council
PO Box 1395, Bismarck, ND 58502
701-223-6380 / 701-226-0006 (fax)
Principal Investigator: Ron Ness, President
Date of Application: April 27, 2007

North Dakota Petroleum Council

Teacher Education Seminar

Grant Requested

from the

North Dakota Oil and Gas Research Council

Amount Requested: $17,900

Grant Deadline: May 1, 2007

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1.0 Abstract

The objective of the North Dakota Petroleum Council Teacher Education Seminar (Seminar) is to educate teachers about the economic benefits and career opportunities provided by the North Dakota oil and gas industry enabling them to educate their students about the industry.

The expected result of the seminar is to provide an on-going education effort to educate students through their classrooms about the industry. This awareness will create a positive mindset about the oil and gas and energy industry in young people who, as future leaders, might translate their knowledge into a positive public opinion of the industry and ultimately effectuate favorable public policy towards the industry. A positive public opinion will help attract a workforce and create an interest and awareness of the career opportunities afforded by the North Dakota energy industry.

The Seminar funding request is for a two-year program. The total budget for the Seminar as described in this grant request is $35,800 of which $17,900 is requested from the Oil and Gas Research Council. The Petroleum Council is the primary participant and will manage the Seminar. Other financial supporters include the North Dakota Landmans' Association, and the Dickinson and Williston API Chapters.

2.0 Project Description

The mission of the Oil and Gas Research Council is to promote the growth of the oil and gas industry through research and education. The Petroleum Council Teacher Education Seminar as outlined in this grant request is an effective way for the Research Council to accomplish that mission.

Education is critical to the future success of the energy industry in our state. Public awareness of the value of the industry to the state is important for public acceptance and support of this industry which will be helpful when trying to attract a workforce. Providing teachers with an understanding of the oil and gas industry and related career opportunities will likely provide teachers with the background knowledge to encourage students to consider the career opportunities in North Dakota's energy industry when they begin looking at career choices. Attracting a future workforce is crucial, as the industry faces a 50% to 75% retirement bubble in the next 10 years. As a compliment to the Seminar to help foster better energy education, the Petroleum Council has created an education outreach program to demonstrate to the public,

teachers, students, and parents the value of North Dakota's energy industry and the career opportunities that exist in our state's energy industry.

The three-day Seminar, which is held each June, includes tours of energy facilities. The Seminar curriculum includes an overview of North Dakota's oil and gas industry, history, geology, geophysics, engineering, refining, leasing, gasoline marketing, public land issues, regulations, and safety issues. Each participating teacher receives over $100 worth of hands-on activities, posters, videos, maps, and other related materials including a CD Rom with prepared lesson plans for their classroom.

The objective of the seminar is to provide knowledge and information to the teachers on the oil and gas industry that they will find useful in their classroom. The target audience for the seminar is middle school math, science, and history teachers, along with fourth grade teachers and school counselors. The response from teachers in recent years has been excellent.

Day one of the seminar is spent in the classroom learning about the history of the oil and gas industry in North Dakota and the world, geology, physics, engineering, and production issues. There are also several hands-on learning activities and demonstrations that the teachers can use in their classrooms.

On day two, the teachers tour a production drilling rig, oil and gas producing well, gas plant, and reclaimed well sites in the National Grasslands with industry and Forest Service representatives. They get a first-hand look at how a drilling rig works and the amount of technology used in the oilfield. Forest Service personnel provide an overview of how they permit oil and gas activity and ensure that the environment is protected while allowing this valuable resource to be harvested.

On the final day, the teachers tour the Mandan Refinery and learn about gasoline refining and marketing. As a result of the seminar, they will develop a better understanding of the complexity of the oil and gas industry, the impact it has on North Dakota's economy, and a better understanding of the cost of energy. Our intent is that they will incorporate their new knowledge of the oil and gas industry into their classrooms. They are eligible to receive a graduate credit for attending the course if they submit a lesson plan on how they will incorporate what they learned into their classroom.

The Seminar focuses on sending teachers home with practical and applicable information and classroom tools. It places an emphasis on technology and hands-on learning to help the teachers prepare lesson plans.

Seminar Topics Include:

The History of oil and gas in North Dakota

- When and where was oil discovered?
- 50 years of oil production in North Dakota
- Compete in oil trivia and stock market simulation games

Finding, drilling, and producing oil

- How do they find the oil and get it out of the ground?
- What products are made from petroleum?

Petroleum Geology

- Why is petroleum found in western North Dakota rock?
- How is math used to determine how much oil is in the rock?

Oil and the Environment

- Can they co-exist?
- The oil and gas resources in the North Dakota Grasslands
- Are reclamation activities effective?

Career Exploration in the Energy Industry

- What types of jobs exist in the energy industry?
- What are the skill requirements for the jobs?

Petroleum Refining

- How does the oil get to the refinery?
- How much gasoline is in a barrel of oil?
- What types of jobs are at a refinery?

Gasoline Marketing

- How is gasoline priced?
- Why do gasoline prices fluctuate?

There is a tremendous lack of quality information available in North Dakota classrooms and school libraries relating to petroleum in general, and, specifically, North Dakota's oil and gas resources. Through this program, we have created an energy education kit. This kit is a collection of information on the oil and gas industry and natural resources in North Dakota. These kits are sent to the schools from which teachers are represented at the seminar. The kits provide a resource for everyone in the school.

Oil & Gas Tidbits (*Tidbits*) is a publication distributed quarterly to North Dakota policy makers and interested parties in the oil and gas industry to keep them updated on issues that may be of interest in guiding our state's economy. *Tidbits* is developed by the Petroleum Council with past editions featuring key issues such as the Crude Oil Transportation Bottleneck and Geology of the Bakken. The May edition will review the Petroleum Council Economic Impact Study. Other future editions will focus on the recent oil industry workforce needs study, new technology in the oil industry, refining, natural gas, the Oil and Gas Research Council, energy education, and other topics as they develop. The Petroleum Council feels this consistent approach to reaching out to policy makers across the state is an important step in educating the public about North Dakota's oil and gas industry and informing them of key issues facing industry as it expands.

3.0 Standards of Success

The measuring stick of success in changing public opinion is difficult to quantify without a costly and timely analysis. However, success must be measured by the satisfaction of the audience and the response to the information presented. Teachers attending the Teacher Education Seminar complete evaluations at the completion of the seminar. The Seminar evaluations have been very positive. Many teachers are surprised at how much they learned in the seminar and comment about how little they knew about this industry. The evaluations are reviewed by the instructors to determine how to improve the course in the future. There are many hands-on activities and examples of how to incorporate the oil and gas industry into their classrooms. For example, the geology instructor has a glass jar, bag of marbles, sand, cooking oil, and water and he shows them several examples relating to geology that will help students understand migration, porosity, and permeability. They all leave the seminar with samples of crude oil, drilling mud, salt water, a copy of several industry videos and DVDs that demonstrate industry's ability to responsibly produce oil and gas, along with numerous written materials and brochures from the American Petroleum Institute and other organizations.

4.0 Background/Qualifications

The Petroleum Council has long recognized the critical need to educate the public about the oil and gas industry; therefore, has been sponsoring a teacher seminar for 15 years. The focus of the seminar is directed towards giving educators a hands-on learning experience and a broad overview of the oil and gas industry. The seminar is designed to provide teachers with

information to take back to be used in the classroom in order to educate their students about the oil and gas industry for years to come. The Seminar was reorganized in 2000 making it a more hands-on seminar with tours and practical applications that can easily be replicated in classrooms.

The Petroleum Council has primarily funded the seminar with membership dues along with contributions from the Dickinson and Williston API Chapters and the Landmans' Association of ND. The cost of the program continues to increase due to the increasing number of participants, information, and activities in recent years resulting in increased expenses for the Petroleum Council thereby making additional financial assistance necessary.

The North Dakota Petroleum Council is a nonprofit trade association that represents more than 130 companies involved in all aspects of the oil and gas industry including oil and gas production, refining, pipeline, mineral leasing, consulting, legal work, and oil field service activities in North Dakota, South Dakota, and the Rocky Mountain Region and is affiliated with the American Petroleum Institute in Washington, DC.

North Dakota ranks ninth in the nation in oil production. The oil and gas industry's production taxes account for approximately 10% of the state's budget. The oil and gas industry employs nearly 5,000 people in North Dakota and the average wage in the industry is nearly 90% higher than the state's average annual wage. However, North Dakota's oil and gas industry is still unknown to many people in our state and as our population is shifting to the eastern part of the state, the knowledge and understanding of the oil and gas industry in western North Dakota lessens each year.

The Petroleum Council's Teacher Seminar is helping industry address the need for public education and address the looming workforce shortage the energy industry is facing.

One of the challenges facing teachers is helping students apply the things they learn. This seminar provides North Dakota examples of how geography, math, chemistry, geology, and other classroom topics are used in the workplace and are vital skills for careers in the energy industry. The energy education kit provided to schools through the program is a valuable resource for teachers to use when developing coursework and projects relating to the energy industry. This information is critical since most schools have virtually no resources that provide a positive message about the energy industry.

5.0 Management

The Petroleum Council will manage and oversee the Seminar and its Board of Directors authorized the program and budget. Ron Ness, President of the Petroleum Council, is the manager of the Seminar and Lynn Helms, Director of the North Dakota Industrial Commission Department of Mineral Resources, is the primary instructor for the three-day Seminar. Other faculty members will be various government, industry, and Forest Service professionals. The University of North Dakota approves the program for eligibility of a graduate credit for the Seminar through the University. To receive a graduate credit for attending the course, the teachers are required to submit a lesson plan on how they will incorporate what they learned into their classroom. The participants are also required to complete an evaluation of the seminar at the completion of the seminar.

The *Tidbits* is created and published by the Petroleum Council staff with the assistance of communications and printing professionals.

6.0 Timetable

Petroleum Council's Teacher Education Seminar described in this grant request runs from June 1, 2007 through May 31, 2009. The Seminar is held the second week in June each year at Bismarck State College.

7.0 Project Budget

The Teacher Education Seminar Budget for June 1, 2007 – May 31, 2009 $35,800.00

This is a two year budget. The Petroleum Council has made a two year commitment to these education programs. This allows for planning for the Teacher Seminar and eight *Tidbits* newsletters for a two-year period.

PETROLEUM COUNCIL OIL AND GAS TEACHER EDUCATION PROGRAM BUDGET

EXPENSES:

Printing/Postage/Material Production	$ 3,000.00
Facilities/Food/Lodging/Transportation	$ 10,000.00
Energy Education Kits	$ 6,000.00
Tidbits ($1,500 per issue 8 issues over two years)	$ 12,000.00
Administrative Costs (Four days per month Petroleum Council staff time)	$ 4,800.00

Total Expenses Two Year Budget	$ 35,800.00

The Petroleum Council request is based on a match for this project.

Petroleum Council	(50%)	$17,900.00
Oil and Gas Research Council	(50%)	$17,900.00
Total Project Expenses		$35,800.00

Matching Contributions:	Cash
Petroleum Council	$16,400.00
North Dakota Landmans Association	$ 500.00
Williston API Chapter	$ 500.00
Dickinson API Chapter	$ 500.00
Total Matching Contributions	$17,900.00

Other non-enumerated contributions:

Petroleum Council office support
Petroleum Council membership contributes prizes and staff resources
Staff support from Department of Mineral Resources
Energy Career Awareness Partnership resources
Forest Service staff support

8.0 Tax Liability

I, Craig Smith, certify that the North Dakota Petroleum Council does not have any outstanding tax liability owed to the State of North Dakota or any of its political subdivisions.

_____ _____

Craig Smith Date
Treasurer, North Dakota Petroleum Council

9.0 Confidential Information

The Petroleum Council does not request that any of the information related to this application be confidential.

10.0 Patents Rights to Technical Data

The Petroleum Council does not request to reserve any patent rights to technical data.

11.0 Appendices

*Petroleum Council's Teacher Education Seminar 2007 brochure

*Petroleum Council's Teacher Education Seminar 2007 agenda

Petroleum Council Teacher Education Seminar Evaluation Form

**Tidbits* – September 2006, December 2006

* For an electronic version or additional information see the Petroleum Council Energy Education link at http://www.ndoil.org/educ.html.

NORTH DAKOTA PETROLEUM COUNCIL TEACHER EDUCATION SEMINAR

June 11 – 13, 2007 • Bismarck, ND

The North Dakota Petroleum Council presents this seminar for educators to learn and bring projects and ideas back to the classroom. Find out more about this important form of energy (petroleum) from this informational, hands-on and entertaining seminar. Take advantage of this professional opportunity to pick up new information and interact with other teachers from across the state. **Register now! Space is limited!**

One of the challenges facing teachers is helping students apply the things they learn. How does geography, math, chemistry, geometry, etc. tie into the oil and gas industry and careers? This seminar can help you, as a teacher, answer that question!

THE SEMINAR WILL FOCUS ON:

- Visiting a drilling rig in western North Dakota. The second day of the seminar will be a field tour of the oil patch in western North Dakota. Participants will get a close-up look at how oil is produced and get to see how the industry operates on the North Dakota Grasslands.
- Sending teachers home with practical and applicable information and classroom tools.
- Placing emphasis on technology and hands-on learning to help teachers prepare lesson plans.
- Developing ideas to show students why courses such as geometry, math, science and foreign languages are used on a daily basis in the workplace.

SEMINAR TOPICS:

Drilling, Production and Refining Oil and Gas – Why is it important to me?

- How do they find the oil, get it out of the ground, make it into gas and get it to my car?
- What everyday products are made from petroleum?
- Why do gasoline prices fluctuate?
- Tour an oil production rig in western North Dakota.
- Tour the Tesoro Mandan Refinery.

Oil and the Environment – Can they co-exist?

- ND Grasslands Management Plan/Roadless Plan – How does it impact North Dakota?
- Are reclamation activities effective?
- Visit Tesoro Refinery's North 40 wildlife habitat area in Mandan, ND.

Petroleum Geology – Why is petroleum found in the rocks of western North Dakota?

- Do you know why certain areas and rock formations contain oil and others do not?
- How is math used to determine how much oil is in the rock?
- See core samples, shale samples and charts of geologist rock formations.

Career Exploration in the Energy Industry

- What types of jobs exist in the energy industry?
- What are the skill requirements (foreign languages, math, science, etc.)?

The History of Oil and Gas in North Dakota

- Where and when was oil discovered in North Dakota and what does this mean for our state?
- Compete against your classmates in oil trivia and a stock market simulation game.

Cost: ***FREE*** (Includes: All course material, two nights lodging on the campus of BSC and meals in conjunction with the seminar.) A $25 deposit is required to reserve your spot for the seminar.

Lodging, Meals & Transportation: Free lodging is provided in a Bismarck State College dormitory (two people per room). Meals will also be provided. Transportation will be provided for the tour of the rig and the refinery.

Course Credit: Participants will be eligible for one graduate geography credit from the University of North Dakota for satisfactory completion of the course requirements. However, by submitting the syllabus to the portfolio committee, the credit can be submitted for science, math, history or economics. ***(The University will charge $50 on the first day of the seminar to participants wanting the credit).***

Registration: The course is limited to 40 primary and secondary educators. Register now to reserve a seat in the course. The application deadline is May 21, 2007.

Primary Sponsor: North Dakota Petroleum Council – the Petroleum Council provides public and governmental affairs services for the oil and gas industry.

For more information on the North Dakota Petroleum Council, see www.ndoil.org.

Faculty: Ron Ness, President of the North Dakota Petroleum Council; Kent Ellis, Special Projects Coordinator for the Bismarck Public Schools School-to-Work Program and Lynn Helms, Director of the NDIC Oil and Gas Division. Other faculty members will be industry professionals.

Participant Testimonials:

"What an eye opening experience! Thank you! I had no idea what to expect but I am very impressed with everything we learned." Connie Schmidt, Fargo, Social Studies Teacher

"Thanks! I can use the information presented to help my students understand how math is used on a daily basis." Greg White, Jamestown High School, Algebra Teacher

"It was an excellent hands-on seminar. I brought many ideas and materials back to my classroom to assist in student learning." Rick Olwell, Bismarck, Horizon Middle School, Life Science Teacher

"The seminar was great. We were given first-hand tours of an actual oil rig drill site and the reclaimed areas of drill sites no longer in production. I was extremely impressed with this seminar and would recommend it to any educator. The food was great, too." Jay Johnson, Counselor, Bismarck Vocational Center

Registration

North Dakota Petroleum Council
2007 Teacher Education Seminar

NAME: _____ HOME PHONE: _____

HOME ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

WORK EMAIL: _____ HOME EMAIL: _____

NAME OF SCHOOL: _____ PHONE: _____

SCHOOL ADDRESS: _____

GRADE(S) TAUGHT: _____

SUBJECT(S) TAUGHT: _____

LAST DAY OF SCHOOL: _____

WILL YOU BE STAYING IN THE BSC DORM? YES _____ NO _____

Two people per room. Roommate request. _____

SIGNATURE: _____

Space is limited - Register Now!
Return this form and $25 check (refundable at seminar) to:

North Dakota Petroleum Council
P.O. Box 1395
Bismarck, ND 58502

The $25 is non-refundable for cancellations received after the May 21 deadline.

Telephone: 701.223.6380 • Fax: 701.222.0006 • Email: ndpc@ndoil.org
Registration form available online at www.ndoil.org

North Dakota Petroleum Council
P.O. Box 1395
Bismarck, ND 58502

North Dakota Petroleum Council
Teacher Education Seminar

NORTH DAKOTA
PETROLEUM
COUNCIL

Learn about one of North Dakota's most important industries!

Tour an Oil Field!

Visit the Tesoro Mandan Refinery!

June 11 – 13, 2007
Bismarck, ND

FREE Seminar!

(One hour of graduate level continuing credit will be available from UND for a small fee.)

NORTH DAKOTA PETROLEUM COUNCIL

Ron Ness
President

Marsha Reimnitz
Office Manager

120 N. 3rd Street • Suite 225 • P.O. Box 1395 • Bismarck, ND 58502-1395
Phone: 701-223-6380 • Fax: 701-222-0006 • Email: ndpc@ndoil.org

April 27, 2007

Ms. Karlene Fine
North Dakota Industrial Commission
600 E. Boulevard Avenue
Bismarck, ND 58505

Subject: Grant Application for the North Dakota Petroleum Council Teacher Education Seminar

Dear Ms. Fine:

Enclosed is a grant application requesting the North Dakota Industrial Commission to approve funding from the Oil and Gas Research Council to help fund the North Dakota Petroleum Council Teacher Education Seminar. We are requesting $17,900 to help fund this program over the next two years. A $100 check is enclosed to cover the application fee.

The Petroleum Council is committed to complete the education program detailed in this grant request. This program has proven successful and has become a valuable tool in educating the state's students through the teachers that attend. The Research Council has provided grant funding for this seminar in 2004, 2005, and 2006. The most recent grant approved in May of 2005 was for the June 2005 seminar and the June 2006 seminar. To supplement this seminar and our education efforts, the Petroleum Council has recently developed a newsletter titled, *Oil and Gas Tidbits,* which is also included in this grant request.

Please contact me if you have any questions or need additional information for the enclosed grant application.

Sincerely,

Ron Ness, President
North Dakota Petroleum Council

mr
enclosures

VOLUME I ISSUE II

Oil & Gas TIDBITS

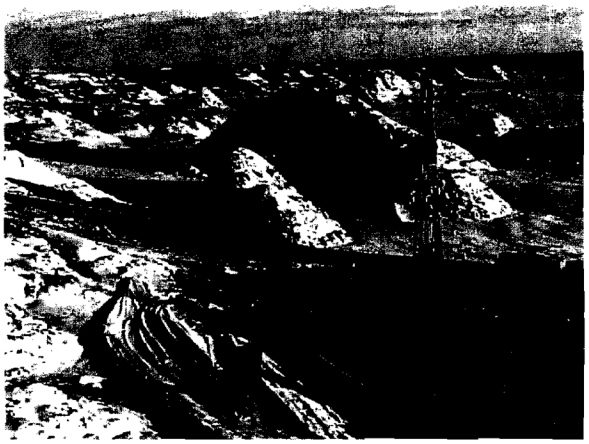
We Keep North Dakota Going Strong

NORTH DAKOTA PETROLEUM COUNCIL

GREETINGS

Greetings from North Dakota's oil and gas industry! This is our second issue of "Oil & Gas Tidbits." This publication will be distributed quarterly to North Dakota policy makers and interested parties in the oil and gas industry to keep you updated on issues that may be of interest in guiding our state's economy.

In future editions, we will focus on Energy Education, New Technology in the Oil and Gas Industry, Oil and Gas Research Council, Refining, the Economic Impact of North Dakota's Oil and Gas Industry and Workforce Needs Study Results.



Drilling rig in North Dakota Badlands

North Dakota Bakken – Geology at its Best and Worst!

Right now, the North Dakota Bakken Formation is the focus of much attention within the oil and gas industry as well as in the general media. Why all the excitement and why now? There are many answers, but the most important is it has great potential!

Oil industry leaders, as well as new operators, are beginning to find success in the North Dakota portion of the Bakken Formation over a widespread area. The Bakken is once again creating excitement in the state's oil and gas industry.

365 million years ago North Dakota was covered by an ocean or sea which deposited various amounts of sand, silt, and shale. For this reason the Bakken Formation has been split into upper, middle, and lower members. The upper Bakken in North Dakota is comprised of black, oil-bearing shale. This rock is the source of Bakken oil.

The Bakken Formation is geology at its best because of the tremendous oil reserves (see Facts below), however, the Bakken Formation is also geology at its worst because sustainable oil production has proven to be elusive because of the character of the reservoir rock. ▶

Extent of the Middle Bakken Formation in North Dakota

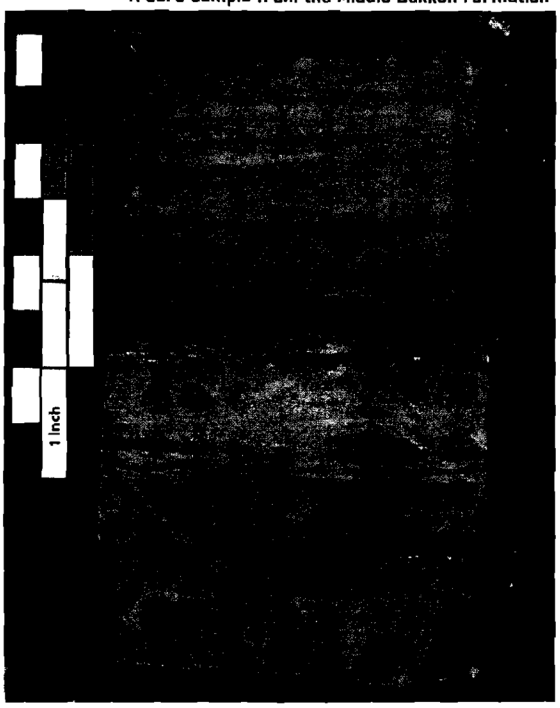
FACTS

- The **Wilson M. Laird Core and Sample Library** in Grand Forks, North Dakota contains **6,119 feet of Bakken cores** from oil and gas wells.
- Reserve studies estimate **250 billion barrels of oil in the North Dakota Bakken.** However, current technology allows that **we could only produce about 1% of those reserves.**
- In 2006, there were **46 new horizontal Bakken wells drilled.**
- It cost nearly **$6 million to complete a Bakken well in 2006 compared to $1.3 million in 2004.**
- **All Bakken wells** in North Dakota since October of 2005 **have been horizontal wells.** Statewide horizontal drilling accounted for **72% of all new wells drilled** and **55% of the state's total oil production** in 2005.
- The typical North Dakota **Bakken well is 10,000 feet deep** and has one to three horizontal **legs extending out as far as 9,000 feet** across two sections of minerals.

ND Bakken - Future Depends on Technology

Historically, the problem with drilling horizontally in this shale member, as was discovered during the previous Bakken plays of the 1980s and 1990s, is that the shale is impermeable, meaning it does not allow the oil to move freely. Unless a fracture system is encountered, the oil stays in place and the production declines rapidly. The formation needs natural conduits to enable oil to be produced. Recent technological advancements in horizontal drilling and well completion techniques including fracture stimulation has enabled the Bakken to be explored in a new way. This has resulted in the Williston Basin Bakken becoming one of the largest on-shore oil plays in the lower 48 states.

A core sample from the Middle Bakken Formation



Geologic study, continued drilling, and refinement of completion practices, will hopefully improve the success of this North Dakota Bakken play. Geology of the Bakken is very complex and this new technology is very expensive (see Facts section). As the Play develops scientists will continue to work together to unlock the mysteries of these ancient rocks.

Article submitted by Kathy Neset, owner of Neset Consulting in Tioga, ND. Kathy is a geologist and her business employs 22 people who provide well-site geological services for oil and gas companies in the Williston Basin. Kathy is a former school teacher. Neset Consulting is a member of the ND Petroleum Council.

North Dakota Petroleum Council
We Keep North Dakota Going Strong

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For more information,
please visit our website at:
www.ndoil.org

Ron Ness, President

Please note: If you do not wish to receive further mailings from us, please email ndpc@ndoil.org and you will be automatically removed from our mailing list.

North Dakota Petroleum Council
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ISSUE I EDITION I

Oil & Gas TIDBITS

NORTH DAKOTA PETROLEUM COUNCIL

We Keep North Dakota Going Strong

GREETINGS

Welcome to the first edition of "Oil & Gas Tidbits." This publication will be distributed quarterly to North Dakota policy makers and interested parties in the oil and gas industry to keep you updated on issues that may be of interest in guiding our state's economy.

Greetings from North Dakota's oil and gas industry! These are exciting times for North Dakota as there is a tremendous amount of activity taking place throughout the 17 oil-producing counties. Plus, we are seeing growing interest in new areas as well, which is great for our state and economy. Please enjoy the following stories about recent happenings in the oil and gas industry.

In future editions, we will focus on Energy Education, New Technology in the Oil and Gas Industry, Oil and Gas Research Council, Refining, The Bakken Play, The Economic Impact of North Dakota's Oil and Gas Industry, Williston Basin Geology, and Workforce Needs Study Results.

WILLISTON BASIN CRUDE OIL TRANSPORTATION BOTTLENECK

The Williston Basin is currently producing approximately 200,000 barrels of oil per day (bpd). North Dakota is producing 110,000 bpd and Richland County in eastern Montana is producing approximately 60,000 bpd, along with approximately 30,000 bpd produced in southeastern Montana.

The Tesoro Refinery in Mandan is refining nearly 60,000 bpd of Williston Basin crude oil. Most of the crude oil produced in southwestern North Dakota and southeastern Montana is shipped by pipeline to the Guernsey, Wyoming hub then to Denver area refiners. Most Richland County, Montana and northern North Dakota crude oil is delivered to the Clearbrook, Minnesota hub via the Enbridge (ND) pipeline system. The growing oil production in the Williston Basin has surpassed existing transportation capacity and crude producers in the Williston Basin have seen their ability to market crude restricted and some have experienced significant differentials from NYMEX posted crude oil prices. The prospect of not being able to market crude, or having to market at significantly reduced rates, is likely to create great uncertainty with investors drilling new wells and could have long-term impacts as companies place their investments in other areas of the country or world.

There is a sense of urgency because Bakken zone exploration in North Dakota has not been as successful as in Montana. Continued research, through drilling new wells, is needed to develop the right completion techniques for an economic Bakken oil play in North Dakota. The cost of drilling a well in the Williston Basin has risen dramatically in the past year and is now between three and five million dollars per well. Investors may become hesitant to continue ▶

FACTS

-North Dakota is the **ninth largest** oil producing state. The state produced nearly 98,000 barrels of oil per day in 2005, **totaling 35.6 billion** barrels for the year. Currently, the state is producing **110,000 barrels** of oil per day.

-At the end of 2005, there were **3,908 wells** capable of producing oil and gas in North Dakota. The average North Dakota well produced approximately **25 barrels per day**.

-The drilling rig count, which is a prime barometer for measuring new oil and gas activity, averaged **25 rigs a day** in 2005, and is currently at 39 drilling rigs. The peak year for drilling rigs was 1981, with an average monthly rig count of **119**. The all-time high was in October of 1981 with **146 rigs** operating. However, with today's technology, one rig today can do the work of four in 1981.

BOTTLENECK, CONT'D

drilling wells in an area where there are problems marketing the oil.

Enbridge Pipeline (North Dakota) is working with producers and shippers to meet their transportation needs of getting their production to market. Enbridge is implementing its capacity expansion of its pipeline that would add an additional 30,000 bpd year round with a potential of 45,000 bpd depending upon temperature and crude oil viscosity. The capacity expansion project consists of adding drag reduction agents (DRA) at selected stations, hydro testing the pipeline to insure the pipeline's integrity at increased pressures, upgrading and adding new pumping stations, and construction of a 52 mile segment. The new segment would increase transport capacity from Alexander to Beaver Lodge including areas of highest production increases in western North and Richland County, Montana oil fields.

On August 24, Enbridge successfully completed the third and final hydrotest on three line sections from Beaver Lodge Station to Clearbrook, Minnesota. These successful tests allow for the continued plans to add additional pump stations along the line segment to increase capacity to Clearbrook. The successful hydrotests also allow for safely increasing capacity to Clearbrook. The combination of increased operating pressures and the use of drag reduction agents have currently added a capacity increase of approximately 10,000 bpd

12,000 bpd from Beaver Lodge to Minot and a capacity increase of approximately 15,000 bpd from Minot to Clearbrook. These capacity increases will uctuate along with temperature and crude viscosity. These additional capacities are in effect as of September 1 from Beaver Lodge to Clearbrook. Completion of the entire expansion project, including the new pipeline construction, is estimated by year end 2007. Enbridge continues to monitor production trends and dialogue with producers and shippers for other potential pipeline expansion opportunities to meet anticipated demand.

However, that may still not be enough new pipeline capacity as we continue to see eastern Montana produce more oil, Bowman County's oil production increase, and Canadian crude being trucked into Williston Basin pipelines and markets.

For more detailed information on this issue, see – Williston Basin Crude Oil Transportation Bottleneck Whitepaper at www.ndoil.org/content/category/1/1/2/.

North Dakota Petroleum Council

We Keep North Dakota Going Strong

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For more information,
please visit our website at:
www.ndoil.org

Ron Ness, President

Please note: If you do not wish to receive further mailings from us, please email ndpc@ndoil.org and you will be automatically removed from our mailing list.

North Dakota Petroleum Council
PO Box 1395
Bismarck, ND 58502 1395

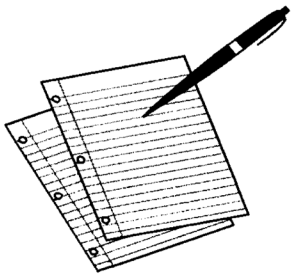
UND/Continuing Education
Extension Program

Course Feedback

Course Name:_____

Instructor: _____ Location:_____

Dates of Course: _____



1. Describe the **most valuable** aspects of this course.

2. Describe the **least valuable** aspects of this course.

3. Describe the kind of teaching model this instructor has provided (Use appropriate adjectives or describe a typical way this instructor approaches a student or class.) Was the instructor well prepared?

4. Did the course meet your expectations? Please provide examples.

5. Was the size of the facility adequate for the number of participants? How would you rate the facility overall?
   1 2 3 4 5 (With 5 being the best score)

6. Overall rating you give the course (Circle one): Poor Fair Average Good Excellent

7. Is there anything the Division of Continuing Education can do to make your experiences at workshops more valuable?

8. OTHER COMMENTS:

List any suggestions for future courses:	Where did you hear about this course?
	☐ Radio ☐ Division of Continuing Education Bulletin
List preferred locations for future courses:	☐ Newspaper ☐ Friend or Colleague ☐ School ☐ Other (list)
List preferred months for future courses:	Would you be interested in teaching a workshop for us? If so, contact Connie Bjerk at: 1-877-450-1842 ext. 4225

NORTH DAKOTA PETROLEUM COUNCIL
TEACHER EDUCATION SEMINAR
BISMARCK STATE COLLEGE
JUNE 11 - 13, 2007

SEMINAR SCHEDULE (tentative)

All events will be conducted in the Student Union on the BSC campus except for the Monday night social and the refinery and rig tour on Tuesday.

Monday, June 11, 2007

8:30 a.m.	Registration and dormitory room assignment – Student Union – coffee/rolls
9:00 a.m.	Opening Session – Welcome, introductions, seminar agenda, and UND credit registration – Ron Ness, North Dakota Petroleum Council
9:30 a.m.	The History of North Dakota's Black Gold – Fifth Annual "Oil Bowl" Oil & Gas Trivia – Josh Reimnitz, 2004 Bismarck High School graduate attending NDSU
10:45 a.m.	Break
11:00 a.m.	Petroleum Geology – "Where is the oil and gas and how do we know where to find it?" -- Lynn Helms, Director, North Dakota Department of Mineral Resources
11:45 a.m.	Physics in Petroleum – "How do we use math, physics, and computers to search for oil?" – Lynn Helms
12:30 p.m.	Lunch is served!
1:15 p.m.	Petroleum Engineering – "Drilling and Production, How it Works" – Lynn Helms
2:30 p.m.	Break
2:45 p.m.	Oil and Gas Stock Analyst Simulation Game – Kent Ellis, Bismarck Public Schools
4:00 p.m.	Wrap-up and Questions
4:15 p.m.	Dorm check-in – Swenson Hall
5:30 p.m.	"Black Gold Mixer" at Hawktree Golf Course
7:00 p.m.	Day one complete

Tuesday, June 12

7:45 a.m.	Breakfast

8:30 a.m. Refining 101 – "Turning crude oil into gasoline" – Ron Day, Tesoro Petroleum Refinery

9:30 a.m. Break

9:45 a.m. Bus departs for Tesoro Refinery and North Dakota's "Oil Patch" – Tour will include drilling rig, oil well, gas plant, and reclaimed well sites.

Bus Trip
North Dakota Geology – Fred Anderson, ND Geological Survey
Careers in Energy – Kent Ellis
Carbon Sequestration – Lynn Helms
Environmental Issues – Larry Melvin, U.S. Forest Service

7:00 p.m. Arrive Bismarck – Day two complete

Wednesday, June 13

7:30 a.m. Breakfast

8:00 a.m. Split Session:
Grades K-6 Project Learning Tree – "Energy & Society" – Barb Patzman, Bismarck Public Schools
Grades 7-12 Energy Industry Career Choices – Kent Ellis

9:30 a.m. Ron Ness – Oil Industry Economic Impact/Workforce Needs Study Results

10:00 a.m. Break

10:15 a.m. Gasoline Marketing – "How is gas priced?" – Dave Froelich, Missouri Valley Petroleum

11:15 a.m. Seminar Wrap –up

11:30 a.m. Lunch is served and Seminar is complete!