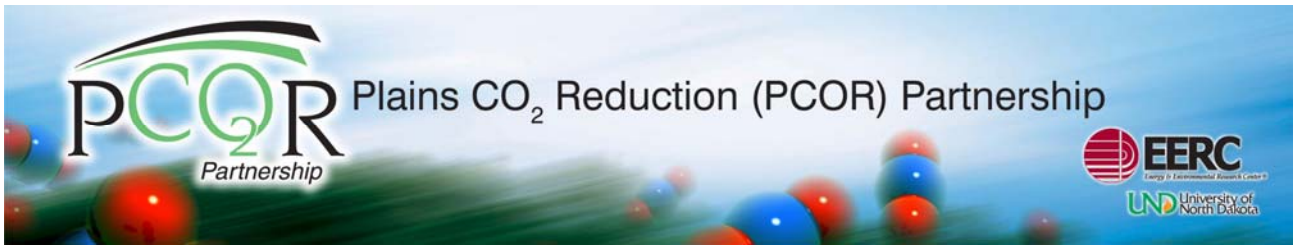


LIGNITE FIELD VALIDATION TEST IN BURKE COUNTY, NORTH DAKOTA: SAMPLING PROTOCOLS

Task 4 – Deliverable D32

Prepared for:

Darin Damiani

Project Manager
U.S. Department of Energy
National Energy Technology Laboratory
3610 Collins Ferry Road
PO Box 880, MS B26-D06
Morgantown, WV 26507-0880

Cooperative Agreement No. DE-FC26-05NT42592

Prepared by:

Anastasia A. Dobroskok
Lisa S. Botnen
James A. Sorensen
Edward N. Steadman

Energy & Environmental Research Center
University of North Dakota
15 North 23rd Street, Stop 9018
Grand Forks, ND 58202-9018

2010-EERC-06-04

June 2007
Approved

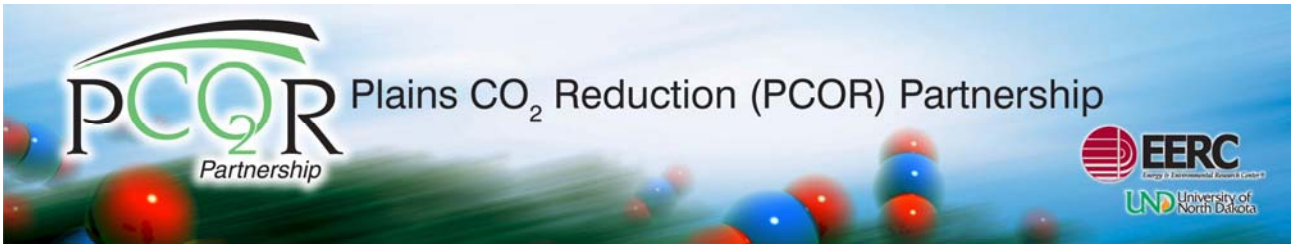
DOE DISCLAIMER

EERC DISCLAIMER

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES



LIGNITE FIELD VALIDATION TEST IN BURKE COUNTY, NORTH DAKOTA: SAMPLING PROTOCOLS

Anastasia A. Dobroskok, Energy & Environmental Research Center
Lisa S. Botnen, Energy & Environmental Research Center
James A. Sorensen, Energy & Environmental Research Center
Edward N. Steadman, Energy & Environmental Research Center

June 2007

BACKGROUND

The United States possesses abundant unminable lignite resources, which can provide viable options for greenhouse gas geological sequestration. However, feasibility of CO_2 sequestration in lignites has yet to be proven. The Plains CO_2 Reduction (PCOR) Partnership has developed a lignite field validation test in Burke County, North Dakota, to investigate the feasibility of carbon dioxide storage in unminable lignite seams with the concurrent production of coalbed methane.

Several field tests for CO_2 sequestration in coals have been conducted worldwide recently. However, many aspects of the sequestration process still need to be better understood including fluid transport in coals of different ranks, mechanism and efficiency of the replacement of natural gas by carbon dioxide, stability of the system during and after the injection, and the importance of cofiring seals for this type of storage. The Energy and Environmental Research Center (EERC) is collaborating with its partners within the PCOR Partnership to address these specific questions. Special attention will be given to the understanding of lignite permeability, natural gas content, adsorption and desorption of natural gas and carbon dioxide, and the stability of the system during and after injection. A comprehensive sampling program will be implemented to ensure that meaningful results will be obtained. The program will include an appropriate site design and development to allow for efficient monitoring, in situ measurements, and laboratory tests.

Five wells including a central injection well and four peripheral monitoring wells will be drilled, logged, and completed. The central injection well will be cored. The core will be preserved and transported to a laboratory for testing. The central well will be dewatered, and essential reservoir properties will be estimated by monitoring the dewatering process. After the reservoir pressure decreases in response to dewatering, the injection of CO_2 will commence. It is anticipated that injection monitoring will include pressure and temperature monitoring, fluid sampling, tracer study, and microseismic monitoring. The two latter techniques will be employed

only if their feasibility and utility are indicated based on the information gained during the site development.

The subsequent sections contain a detailed description of the anticipated sampling program and procedures. The program includes core testing and fluid sampling.

LIGNITE FIELD VALIDATION TEST DESIGN

Design of the lignite validation test is highly important for obtaining meaningful results from the sampling program. Thus this section contains a brief description of the design.

The test adopts a five spot well configuration shown in Figure 1. The central well will be used for coring, logging, dewatering, fluid sampling, and CO_2 injection. The four peripheral wells will be used for pressure monitoring and fluid sampling and, if feasible, natural gas production and microseismic monitoring. The chosen configuration of the monitoring wells is crucial for implementing a successful sampling program because close proximity to the injection well allows for the determination of changes in formation fluid composition and formation pressure.

The injection and production wells will be completed with zonal isolation to allow fluid injection into, and sampling from, selected horizons. Fluid sampling and a tracer study may additionally require isolation of specific zones within some of the wells. Isolation will be accomplished by using packers.

Figure 1. Wells configuration for the lignite test in Burke County, North Dakota.

SAMPLING PROGRAM

Because of the exploratory nature of the project, the sampling program has been developed to most effectively characterize the target reservoir and monitor the injection. The program is focused on assessing the target lignite seam and overlying formations. As more is known about the constituents of the coal and water, the program may be modified. However, the components of the program will include at a minimum geophysical logging as well as core and fluid testing. The program can be divided into two major stages.

The first stage will be focused on background data collection. During this stage, geophysical logs will be run in the central and peripheral wells. The central well will be cored and the retrieved core will be preserved and sent to a laboratory for testing. Formation fluid will be collected and sent to a laboratory for analysis.

The second stage of the sampling program will be focused on dewatering and subsequent injection monitoring. At this stage, reservoir pressure will be monitored and fluid samples will be collected on a regular basis. This phase may also include microseismic monitoring as a means to better understand the effects of the injection process and CO_2 plume advancement.

Water Quality Sampling

It is anticipated that water quality sampling will be conducted on a quarterly basis in all four monitoring wells. Field parameters collected will include: conductivity, pH, temperature, and salinity. Additionally, samples will be collected, preserved, and sent to a qualified lab to conduct the following analysis:

Total Dissolved Solids (TDS)
Sodium
Sulfate
Potassium
Chloride
Lithium
Carbonate
Calcium
Bicarbonate
Magnesium
Hydroxide
Iron
Hydrogen Sulfide

Fluids could be collected from different horizons and checked for carbon isotope tracers, if feasible.

Recording Telemetry Unit

It is anticipated that a Telog Ru-33 or similar will be used to provide real-time data monitoring. Using a single, 6-volt battery for power, the unit is capable of automatically monitoring level, flow, and pressure and may be used to monitor water quality. Data is forwarded wirelessly to a host computer operating host application software.

The groundwater extraction and monitoring system will be equipped with a NEMA controller, modem, and Internet-accessed telemetry package via wireless digital subscriber line (DSL). This setup allows for system control and data download, including pump operation, discharge, and groundwater level response data, from any PC with Internet access.

The sampling protocols for the first and second stages follow.

Sampling Protocols

Fluid Sampling

Fluid samples will be collected and sent to a qualified laboratory for analysis. Samples will be collected on a quarterly basis. An example of fluid sample collection procedure is as follows:

- Bypass appropriate fluid heads.
- Blow down sample point to remove any debris.
- Connect appropriate fitting to sample point.
- Slowly open sample source valve.
- Open inlet valve to the cylinder to allow fluid to enter the cylinder. Ensure time is given to allow cylinder to fully fill.
- Lose cylinder inlet valve.
- Open vent valve on other end of cylinder, allow cylinder to depressurize almost to atmospheric pressure, and then close.
- Repeat the pressurize/depressurize sequence at least three times (up to six times). This is to make sure that all air has been removed from the cylinder. On the last time, do not depressurize the cylinder because this is your sample.
- Close sample source valve and disconnect.

The following information will accompany the samples: location, sample point, temperature, pressure, sampler’s name, sampling method, and sample type.

Core Collection

The lignite interval of interest in the central well will be cored, and the core will be subjected to canister tests on location and then sent to a qualified laboratory for analysis. Example procedures for coring and preserving the core follow.

Coring

- Drill an 8.25 in. well to the depth of the lignite seam with freshwater. Gel lime sweep may be used for hole cleaning. Polymer can be used for hole stabilization.

- Core the well with an 8.25 in. coring bit to the total thickness of lignite (approximately 10 feet).

- Drill an 8.25 in. well to the total depth (TD).

- Run a 7 in. to TD, open-ended with a centralizer every other joint, space top of casing at a depth of 1 foot above the conductor. Makeup torque to be applied is 2300 ft-lb.

- Cement casing with 80 sx (20 cubic feet + 50% excess) of Class G cement with $^{1}/_{8}$ lb/sx cellophane, 2% $CaCl_2$ and excess water, displace to the end of casing with 10 bbl water.

- As cores are retrieved, the formations that have gas coals and shales will be put in a canister 1–2 feet in length and desorbed at the well site until the end of the day and sent to the EERC for further desorption and analysis. The core preserving procedure is described below.

- Repeat the coring procedure for each lignite seam if needed.

While collecting the core, it is essential to remember the following guidelines:

- Minimize aerial exposure (oxidation and desiccation).
- Collect representative samples for analysis.
- Preserve samples for future analysis.
- Convert reservoir property data to an in situ basis.

Core Preservation

Desorption samples are placed inside plastic sleeves in aluminum desorption canisters for analysis of sorbed gas content. Deionized water purged with argon and heated to the approximate reservoir temperature is used to fill the space between the plastic sleeve and the canister wall to increase the accuracy of desorption measurements. Canisters are placed in water baths at the approximate reservoir temperature.

Core Studies

The following characteristics of core will be defined in the laboratory, if feasible:

- Gas content
- Gas specific gravity
- CH_4 and CO_2 isotherms
- Diffusion coefficient
- Gas desorption time
- Coal ash and moisture contents
- Coal density and compressibility
- Rock porosity and permeability

North Dakota Industrial Commission (NDIC) Requirements (NDIC, 2007)

As part of the permitting process, the NDIC has set forth a set of guidelines for the EERC to comply with as it proceeds with the project. The following items have been identified as being necessary to be in compliance and that need to be part of the sampling program. Table 1 provides an overview of the requirement. Please see Appendix A for copies of necessary forms.

Table 1. NDIC Sampling Requirements for the Lignite Field Validation Test

Regulation	Governance	NDAC Reference
Form 4	Sundry Notices and Reports on Wells	Chapters 43-02-03, 43-02-05, 43-02-09
Form 6	Well Completion or Recompletion Report	Chapter 43-02-03-31
Form 9A	Reservoir Pressure Test	Chapter 43-02-03-41
Form 14	Application for Injection	Chapter 43-02-05
Form 19	Well Integrity Report	Chapter 43-02-03-07

Cores, Core Chips, and Samples from Drilling

North Dakota Century Code (NDCC) Section 38-08-04 provides for the preservation of cores and samples and their shipment to the state geologist when requested. The following is required for the EERC research project.

All cores, core chips, and samples must be submitted to the state geologist as provided for the NDCC Section 38-08-04 and North Dakota Administrative Code (NDAC) 43-02-03-38.1.

Samples will include all cuttings from the surface to measured total depth. Sample of cuttings will be taken at 10 ft. maximum intervals through all vertical sections and at 30 ft.

maximum intervals through all build and horizontal sections. Samples will be washed, dried, and packed in sample envelopes in correct order with labels showing operator, well name, location, and depth and forwarded in standard boxes to the state geologist within 30 days of the completion of drilling operations.

All cores cut will be preserved in correct order, properly boxed, and forwarded to the state geologist within 90 days of completion of drilling operations. Any extension of time requires written approval from the state geologist.

Form 4 – Sundry Notices and Reports on Wells

Prior to perforating or recompleting a well in a reservoir other than the reservoir in which the well is currently completed, prior to plug back of a well, prior to temporary abandonment of a well, prior to abandonment of a well, prior to reclamation of a well site, prior to reclamation of a reserve pit, and prior to beginning a workover project, a Form 4 must be completed and approved.

On the completion of any remedial work or attempted remedial work, such as plugging back, drilling deeper, acidizing, shooting, formation fracturing, squeezing operations, setting liner, fishing operations, repair work, perforating, reperforating, or other similar operations, a report on the operation needs to be filed with NDIC. The report must include a detailed account of all work done and the date of the work; the daily production of oil, gas, and water both prior to and after the operation; the shots per foot, size, and depth of perforations; the quantity of sand, crude, chemical, or other materials employed in the operation; and any other pertinent information or operations which affect the original status of the well.

Upon the completion of a workover project that could qualify for a tax exemption pursuant to NDCC Section 57-51.1-03, a report on the operation needs to be filed on detailing the work done. The dates during which the workover rig was in service actually performing work on the workover project and the date the workover was completed need to be included. A detailed list identifying all labor, services, and materials used and equipment replaced during the workover project, the cost of each item, and whether the replacement equipment was new or used also needs to be included. The value of all equipment removed from service must be listed. The average daily oil production from the well during the first 2 months after completion of the project must be included if the costs of the project do not exceed $65,000. All gauge tickets of oil produced in incomplete months during the first 2 months after completion of the workover and the volume of oil stored on the well premises immediately prior to commencement of the workover project must also be included.

Upon the initial installation of pumping equipment, or change in type or depth of pumping equipment designed to increase productivity in a well, the operator will need to file a Form 4. The notice needs to include all pertinent information on the pump and the operation including the date of installation and the daily production of the well prior to and after the pump has been installed.

For any Form 4 application, the well file number, well name and number, well location, field, pool, and county need to coincide with the official records on file with NDIC.

Form 6 – Well Completion or Recompletion Report

This report needs to be filed with the NDIC within 30 days after the completion of a well or recompletion of a well in a different pool. The well file number, operator, well name and number, type of well completion, well location, and any other pertinent data need to be included. If a parasite string was used during the drilling of the well, the size, depth set and cement volume that was used to plug and the date plugged need to be included.

A perforation and lateral record table is included on Form 6. In the table, each borehole should be identified in the "Well Bore" column. In the "production" section of the form, all the current producing open hole or perforated intervals associated with the production rates reported need to be listed.

For enhanced oil recovery or salt water disposal wells, the date the well is completed (i.e., ready for injection) needs to be reported in the "Date of First Production Through Permanent Wellhead" portion of the report. The packer type and depth and tubing size, depth, and type also need to be reported. The top of Dakota Formation needs to be included in the "Geologic Markers" section of Form 6.

Two copies of all logs run need to be filed with this report. One paper copy and one digital LAS formatted copy need to be submitted. Drill stem test reports and charts, core analysis, formation water analysis, and noninterpretive lithologic logs or sample descriptions, if compiled, must also be filed with Form 6.

Form 9A – Reservoir Pressure Test

A subsurface pressure test is required on the discovery well of any new pool, and the report needs to be submitted within 30 days after the completion of the well. All wells have to remain completely shut-in for at least 48 hours, or for a duration prescribed by the appropriate field order, prior to the test. The datum, field, pool, operator, well names and numbers, and well file numbers must coincide with the official records on file with the NDIC. All tests have to be conducted by a qualified person with an approved subsurface pressure instrument. Wells need to be clearly identified by well name and number and well file number.

Form 14 – Application for Injection

There are several items that need to accompany a Form 14. The operator, well name and number, field or unit, well location, and any other pertinent data that is listed on the form needs to coincide with the official records on file with the NDIC. If there is a discrepancy, an explanation must be given. If an injection well needs to be drilled, an Application for Permit to Drill - Form 1 (see previous section) must also be completed.

In addition, the following need to be provided:

- Surface and bottom hole location
- Appropriate geologic data on the injection zone and the confining zones including geologic names, lithologic descriptions, thicknesses, and depths
- Estimated bottom hole fracture pressure of the top confining zone
- Average and maximum daily rate of fluids to be injected
- Average and maximum requested surface injection pressure
- Geologic name and depth to base of the lowermost underground source of drinking water which may be affected by injection
- Existing or proposed casing, tubing, and packer data.

A plat depicting the area of review (¼-mile radius) and detailing the location, well name, and operator of all wells in the area of review must be attached. It must also include injection wells, producing wells, plugged wells, abandoned wells, drilling wells, dry holes, and water wells. The plat must also depict faults, if known or suspected.

A description of the needed corrective action on wells penetrating the injection zone in the area of review must be included as well as a brief description of the proposed injection program.

A quantitative analysis from a state-certified laboratory of fresh water from the two nearest fresh water wells, including legal descriptions, must be attached to the application. A quantitative analysis from a state-certified laboratory must also be completed of a representative sample injectate water if that is the medium that is going to be injected.

A list identifying all source wells or sources of injectate must be attached to the application. A legal description of land ownership within the area of review must be included in the application. The ownership should be listed by tract or submitted in plat form. An affidavit of mailing certifying that all landowners within the area of review have been notified of the proposed injection well must accompany the application. The notice must inform the landowners that comments or objections can be submitted to the NDIC within 30 days or that a hearing will be held at which comments or objections may be submitted, whichever is applicable. Copies of the letters need to be included.

All available logging and test data on the well which has not been previously submitted should be included in the application as well as schematic drawings of the injection system including current well bore construction and proposed well bore and surface facility construction. A Sundry Notice - Form 4 (see previous section) detailing the proposed procedure must also be included in the application for injection.

In addition to the items discussed previously, Chapter 43-02-05 of the NDAC details the following for injection wells:

- Well siting requirements
- Construction requirements
- Mechanical integrity requirements
- Plugging requirements
- Operating requirements
- Corrective action
- Bonding requirements
- Reporting and monitoring requirements

A public hearing will be required as part of the application process.

Form 19 – Well Integrity Report

A Well Integrity Report must be filed with the NDIC subsequent to any workover conducted on a underground injection control (UIC) well, any periodic pressure test conducted on a UIC well, or any pressure test conducted for temporary abandonment purposes. This report will be filed by the NDIC field inspector if they witness the mechanical integrity test. The well file number, UIC number, operator, well name and number, field, well location, and any other pertinent information shall coincide with the official records on file with the NDIC. If it does not, an explanation shall be given.

The "Before Test" section of the report shall report the condition(s) of the well prior to connecting to the well for the mechanical integrity test. The "Start of Test" section of the report shall report the condition(s) of the well after pressuring up the well to start the mechanical integrity test. The "End of Test" section of the report shall report the condition(s) of the well at the end of the test interval prior to relieving the pressure on the well.

REFERENCES

1. North Dakota Industrial Commission Oil and Gas Division. https://www.dmr.nd.gov/oilgas/rules/rulebook.pdf (accessed June 2007).

APPENDIX A

NDIC FORMS

SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 5749 (03-2004)

Well File No.

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.
PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

☐ Notice of Intent	Approximate Start Date	☐ Drilling Prognosis	☐ Spill Report
☐ Report of Work Done	Date Work Completed	☐ Redrilling or Repair	☐ Shooting
☐ Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	Approximate Start Date	☐ Casing or Liner	☐ Acidizing
		☐ Plug Well	☐ Fracture Treatment
		☐ Supplemental History	☐ Change Production Method
		☐ Temporarily Abandon	☐ Reclamation
		☐ Other	

Well Name and Number				
Footages F L F L	Qtr-Qtr	Section	Township N	Range W
Field	Pool		County	

24-HOUR PRODUCTION RATE

Before		After	
Oil	Bbls	Oil	Bbls
Water	Bbls	Water	Bbls
Gas	MCF	Gas	MCF

Name of Contractor(s)			
Address	City	State	Zip Code

DETAILS OF WORK

Company		Telephone Number
Address		
City	State	Zip Code
Signature	Printed Name	
Title	Date	

FOR STATE USE ONLY

☐ Received	☐ Approved
Date	
By	
Title	

WELL COMPLETION OR RECOMPLETION REPORT - FORM 6

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 2468 (02-2004)

Well File No.

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.
PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

Designate Type of Completion
☐ Oil Well ☐ EOR Well ☐ Recompletion ☐ Deepened Well ☐ Added Horizontal Leg ☐ Extended Horizontal Leg
☐ Gas Well ☐ SWD Well ☐ Water Supply Well ☐ Other:

Well Name and Number		Spacing Unit Description
Operator	Telephone Number	Field
Address		Pool
City / State / Zip Code		Permit Type ☐ Wildcat ☐ Development ☐ Extension

LOCATION OF WELL

At Surface	Qtr-Qtr	Section	Township	Range	County
F L F L			N	W	

Spud Date	Date TD Reached	Drilling Contractor and Rig Number	KB Elevation (Ft)	Number of DSTs Run (See Back)

Type of Electric and Other Logs Run (See Instructions)	Was Well Cored? ☐ No ☐ Yes List Intervals:	Directional Survey Run? ☐ No ☐ Yes

CASING RECORD (Report all strings set in well)

Casing Size (Inches)	Measured Depth Set (Feet)	Hole Size (Inches)	Weight (Lbs/Ft)	Sacks Cement	Top of Cement

LINER RECORD

Liner Size (Inches)	Hole Size (Inches)	Top (MD) (Feet)	Bottom (MD) (Feet)	Sacks Cement

TUBING RECORD

Size (Inches)	Depth Set (MD,Ft)	Anchor Set (MD,Ft)	Packer Set (MD,Ft)

PERFORATION & LATERAL RECORD

Well Bore	OH or Perforated Interval (MD,Ft)	Kick-off Point (MD,Ft)	Top of Casing Window (MD,Ft)	Total Depth (MD,Ft)	Acid, Frac, Sqz, Etc.	Amount and Kind of Material Used

PRODUCTION

Current Producing OH or Perforated Interval(s), This Completion, Top and Bottom, (MD)			Name of Zone (If Different from Pool Name)
Date of First Production Through Permanent Wellhead	Producing Method (Flowing, Gas Lift, Pumping - Size & Type of Pump)		Well Status (Producing or Shut-In)

Date of Test	Hours Tested	Choke Size	Production for Test	Oil (Bbls)	Gas (MCF)	Water (Bbls)	Oil Gravity - API (Corr.) °

Flowing Tubing Pressure (PSI)	Casing Pressure (PSI)	Calculated 24-Hour Rate	Oil (Bbls)	Gas (MCF)	Water (Bbls)	Gas-Oil Ratio

Test Witnessed By	Oil Purchaser	Oil Transporter	Disposition of Gas

RESERVOIR PRESSURE TEST - FORM 9A

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 5756 (04-2006)

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.
PLEASE SUBMIT THE ORIGINAL.

Datum Feet Below S.L.	Field	Pool	
Operator			Telephone Number
Address	City	State	Zip Code
Required Test ☐ Reason Special Test ☐	Equipment Used		

Well Name and Number	Well File Number	Date of Test	Depth of Test (Feet)	Reservoir Temperature (°F)	Fluid Gradient Opposite Reservoir (PSI/Ft)	Tubing Pressure (PSI)	Reservoir Pressure (PSI)

% Variation in Calibration of Instrument Before Test	% Variation in Calibration of Instrument After Test
Name(s) of Person(s) Witnessing Above Tests	Name of Company or Operator
Comments	

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records.		Date
Signature	Printed Name	Title

Above Signature Witnessed By

Witness Signature	Witness Printed Name	Witness Title

APPLICATION FOR INJECTION - FORM 14

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 18669 (12-2004)

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM. PLEASE SUBMIT THE ORIGINAL AND TWO COPIES.
APPROVAL MUST BE OBTAINED BEFORE WORK COMMENCES.

Permit Type	Injection Well Type	Commercial SWD
☐ Enhanced Recovery ☐ Saltwater Disposal ☐ Gas Storage	☐ Converted ☐ Newly Drilled	☐ Yes ☐ No

Operator	Telephone Number

Address	City	State	Zip Code

Well Name and Number	Field or Unit

LOCATIONS

At Surface	Qtr-Qtr	Section	Township	Range	County
F L F L			N	W	
Bottom Hole Location	**Qtr-Qtr**	**Section**	**Township**	**Range**	**County**
F L F L			N	W	

Geologic Name of Injection Zone	Top	Injection Interval
	Feet	Feet

Geologic Name of Top Confining Zone	Thickness	Geologic Name of Bottom Confining Zone	Thickness
	Feet		Feet

Bottom Hole Fracture Pressure of the Top Confining Zone	Gradient
PSI	PSI/Ft

Estimated Average Injection Rate and Pressure	Estimated Maximum Injection Rate and Pressure
BPD @ PSI	BPD @ PSI

Geologic Name of Lowest Known Fresh Water Zone	Depth to Base of Fresh Water Zone
	Feet

Total Depth of Well (MD & TVD)	Logs Previously Run on Well
Feet	

CASING, TUBING, AND PACKER DATA (Check ☐ If Existing)

NAME OF STRING	SIZE	WEIGHT (Lbs/Ft)	SETTING DEPTH	SACKS OF CEMENT	TOP OF CEMENT	TOP DETERMINED BY
Surface ☐						
Intermediate ☐						
Long String ☐						

				TOP	BOTTOM	SACKS OF CEMENT
Liner ☐						

				TYPE
Proposed Tubing				

Proposed Packer Setting Depth	Model		
Feet		☐ Compression ☐ Permanent ☐ Tension	

FOR STATE USE ONLY

Permit Number and Well File Number	
UIC Number	Approval Date
By	
Title	

COMMENTS

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records.		Date
Signature	Printed Name	Title

Above Signature Witnessed By

Witness Signature	Witness Printed Name	Witness Title

SFN 5767 (10-2001)

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.
PLEASE SUBMIT THE ORIGINAL.

Date of Test	Name of Contractor Performing Pressure Test		
Operator		Telephone Number	
Address	City	State	Zip Code
Well Name and Number	Field		

Location of Well	Qtr-Qtr	Section	Township N	Range W	County

WELL DATA

Formation	Perforations Feet
Tool Type ☐ Packer ☐ CICR ☐ CIBP	Depth Feet / Packer Model
Tubing Size Inches	Tubing Type

Well Type	Reason for Test	Type of Test
☐ Disposal Well ☐ Production Well ☐ Enhanced Recovery Well ☐ Other	☐ UIC MIT ☐ TAO ☐ TA ☐ Workover	☐ MIT ☐ Annual MIT ☐ Initial MIT ☐ 5 Year MIT

BEFORE TEST

Tubing Pressure PSIG ☐ FTP or ☐ SITP	Annulus or Casing Pressure PSIG

START OF TEST

Starting Tubing Pressure PSIG ☐ FTP or ☐ SITP	Starting Annulus or Casing Pressure PSIG

END OF TEST

Ending Tubing Pressure PSIG ☐ FTP or ☐ SITP	Ending Annulus or Casing Pressure PSIG

TEST DATA

Annular or Casing Fluid	Fluid Used to Test	Amount of Fluid Needed to Fill Annulus or Casing Bbls
Length of Test Minutes	Was Annulus or Casing Bled Off to Zero After Test? ☐ Yes ☐ No - Pressure Left	PSIG

COMMENTS

☐ Approved MIT ☐ Failed MIT - Explain Below ☐ Conditionally Approved MIT - Explain Below ☐ Approved TA Status ☐ Report of Work Done Required

This report is true and complete to the best of my knowledge.

Company Representative Witnessing Test	Title
Commission Field Inspector Witnessing Test	