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 (09-2006)

Well File No. 25759

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: December 29, 2017	☐ 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 NDAC 43-02-03-49 Compliance	

Well Name and Number					
See Attached					
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

Continental Resources, Inc. has inspected all the sites listed on the attached list and all are in compliance with NDAC 43-02-03-49. All sites are in compliance based on the fact that our oil storage tanks, flow-through process vessels, recycle pumps, and load lines are all located within secondary containment.

confirmed per RSD

Company: Continental Resources, Inc.			Telephone Number: (405) 234-9020
Address: PO Box 268870			
City: Oklahoma City		State: OK	Zip Code: 73126
Signature: Robert Sandbo	Printed Name: Robert Sandbo		
Title: Regulatory Compliance Supervisor	Date: February 8, 2018		
Email Address: robert.sandbo@cir.com			

FOR STATE USE ONLY

☐ Received	☒ Approved
Date: 3/22/18	
By: David E. Hunter	
Title: Inspector	

NORTH DAKOTA
OIL AND GAS DIVISION

Oil and Gas Division

Lynn D. Helms - Director Bruce E. Hicks - Assistant Director
Department of Mineral Resources
Lynn D. Helms - Director
North Dakota Industrial Commission
www.dmr.nd.gov/oilgas

August 29, 2017

CONTINENTAL RESOURCES
ATTENTION: BOB SANDBO
P.O. BOX 268870
OKLAHOMA CITY, OK 73126

RE: North Dakota Administrative Code (NDAC) Section 43-02-03-49
Perimeter Berm Requirement

NDIC # Please see attached list of 103 Facilities

Dear Bob Sandbo:

Please be advised that the attached list of facilities require a perimeter berm to be constructed within 180 days of this notice because they have:

1. Storage tanks;
2. Daily throughput of more than one hundred barrels of fluid per day; and
3. Includes production equipment or load lines that are not contained within secondary containment dikes

The berm must be at least six inches in height, constructed of sufficiently impermeable material to provide emergency containment, and must be maintained until the facility is either granted a waiver or the site is reclaimed.

Pursuant to NDAC Section 43-02-03-49 - Within one hundred eighty days from the date the operator is notified by the Commission, a perimeter berm, at least six inches in height, must be constructed of sufficiently impermeable material to provide emergency containment and to divert surface drainage away from the site around all storage facilities and production sites that include storage tanks, have a daily throughput of more than one hundred barrels of fluid per day, and include production equipment or load lines that are not contained within secondary containment dikes. The Director may consider an extension of time to implement these requirements if conditions prevent timely construction, or modification of these requirements if other factors are present that provide sufficient protection from environmental impacts.

This perimeter berm requirement may be modified or waived if the operator can demonstrate that other factors are present that provide sufficient protection from environmental impacts. A Sundry Notice (Form 4) outlining any engineering controls or other factors must be submitted to the Commission for approval of this modification or waiver. Should you have any questions regarding this matter, feel free to contact me at 701-770-3554.

Sincerely,

Richard Dunn
Field Inspector

Oil and Gas Division

Lynn D. Helms - Director Bruce E. Hicks - Assistant Director
Department of Mineral Resources
Lynn D. Helms - Director
North Dakota Industrial Commission
www.dmr.nd.gov/oilgas

NDIC #		Facility Name	TB/CTB #
19126		LANSING 1-25H	
19578		MISSOULA 1-21H	
19740		SYRACUSE 1-23H	
19858		JAMESTOWN 1-17H	
19915		STEELE 1-24H	
19918		CHARLOTTE 1-22H	
20566		MONTPELIER 1-14H	
20629		PATTERSON 1-13H	
20638		KUHN 1-12H	
20676		NORFOLK 1-1H	
21128		CHARLOTTE 2-22H	
21511		BOULDER 1-4H	
21600		ROCHESTER 1-24H	
22155		LANSING 2-25H	
22158		KUHN 2-12H	
22273		STEELE 2-24H	
22375		CHICAGO 2-26H	
22891		MONROE 1-2H	
23048		CHICAGO 3-26H	
23049		CHICAGO 4-26H	
23050		SYRACUSE 3-23H	
23051		SYRACUSE 4-23H	
23086		NORFOLK 2-1H	
23087		NORFOLK 3-1H	
23351		MISSOULA 2-21H	
23352		MISSOULA 3-21H	
23427		MISSOULA 7-21H	
23428		MISSOULA 6-21H	
23429		MISSOULA 5-21H	
23430		MISSOULA 4-21H	
23477		DURHAM 2-2H	
23608		CHARLOTTE 5-22H	
23609		AKRON 3-27AH	
23610		AKRON 2-27AH	
23611		AKRON 4-34H	
23612		CHARLOTTE 4-22H	
23664		CHARLOTTE 3-22H	
23747		ROCHESTER 3-24H	
23748		ROCHESTER 2-24H	
23749		ROCHESTER 5-24H1	
23750		ROCHESTER 4-24H	
24490		DURHAM 4-2H	
24491		DURHAM 5-2H	
24507		NORFOLK 5-1H	
24508		NORFOLK 4-1H	
24804		WAHPETON 14-16H2	224837-01
24805		WAHPETON 13-16H	
24806		WAHPETON 12-16H3	
24807		WAHPETON 11-16H1	
24808		WAHPETON 10-16H2	
24809		WAHPETON 9-16H	
24810		WAHPETON 8-16H1	

NDIC #		Facility Name	TB/CTB #
24834		DURHAM 3X-2H	
24837		WAHPETON 2-16H2	
24840		WAHPETON 4-16H1	
24842		WAHPETON 5-16H2	
24843		WAHPETON 6-16H	
24844		WAHPETON 7-16H3	
24908		CHARLOTTE 6-22H2	
25116		BJARNE 2-29H	
25117		BJARNE 3-29H	
25156		COLUMBUS FEDERAL 1-16H	
25157		TALLAHASSEE 3-16H	
25158		TALLAHASSEE 2-16H	
25159		COLUMBUS FEDERAL 2-16H	
25160		COLUMBUS FEDERAL 3-16H	
25189		PATTERSON FEDERAL 2-13H	
25190		PATTERSON FEDERAL 3-13H	
25826		AKRON 6-34H1	
25827		AKRON 5-34H1	
26190		MONTPELIER 4-14H	
26191		MONTPELIER 3-14H1	
26420		MONTPELIER 2-14H	
26476		ROCHESTER FEDERAL 6-24H	
26477		ROCHESTER FEDERAL 7-24H1	
26525		JERRY 2-8H	
26526		JERRY 3-8H	
26530		JERRY 5-8H	
26531		JERRY 4-8H	
26535		JERRY 7-8H	
26536		JERRY 6-8H	
27418		GARFIELD FEDERAL 7-5H1	
27419		GARFIELD FEDERAL 6-5H	
27420		GARFIELD FEDERAL 5-5H1	
27421		GARFIELD 4-5H	
27694		BERLAIN 3-30H	
27695		BERLAIN 2-30H	
28202		JAMESTOWN FEDERAL 2-17H	
28203		JAMESTOWN FEDERAL 3-17H1	
28405		HARRISBURG 1-34H	
28604		JAMESTOWN FEDERAL 6-17H	
28605		JAMESTOWN FEDERAL 7-17H	
28735		DURHAM 7-2H	
28736		DURHAM 6-2H1	
28737		UHLMAN 1-7H	
28999		NORFOLK 6-1H1	
29000		NORFOLK 7-1H	
31508		AKRON FEDERAL 7-27H	
31838		CHARLOTTE 7X-22H	
32033		NORFOLK 11-1H	
32034		NORFOLK 10-1H1	
32035		NORFOLK 9-1H	
32036		NORFOLK 8-1H1	

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 (09-2006)

Received
OCT 05 2016
ND Oil & Gas Division

Well File No.
25159

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

- ☐ Notice of Intent — Approximate Start Date
- ☑ Report of Work Done — Date Work Completed: **July 23, 2016**
- ☐ 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

- ☐ Drilling Prognosis
- ☐ Redrilling or Repair
- ☐ Casing or Liner
- ☐ Plug Well
- ☐ Supplemental History
- ☐ Temporarily Abandon
- ☐ Spill Report
- ☐ Shooting
- ☐ Acidizing
- ☐ Fracture Treatment
- ☑ Change Production Method
- ☐ Reclamation
- ☐ Other

Well Name and Number: **Columbus Federal 2-16H**

Footages	Qtr-Qtr	Section	Township	Range
2508 F N L 222 F E L	SENE	16	153 N	101 W

Field	Pool	County
Baker	Bakken	McKenzie

24-HOUR PRODUCTION RATE

	Before		After	
Oil	97	Bbls	82	Bbls
Water	123	Bbls	153	Bbls
Gas	80	MCF	76	MCF

Name of Contractor(s)

Address	City	State	Zip Code

DETAILS OF WORK

Continental Resources, Inc. requests a change in production method on the above mentioned well. The well went from flowing to Rod Pump on 7/23/2016. New Tubing: 2 1/2 Depth: 9940

Company	Telephone Number
Continental Resources	(405) 234-9688

Address: **P.O. Box 268870**

City	State	Zip Code
Oklahoma City	OK	73126

Signature	Printed Name
	Zach Green

Title	Date
Regulatory Specialist	September 30, 2016

Email Address: **Zach.Green@clr.com**

FOR STATE USE ONLY

☑ Received ☐ Approved

Date: 11-2-2016

By: Taylor Roth

Title: TAYLOR ROTH
Engineering Technician

North Dakota Industrial Commission Follow-up Spill Report

API Number	Well File or Facility No
33 - 053 - 04855	25159

Operator	Telephone Number
Continental Resources, Inc.	(406)433-3006

Address	City	State	Zip Code
P.O Box 268835	Oklahoma City	OK	73126

Well Name and Number or Facility Name	Field
Columbus Federal 2-16H	Baker

Location of Well or Facility	Footages	Qtr-Qtr	Section	Township	Range	County
	F L F L	SE-NE	16	153 N	101 W	McKenzie

Description of Spill Location if not on Well or Facility Site and/or Distance and Direction from Well or Facility

Directions to Site

Release Discovered By	Date Release Discovered	Time Release Discovered	Date Release Controlled	Time Release Controlled
Rig Supervisor	February 27, 2014	11 : 15 PM	February 27, 2014	:

Company Personnel Notified	How Notified	Date Notified	Time Notified
Patrick Skillestad	Phone	February 28, 2014	:

Type of Incident	Root Cause of Release	Date Clean up Activities Concluded
Tank Overflow	Human Error	February 28, 2014

Distance to Nearest Residence or Occupied Building	Distance to Nearest Fresh Water Well

Piping Specifics (If Applicable)	Size (Decimal Format)	Type	Location of Piping
	"		

Volume of Release	Oil	Saltwater	Other
			15.00 Barrels

Volume of Release Recovered	Oil	Saltwater	Other
			15.00 Barrels

Was Release Contained Within Dike	If No, Was Release Contained on Well Site	If No, Was Release Contained on Facility Site or Pipeline ROW
No	Yes	

Areal Extent of Release if not Within Dike	Affected Medium	General Land Use
	Well/Facility Soil	Well/Facility Site

Describe Cause of Release or Fire and Other Type of Incidents, Root Causes of Release, Land Uses, and Released Substances

While transferring fresh water into frac tanks, employee overfilled the tank.

Action Taken to Control Release and Clean Up Action Undertaken

All standing fluid was sucked up and returned to tank on-site.

Potential Environmental Impacts

Location soil

Planned Future Action and/or Action Taken to Prevent Reoccurrence

Where Were Recovered Liquids Disposed	Where Were Recovered Solids Disposed
Tank on-site	N/A

Weather Conditions	Wind Speed	Wind Direction	Temperature	Skies	Estimated Cleanup Cost	Damage Value
	MPH		° F		$	$

Regulatory Agencies/Others Notified	Person Notified	Date Notified	Time Notified	Notified By
NDIC/NDDH	Online report	February 28, 2014	4 : 50 PM	Patrick Skillestad
Fee Surface Owner			:	
Local Fire Department			:	
Federal Agency Lease Number				
BLM			:	
USFS			:	

Report Originator	Title	Date
Nate Stannope	Assoc. Environmental Specialist	September 26, 2016

Signature	Date
Nate Stannope	9/26/16

Industrial Commission of North Dakota
Oil and Gas Division
Spill / Incident Report

Date/Time Reported : Feb 28 2014 / 16:48
State Agency person :
Responsible Party : CONTINENTAL RESOURCES, INC.
Well Operator : CONTINENTAL RESOURCES, INC.
Date/Time of Incident : 2/27/2014 12:00:00 AM
NDIC File Number : 25159
Facility Number :
Well or Facility Name : COLUMBUS FEDERAL 2-16H
Type of Incident : Tank Overflow
Field Name : BAKER
County : MCKENZIE
Section : 16
Township : 153
Range : 101
Quarter-Quarter :
Quarter :
Distance to nearest residence :
Distance to nearest water well :
Release Oil :
Release Brine :
Release Other : 15 Barrels
Recovered Oil :
Recovered Brine :
Recovered Other : 15 Barrels
Has/Will the incident be reported to the NRC? : No
Was release contained : Yes - On Constructed Well Site
Description of other released substance : Fresh water mixed with biocite.

Immediate risk evaluation : None
Followup Report Requested Y/N : Y

AUTHORIZATION TO PURCHASE AND TRANSPORT OIL FROM LEASE - FORM 8

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 5698 (03-2000)

DEC 2013
RECEIVED
ND OIL & GAS
DIVISION

Well File No.
25159
NDIC CTB No.
125159

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.
PLEASE SUBMIT THE ORIGINAL AND FOUR COPIES.

Well Name and Number	Qtr-Qtr	Section	Township	Range	County
Columbus Federal 2-16H	SENE	16	153 N	101 W	McKenzie

Operator	Telephone Number	Field
Continental Resources Inc.	405-234-9000	Baker

Address	City	State	Zip Code
P.O. Box 268870	Oklahoma City	OK	73126

Name of First Purchaser	Telephone Number	% Purchased	Date Effective
Continental Resources, Inc.	405-234-9000	100	December 18, 2013

Principal Place of Business	City	State	Zip Code
P.O. Box 268870	Oklahoma City	OK	73126

Field Address	City	State	Zip Code

Name of Transporter	Telephone Number	% Transported	Date Effective
Hiland Crude, LLC	580-616-2053		December 18, 2013

Address	City	State	Zip Code
P.O. Box 3886	Enid	Ok	73702

The above named producer authorizes the above named purchaser to purchase the percentage of oil stated above which is produced from the lease designated above until further notice. The oil will be transported by the above named transporter.

Other First Purchasers Purchasing From This Lease	% Purchased	Date Effective
Other First Purchasers Purchasing From This Lease	% Purchased	Date Effective
Other Transporters Transporting From This Lease	% Transported	Date Effective
Other Transporters Transporting From This Lease	% Transported	Date Effective

Comments

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records. Date: December 23, 2013

Signature	Printed Name	Title
Becky Barnes	Becky Barnes	Regulatory Compliance Specialist

Above Signature Witnessed By

Witness Signature	Witness Printed Name	Witness Title
Christi Scritchfield	Christi Scritchfield	Regulatory Compliance Specialist

FOR STATE USE ONLY

Date Approved	MAY 27 2014
By	
Title	Oil & Gas Production Analyst

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 (04-2010)

MAY 2014
RECEIVED
ND OIL & GAS
DIVISION

Well File No.
25159

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
Columbus Federal 2-16H			**Sec 4,9,16 & 21-153N-101W**
Operator		Telephone Number	Field
Continental Resources, Inc.		**405-234-9000**	**Baker**
Address			Pool
P.O. Box 268870			**Bakken**
City	State	Zip Code	Permit Type
Oklahoma City	**Ok**	**73126**	☐ Wildcat ☑ Development ☐ Extension

LOCATION OF WELL

At Surface		Qtr-Qtr	Section	Township	Range	County
2508 F N L	**222 F E L**	**SENE**	**16**	**153 N**	**101 W**	**McKenzie**

Spud Date	Date TD Reached	Drilling Contractor and Rig Number	KB Elevation (Ft)	Graded Elevation (Ft)
8/12/2013	**12/13/2013**	**Cyclone 4**	**1940**	**1920**

Type of Electric and Other Logs Run (See Instructions)
CBL/GR, Mud Logs, Geological Report

CASING & TUBULARS RECORD (Report all strings set in well)

Well Bore	String Type	String Size (Inch)	Top Set (MD Ft)	Depth Set (MD Ft)	Hole Size (Inch)	Weight (Lbs/Ft)	Anchor Set (MD Ft)	Packer Set (MD Ft)	Sacks Cement	Top of Cement
Lateral1	Conductor	16		100	20				8 yds	
	Surface	9 5/8		1965	13 1/2	36			868	
	Intermediate	7		10850	8 3/4	29-32			1087	1922
	Liner	4 1/2	10071	23274	6	11.6				
	Tubing	2 7/8			4	6.5				

PERFORATION & OPEN HOLE INTERVALS

Well Bore	Well Bore TD Drillers Depth (MD Ft)	Completion Type	Open Hole/Perforated Interval (MD,Ft) Top	Bottom	Kick-off Point (MD Ft)	Top of Casing Window (MD Ft)	Date Perf'd or Drilled	Date Isolated	Isolation Method	Sacks Cement
Lateral1	13133	Perforations	10850	13133	10135	1922	2/27/2014			
Sidetrack1	23475	Open Hole	12488	23475	12488					

PRODUCTION

Current Producing Open Hole or Perforated Interval(s), This Completion, Top and Bottom, (MD Ft)							Name of Zone (If Different from Pool Name)
Bakken 10,850'/23,475'							**Three Forks**
Date Well Completed (SEE INSTRUCTIONS)		Producing Method	Pumping-Size & Type of Pump				Well Status (Producing or Shut-In)
5/3/2014		**Flowing**					**Producing**
Date of Test	Hours Tested	Choke Size	Production for Test	Oil (Bbls)	Gas (MCF)	Water (Bbls)	Oil Gravity-API (Corr.)	Disposition of Gas
5/4/2014	**24**	**16 /64**		**541**	**387**	**815**	**40.0 °**	**Sold**
Flowing Tubing Pressure (PSI)		Flowing Casing Pressure (PSI)	Calculated 24-Hour Rate	Oil (Bbls)	Gas (MCF)	Water (Bbls)	Gas-Oil Ratio	
1650		**N/A**		**541**	**387**	**815**	**715**	

GEOLOGICAL MARKERS

Formation	MD (Ft)	TVD (Ft)
Greenhorn		4420
Dunham Salt		6678
Base Pine Salt		7136
Minnelusa		7431
Kibbey Lime		8162
Mission Canyon		9228
Lodgepole		9797
Middle Bakken		10505
Three Forks		10570

PLUG BACK INFORMATION

Well Bore	Type of Plug	Top (Ft)	Bottom (Ft)	Sacks Cement

CORES CUT

Top (Ft)	Bottom (Ft)	Formation	Top (Ft)	Bottom (Ft)	Formation

Drill Stem Test

Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)

Drill Pipe Recovery

Sample Chamber Recovery

Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)

Drill Pipe Recovery

Sample Chamber Recovery

Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)

Drill Pipe Recovery

Sample Chamber Recovery

Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)

Drill Pipe Recovery

Sample Chamber Recovery

Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)

Drill Pipe Recovery

Sample Chamber Recovery

Well Specific Stimulations

Date Stimulated	Stimulated Formation	Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units
2/27/2014	Three Forks	10850	23475	43	85599	Barrels

Type Treatment	Acid %	Lbs Proppant	Maximum Treatment Pressure (PSI)	Maximum Treatment Rate (BBLS/Min)
Sand Frac		3937842	8493	31.0

Details

Pumped 305478# 40/70 mesh, 2539056# 20/40 sand and 1093308# 20/40 ceramic.

Date Stimulated	Stimulated Formation	Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units

Type Treatment	Acid %	Lbs Proppant	Maximum Treatment Pressure (PSI)	Maximum Treatment Rate (BBLS/Min)

Details

Date Stimulated	Stimulated Formation	Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units

Type Treatment	Acid %	Lbs Proppant	Maximum Treatment Pressure (PSI)	Maximum Treatment Rate (BBLS/Min)

Details

Date Stimulated	Stimulated Formation	Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units

Type Treatment	Acid %	Lbs Proppant	Maximum Treatment Pressure (PSI)	Maximum Treatment Rate (BBLS/Min)

Details

Date Stimulated	Stimulated Formation	Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units

Type Treatment	Acid %	Lbs Proppant	Maximum Treatment Pressure (PSI)	Maximum Treatment Rate (BBLS/Min)

Details

ADDITIONAL INFORMATION AND/OR LIST OF ATTACHMENTS

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records.	Email Address becky.barnes@clr.com		Date 4/15/2014
Signature Becky Barnes	Printed Name **Becky Barnes**	Title **Regulatory Compliance Specialist**	

INDEX

SYNOPSIS

OPERATOR	Continental Resources Inc.
WELL NAME	Columbus Federal 2-16H
SURFACE LOCATION	2508' FNL & 222' FEL: Sec 16, T153N, R101W
BOTTOM HOLE LOCATION	236.1 FNL & 1348.94' FEL: Sec 4, T153N, R101W
FIELD	Williston
COUNTY/STATE	McKenzie Co., North Dakota
API NUMBER	33-053-04855
NorAm FILE NUMBER	NR2689
ELEVATIONS	**G.L. =** 1920' **K.B. =** 1940'
SPUD DATE	October 25, 2013
T.D. DATE	December 13, 2013
DRILLING CONTRACTOR	Cyclone 4
HOLE SIZE	10 3/4" to 1965', 8 3/4" to 10877' , 6" to 23475'
CASING SIZE & DEPTH	9 5/8" to 1965', 7" to 10847 , 5" to 23274'
DRILLING MUD COMPANY	GEO Drilling Fluids Inc
DRILLING FLUID TYPE	Invert OBM to 10877', Saltwater Brine to 23475'
DIRECTIONAL COMPANY	Leam Energy Services
WIRELINE LOGGING COMPANY	N/A
LOG RECORD	NorAm Wellsite Services
DRILLING SUPERVISION	Steve Northern, Biggens, Monty Harris
GEOLOGICAL SUPERVISION	Darcy Klessens, NorAm Wellsite Services
MUDLOGGING COMPANY	NorAm Wellsite Services
TOTAL DEPTH	23,475'

FORMATION TOPS (ft)

KB =1940'

GL =1920'

FORMATION	PROGNOSIS			SAMPLES		
	MD	TVD	SS	MD	TVD	SS
Top Charles Salts	-	8329	-6389	8298	8296	-6356
Base Last Salt	-	9025	-7085	8299	8297	-7057
Mission Canyon	-	9250	-7310	9222	9219	-7279
Lodgepole	-	9817	-7877	9792	9790	-7850
False Bakken	-	-	-	10537	10483	-8543
Upper Bakken Shale	-	10505	-8565	10550	10490	-8550
Middle Bakken	-	10522	-8582	10576	10505	-8565
Lower Bakken Shale	-	10557	-8617	10641	10538	-8598
Three Forks	-	10583	-8643	10726	10568	-8628
7" Casing Point	-	-	-	10887	10586	-8646
End of Lateral	-	10603	-8663	10475	10556	-8616

DEVIATION SURVEY RECORD (Teledrift and Wireline Data)

Depth	Incl	Azim	TVD	VS	Coordinates		DLS
(ft)	(?)	(?)	(ft)	(ft)	N/S (ft)	E/W (ft)	(?/100')
1918	0.30	262.10	1917.98	0.75	0.75	-5.88	0.38
1983	0.70	256.10	1982.98	1.18	0.63	-6.43	0.62
2077	1.30	241.20	2076.96	0.66	-0.02	-7.93	0.69
2170	1.30	238.70	2169.94	-0.24	-1.08	-9.75	0.06
2263	1.60	243.70	2262.91	-1.18	-2.20	-11.82	0.35
2357	1.70	244.90	2356.87	-2.14	-3.37	-14.26	0.11
2450	2.10	226.30	2449.82	-3.68	-5.14	-16.74	0.78
2543	2.30	211.90	2542.75	-6.24	-7.90	-18.96	0.63
2638	2.20	188.10	2637.68	-9.54	-11.32	-20.22	0.98
2732	2.20	173.20	2731.61	-13.11	-14.90	-20.26	0.61
2825	1.80	154.00	2824.56	-16.25	-17.98	-19.41	0.83
2918	1.10	117.80	2917.53	-18.10	-19.71	-17.98	1.20
3011	1.40	63.50	3010.51	-18.16	-19.62	-16.17	1.26
3105	1.70	61.20	3104.47	-17.18	-18.44	-13.92	0.33
3198	1.60	64.70	3197.44	-16.17	-17.22	-11.54	0.15
3291	1.70	68.40	3290.40	-15.32	-16.16	-9.08	0.16
3384	1.60	72.10	3383.36	-14.63	-15.25	-6.57	0.16
3477	1.30	68.40	3476.33	-14.04	-14.46	-4.35	0.34
3571	1.10	65.10	3570.31	-13.42	-13.69	-2.54	0.23
3664	0.80	76.70	3663.30	-13.02	-13.16	-1.10	0.38
3758	0.60	77.60	3757.29	-12.86	-12.91	0.02	0.21
3851	0.50	74.90	3850.28	-12.73	-12.70	0.89	0.11
3944	0.60	78.40	3943.28	-12.60	-12.49	1.76	0.11
4038	0.40	74.40	4037.28	-12.48	-12.31	2.56	0.22
4132	0.40	89.50	4131.27	-12.44	-12.22	3.20	0.11
4225	0.40	91.40	4224.27	-12.51	-12.22	3.85	0.01
4319	0.40	103.70	4318.27	-12.65	-12.31	4.50	0.09
4412	0.30	102.50	4411.27	-12.82	-12.44	5.05	0.11
4505	0.30	147.30	4504.27	-13.11	-12.69	5.42	0.25
4599	0.40	191.60	4598.26	-13.64	-13.22	5.49	0.30
4692	0.40	214.70	4691.26	-14.20	-13.81	5.24	0.17
4785	0.50	181.80	4784.26	-14.86	-14.48	5.04	0.29
4879	0.50	145.60	4878.26	-15.62	-15.23	5.26	0.33
4972	0.30	118.90	4971.25	-16.11	-15.68	5.70	0.29
5066	0.60	36.80	5065.25	-15.88	-15.40	6.21	0.67
5159	0.90	61.40	5158.24	-15.22	-14.67	7.14	0.47
5253	0.90	67.50	5252.23	-14.70	-14.03	8.47	0.10
5347	1.00	83.00	5346.22	-14.45	-13.65	9.97	0.29
5440	1.20	76.90	5439.20	-14.28	-13.33	11.72	0.25
5533	1.40	65.40	5532.18	-13.76	-12.63	13.70	0.35
5627	1.80	55.40	5626.14	-12.64	-11.32	15.96	0.52

Depth	Incl	Azim	TVD	VS	Coordinates		DLS
(ft)	(?)	(?)	(ft)	(ft)	N/S (ft)	E/W (ft)	(?/100')
5720	1.80	46.60	5719.10	-11.01	-9.48	18.23	0.30
5813	2.00	56.10	5812.05	-9.32	-7.58	20.64	0.40
5907	1.80	57.50	5905.99	-7.84	-5.87	23.24	0.22
6000	1.00	48.00	5998.97	-6.67	-4.54	25.08	0.89
6094	0.90	44.00	6092.95	-5.69	-3.46	26.20	0.13
6187	0.10	18.10	6185.95	-5.14	-2.86	26.73	0.87
6281	0.40	343.70	6279.95	-4.74	-2.46	26.66	0.34
6375	0.30	36.10	6373.95	-4.23	-1.95	26.72	0.34
6469	0.30	336.70	6467.94	-3.82	-1.53	26.77	0.32
6562	0.50	318.70	6560.94	-3.26	-1.00	26.40	0.25
6655	0.40	312.80	6653.94	-2.69	-0.47	25.90	0.12
6749	0.10	343.50	6747.94	-2.37	-0.17	25.63	0.34
6843	0.30	69.10	6841.94	-2.22	0.00	25.84	0.33
6936	0.40	68.90	6934.94	-2.06	0.20	26.37	0.11
7030	0.50	325.90	7028.93	-1.61	0.66	26.44	0.75
7123	1.00	319.60	7121.93	-0.60	1.61	25.69	0.54
7216	1.00	319.80	7214.91	0.73	2.85	24.64	0.00
7309	0.90	312.80	7307.90	1.93	3.97	23.58	0.16
7403	0.80	301.90	7401.89	2.87	4.81	22.48	0.20
7497	0.90	287.30	7495.88	3.54	5.38	21.22	0.25
7590	0.60	274.80	7588.87	3.90	5.64	20.04	0.37
7683	0.60	270.70	7681.87	4.03	5.68	19.07	0.05
7777	0.50	267.80	7775.86	4.10	5.68	18.16	0.11
7870	0.70	252.30	7868.86	3.99	5.49	17.22	0.28
7963	0.80	262.70	7961.85	3.84	5.23	16.03	0.18
8056	0.40	255.60	8054.84	3.76	5.07	15.07	0.44
8149	0.40	252.50	8147.84	3.63	4.89	14.45	0.02
8243	0.30	237.90	8241.84	3.45	4.66	13.93	0.14
8336	0.40	248.60	8334.84	3.25	4.41	13.42	0.13
8429	0.60	252.30	8427.83	3.05	4.15	12.65	0.22
8522	0.60	273.40	8520.83	3.01	4.03	11.70	0.24
8616	0.70	285.00	8614.82	3.28	4.21	10.66	0.18
8709	0.70	297.60	8707.82	3.77	4.62	9.61	0.17
8803	0.80	289.40	8801.81	4.35	5.10	8.48	0.16
8896	1.00	280.10	8894.80	4.83	5.46	7.07	0.27
8990	0.60	286.20	8988.79	5.22	5.74	5.79	0.43
9083	0.40	301.10	9081.78	5.59	6.04	5.04	0.25
9176	0.40	291.30	9174.78	5.92	6.33	4.46	0.07
9270	0.40	288.70	9268.78	6.20	6.55	3.84	0.02
9363	0.40	277.10	9361.78	6.40	6.70	3.21	0.09
9457	0.40	260.40	9455.77	6.44	6.68	2.56	0.12
9550	0.40	253.20	9548.77	6.34	6.53	1.93	0.05

Depth	Incl	Azim	TVD	VS	Coordinates		DLS
(ft)	(?)	(?)	(ft)	(ft)	N/S (ft)	E/W (ft)	(?/100')
9643	0.50	253.50	9641.77	6.20	6.32	1.23	0.11
9736	0.30	222.60	9734.77	5.95	6.03	0.68	0.31
9830	0.30	244.20	9828.77	5.70	5.74	0.29	0.12
9923	0.30	256.70	9921.76	5.57	5.58	-0.16	0.07
10016	0.40	274.30	10014.76	5.59	5.55	-0.72	0.16
10081	0.40	256.90	10079.76	5.59	5.51	-1.17	0.19
10112	0.40	260.70	10110.76	5.57	5.47	-1.38	0.09
10143	2.00	317.50	10141.75	5.99	5.85	-1.86	5.85
10174	7.10	328.00	10172.65	8.13	7.88	-3.24	16.60
10236	16.70	325.40	10233.22	19.49	18.68	-10.24	14.97
10267	21.20	321.20	10262.53	28.02	26.72	-16.28	15.16
10298	24.40	318.70	10291.11	37.83	35.90	-24.02	10.78
10329	26.90	315.20	10319.05	48.37	45.69	-33.19	9.43
10361	29.80	312.00	10347.21	59.73	56.15	-44.21	10.23
10392	31.70	314.30	10373.85	71.53	66.99	-55.76	7.21
10423	36.60	313.80	10399.50	84.65	79.09	-68.27	15.83
10423	36.60	313.80	10399.50	84.65	79.09	-68.27	15.83
10454	40.30	312.40	10423.78	98.97	92.25	-82.35	12.26
10485	44.10	309.80	10446.74	113.94	105.92	-98.05	13.49
10516	47.80	307.80	10468.29	129.32	119.87	-115.41	12.80
10547	51.60	307.30	10488.34	145.28	134.27	-134.16	12.32
10578	56.30	308.40	10506.57	162.30	149.65	-153.94	15.43
10641	62.80	311.90	10538.30	200.81	184.73	-195.49	10.32
10672	66.50	313.10	10551.57	221.44	203.66	-216.14	12.44
10703	70.60	313.80	10562.90	243.00	223.50	-237.08	13.39
10734	75.30	313.50	10571.99	265.22	243.95	-258.52	15.19
10765	79.40	312.40	10578.78	287.64	264.55	-280.66	13.67
10796	84.20	311.00	10583.20	309.94	284.95	-303.56	16.12
10821	87.50	310.80	10585.00	327.82	301.28	-322.40	13.22
10873	89.00	310.80	10586.59	365.03	335.24	-361.75	2.88
10968	88.00	311.90	10589.08	433.65	397.98	-433.04	1.56
11063	89.70	314.70	10590.99	504.47	463.11	-502.15	3.45
11158	91.40	317.30	10590.07	578.20	531.43	-568.13	3.27
11253	92.70	321.40	10586.68	655.25	603.45	-629.97	4.52
11348	91.20	324.40	10583.44	735.60	679.16	-687.23	3.53
11443	90.90	325.90	10581.70	817.91	757.11	-741.50	1.61
11538	90.90	329.50	10580.21	902.25	837.38	-792.25	3.79
11633	90.20	332.30	10579.30	988.90	920.38	-838.45	3.04
11728	88.80	334.90	10580.13	1077.29	1005.46	-880.68	3.11
11823	88.50	338.40	10582.36	1167.38	1092.64	-918.32	3.70
11918	90.20	340.50	10583.44	1258.85	1181.58	-951.66	2.84
12013	90.30	343.00	10583.03	1351.28	1271.80	-981.41	2.63

Depth	Incl	Azim	TVD	VS	Coordinates		DLS
(ft)	(?)	(?)	(ft)	(ft)	N/S (ft)	E/W (ft)	(?/100')
12108	90.80	345.60	10582.12	1444.59	1363.24	-1007.11	2.79
12203	90.90	348.30	10580.71	1538.62	1455.77	-1028.56	2.84
12298	90.60	350.50	10579.46	1633.14	1549.13	-1046.03	2.34
12393	88.10	353.40	10580.54	1727.97	1643.17	-1059.33	4.03
12488	89.50	355.60	10582.53	1822.94	1737.71	-1068.43	2.74
12583	85.30	355.60	10586.84	1917.81	1832.31	-1075.71	4.42
12678	88.20	354.60	10592.22	2012.65	1926.80	-1083.82	3.23
12772	90.50	355.80	10593.29	2106.64	2020.45	-1091.68	2.76
12868	90.80	359.00	10592.20	2202.54	2116.34	-1096.03	3.35
12962	90.00	0.20	10591.54	2296.24	2210.33	-1096.69	1.53
13057	88.30	1.10	10592.95	2390.78	2305.31	-1095.61	2.02
13152	88.80	0.70	10595.36	2485.26	2400.27	-1094.12	0.67
13247	89.50	0.70	10596.77	2579.79	2495.25	-1092.96	0.74
13342	88.30	0.70	10598.59	2674.31	2590.22	-1091.80	1.26
13434	89.50	1.30	10600.36	2765.81	2682.19	-1090.19	1.46
13526	89.30	1.40	10601.32	2857.25	2774.16	-1088.03	0.24
13618	88.40	1.60	10603.17	2948.65	2866.11	-1085.62	1.00
13710	88.40	1.60	10605.74	3040.02	2958.03	-1083.05	0.00
13802	88.10	1.60	10608.54	3131.38	3049.96	-1080.48	0.33
13894	89.40	2.30	10610.55	3222.70	3141.88	-1077.35	1.60
13986	90.10	1.10	10610.95	3314.08	3233.83	-1074.63	1.51
14078	90.50	1.30	10610.47	3405.56	3325.81	-1072.70	0.49
14169	88.80	1.10	10611.03	3496.03	3416.79	-1070.79	1.88
14261	90.20	359.90	10611.83	3587.62	3508.78	-1069.99	2.00
14354	88.40	359.30	10612.97	3680.31	3601.76	-1070.64	2.04
14446	91.00	359.50	10613.45	3772.04	3693.75	-1071.60	2.83
14538	89.40	358.80	10613.13	3863.81	3785.73	-1072.97	1.90
14631	88.70	357.80	10614.67	3956.65	3878.68	-1075.73	1.31
14723	91.50	359.20	10614.51	4048.47	3970.64	-1078.13	3.40
14816	91.30	358.60	10612.24	4141.24	4063.59	-1079.92	0.68
14908	91.30	358.50	10610.15	4233.04	4155.54	-1082.25	0.11
15001	90.40	0.20	10608.77	4325.77	4248.52	-1083.30	2.07
15093	91.40	0.20	10607.32	4417.39	4340.50	-1082.98	1.09
15186	89.30	0.70	10606.76	4509.98	4433.49	-1082.25	2.32
15279	89.60	0.70	10607.65	4602.53	4526.48	-1081.11	0.32
15372	91.10	359.00	10607.08	4695.20	4619.47	-1081.36	2.44
15465	91.70	358.80	10604.81	4787.96	4712.43	-1083.14	0.68
15557	90.00	359.50	10603.44	4879.71	4804.40	-1084.51	2.00
15649	90.80	359.70	10602.80	4971.43	4896.40	-1085.15	0.90
15741	91.30	359.50	10601.12	5063.12	4988.38	-1085.79	0.59
15835	90.70	359.30	10599.47	5156.84	5082.36	-1086.77	0.67
15927	89.90	359.90	10598.99	5248.55	5174.36	-1087.42	1.09

Depth	Incl	Azim	TVD	VS	Coordinates		DLS
(ft)	(?)	(?)	(ft)	(ft)	N/S (ft)	E/W (ft)	(?/100')
16020	90.30	359.90	10598.83	5341.22	5267.36	-1087.58	0.43
16115	89.40	359.70	10599.08	5435.90	5362.35	-1087.91	0.97
16210	89.00	359.30	10600.41	5530.61	5457.34	-1088.74	0.60
16306	89.20	358.60	10601.91	5626.38	5553.31	-1090.50	0.76
16401	90.50	0.00	10602.16	5721.11	5648.30	-1091.66	2.01
16496	91.30	359.90	10600.67	5815.76	5743.29	-1091.74	0.85
16590	90.50	359.20	10599.19	5909.46	5837.27	-1092.48	1.13
16685	91.30	0.00	10597.70	6004.15	5932.26	-1093.14	1.19
16780	91.20	359.00	10595.63	6098.85	6027.23	-1093.97	1.06
16875	92.10	358.50	10592.89	6193.61	6122.17	-1096.04	1.08
16970	92.00	357.60	10589.50	6288.42	6217.05	-1099.27	0.95
17065	92.10	358.10	10586.10	6383.25	6311.92	-1102.84	0.54
17160	92.10	356.90	10582.62	6478.10	6406.77	-1106.98	1.26
17255	91.50	359.30	10579.63	6572.91	6501.66	-1110.12	2.60
17350	92.90	0.90	10575.98	6667.47	6596.58	-1109.96	2.24
17445	90.70	0.90	10573.00	6761.93	6691.52	-1108.47	2.32
17540	90.80	0.40	10571.76	6856.47	6786.50	-1107.39	0.54
17635	90.00	359.50	10571.09	6951.13	6881.50	-1107.47	1.27
17730	90.00	359.70	10571.09	7045.83	6976.50	-1108.14	0.21
17824	90.00	359.00	10571.09	7139.57	7070.49	-1109.20	0.74
17919	89.90	358.10	10571.18	7234.39	7165.46	-1111.61	0.95
18014	90.00	358.30	10571.26	7329.25	7260.41	-1114.59	0.24
18109	91.40	0.00	10570.10	7424.00	7355.39	-1116.00	2.32
18204	90.00	359.30	10568.94	7518.69	7450.38	-1116.58	1.65
18299	92.20	0.20	10567.11	7613.35	7545.35	-1116.99	2.50
18394	90.70	0.60	10564.71	7707.91	7640.32	-1116.33	1.63
18489	89.20	0.60	10564.79	7802.46	7735.31	-1115.34	1.58
18584	89.30	0.70	10566.04	7897.01	7830.29	-1114.26	0.15
18679	90.20	0.70	10566.45	7991.55	7925.29	-1113.10	0.95
18774	90.00	0.90	10566.29	8086.08	8020.28	-1111.77	0.30
18869	88.90	0.60	10567.20	8180.60	8115.26	-1110.53	1.20
18964	89.80	1.30	10568.28	8275.10	8210.24	-1108.95	1.20
19059	90.60	0.60	10567.94	8369.60	8305.23	-1107.38	1.12
19154	90.70	1.10	10566.87	8464.11	8400.21	-1105.97	0.54
19249	89.50	0.20	10566.70	8558.66	8495.20	-1104.89	1.58
19344	90.60	1.80	10566.62	8653.15	8590.18	-1103.23	2.04
19439	90.20	0.70	10565.95	8747.59	8685.15	-1101.16	1.23
19534	92.20	0.20	10563.96	8842.15	8780.13	-1100.42	2.17
19629	92.70	359.90	10559.90	8936.71	8875.04	-1100.33	0.61
19724	90.70	0.40	10557.09	9031.29	8969.99	-1100.08	2.17
19819	89.40	0.90	10557.00	9125.84	9064.98	-1099.01	1.47
19914	90.00	0.70	10557.50	9220.36	9159.97	-1097.68	0.67

Depth	Incl	Azim	TVD	VS	Coordinates		DLS
(ft)	(?)	(?)	(ft)	(ft)	N/S (ft)	E/W (ft)	(?/100')
20009	90.90	0.40	10556.75	9314.93	9254.96	-1096.77	1.00
20104	89.30	0.70	10556.59	9409.49	9349.96	-1095.86	1.71
20199	88.50	0.60	10558.41	9504.02	9444.93	-1094.78	0.85
20293	88.40	0.60	10560.95	9597.55	9538.89	-1093.79	0.11
20388	88.90	359.70	10563.19	9692.15	9633.86	-1093.55	1.08
20483	88.50	1.40	10565.35	9786.69	9728.83	-1092.63	1.84
20578	89.70	0.90	10566.84	9881.15	9823.80	-1090.73	1.37
20673	90.90	0.90	10566.34	9975.65	9918.78	-1089.24	1.26
20768	90.70	0.20	10565.02	10070.21	10013.77	-1088.32	0.77
20863	90.20	0.60	10564.27	10164.80	10108.76	-1087.66	0.67
20958	89.90	359.90	10564.19	10259.41	10203.76	-1087.25	0.80
21053	89.3	0.0001	10564.851	10354.07	10298.76	-1087.329	0.64031
21148	90.9	0.0001	10564.685	10448.71	10393.76	-1087.329	1.68421
21243	90.9	359.5	10563.193	10543.39	10488.74	-1087.744	0.52636
21338	90.5	359.3	10562.032	10638.11	10583.73	-1088.738	0.47074
21433	89.2	359.2	10562.281	10732.86	10678.72	-1089.982	1.37246
21528	90	359.2	10562.944	10827.61	10773.71	-1091.308	0.84211
21623	89.6	358.5	10563.276	10922.4	10868.69	-1093.215	0.84865
21718	90.00	0.20	10563.61	11017.13	10963.68	-1094.29	1.84
21813	89.30	0.40	10564.19	11111.74	11058.67	-1093.79	0.77
21908	90.70	0.20	10564.19	11206.34	11153.67	-1093.30	1.49
22003	90.70	359.50	10563.03	11301.00	11248.66	-1093.55	0.74
22098	89.70	359.50	10562.70	11395.72	11343.66	-1094.38	1.05
22193	89.50	359.50	10563.36	11490.43	11438.65	-1095.20	0.21
22288	89.4	359.5	10564.271	11585.15	11533.64	-1096.033	0.10526
22383	90.7	359.5	10564.188	11679.86	11628.64	-1096.862	1.36842
22478	91.1	359.3	10562.695	11774.58	11723.62	-1097.857	0.47074
22573	91.5	359	10560.54	11869.32	11818.58	-1099.266	0.52627
22668	91.5	357.6	10558.053	11964.13	11913.51	-1102.083	1.47318
22763	91.5	357.2	10555.566	12059.02	12008.38	-1106.391	0.42
22858	89.80	357.90	10554.49	12153.92	12103.28	-1110.45	1.94
22952	89.50	359.20	10555.06	12247.75	12197.25	-1112.83	1.42
23047	89.60	359.30	10555.81	12342.49	12292.23	-1114.07	0.15
23142	90.00	358.60	10556.14	12437.27	12387.22	-1115.81	0.85
23237	90.60	358.50	10555.64	12532.10	12482.18	-1118.22	0.64
23332	89.60	358.10	10555.48	12626.95	12577.14	-1121.04	1.13
23427	90.00	357.40	10555.81	12721.84	12672.07	-1124.77	0.85
23475	90.00	357.40	10555.81	12769.80	12720.02	-1126.94	0.00

BIT RECORD

BIT #	TYPE	SIZE (IN)	IN (FT)	OUT (FT)	TOTAL (FT)	HOURS DRLG	WOB (K)	RPM
1	Security MM65D	8.75	1975	10135	8170	68.5	20-30	50-70
2	Security MMD55M	8.75	10135	10877	742	23.5	25-80	0-35
3	Reed SKHE711M	6	10877	16299	5421	97.5	10-20	30-45
4	Reed SKHE711M	6	16299	23475	7178	107.5	15-30	35-50

DRILLING FLUID PARAMETERS

DATE	WT	VIS	PV	YP	PH	NaCL	Ca	% SOL
10/25/2013	9.1	43	5	8	-	35k	1.4	6.01
10/26/2013	9.6	43	7	8	-	36k	3.5	8.12
10/27/2013	9.7	55	23	9	-	41k	3.3	8.09
10/28/2013	10.0	52	15	14	-	45k	3.2	9.59
10/29/2013	10.1	53	14	11	-	41k	2.4	9.93
10/30/2013	10.5	53	16	11	-	40k	2.6	11.71
12/2/2013	9.5	32	1	1	8	138,000	32,000	0.54
12/4/2013	9.8	32	1	1	9	157,000	30,400	0.72
12/6/2013	9.9	33	1	1	8.5	171,000	30,200	0.19
12/7/2013	9.9	33	1	1	8.5	171,000	30,200	0.19
12/8/2013	9.9	33	1	1	8.5	171,000	30,200	0.19
12/9/2013	9.7	30	1	1	8.5	161,000	30,200	0.82
12/10/2013	9.7	30	1	1	8.5	161,000	30,200	0.82
12/11/2013	9.9	30	1	1	8.5	177,775	31,400	0.40
12/12/2013	9.9	30	1	1	8.5	177,775	31,400	0.40
12/13/2013	9.9	30	1	1	8.5	177,775	31,400	0.40

DAILY DRILLING CHRONOLOGY

DATE (m/d/y)	DEPTH @ 24.00	PROGRESS (ft/24 hours)	BREAKDOWN 00:00 – 24:00	RIG ACTIVITY
10/25/2013	1965'		00:00-06:00	BOP Testing, Casing pressure Fit test, Safety meetings, Pick up drill pipe, BHA, Tag Cement.
			06:00-07:30	Ream, Drill Float @ 1918' & Shoe @ 1965'
			07:30-08:00	Drill 10' of new hole, Fit test
			08:00-08:30	Drill 1975'-2302'
			08:30-09:30	Condition mud & circulate, Lost circulation
			09:30-17:00	Drill 2302'-4279'
			17:00-17:30	Rig Service
			17:30-24:00	Drill 4279'-5961'
10/26/2013	5961'	3996'	00:00-17:00	Drill 5961'-8017'
			17:00-17:30	Rig Service
			17:30-24:00	Drill 8017'-8554'
10/27/2013	8554'	2593'	00:00-02:00	Drill 8554'-8670'
			02:00-02:30	Rig Service
			02:30-15:30	Drill 8670'-9234'
			15:30-16:00	Rig Service
			16:00-24:00	Drill 9234'-9710'
10/28/2013	9710'	1156'	00:00-04:00	Drill 9710'-9884'
			04:00-04:30	Rig Service
			04:30-09:00	Drill 9884'-10135' (KOP)
			09:00-09:30	Pump Slug, Circulate
			09:30-13:30	TOOH for Curve Assembly
			13:30-15:30	BHA Operations
			15:30-17:00	TIH
			17:00-17:30	Rig Service
			17:30-22:30	TIH
			22:30-24:00	Drill/Slide 10135'-10153'
10/29/2013	10153'	443'	00:00-04:00	Drill/Slide 10153'-10261'
			04:00-04:30	Rig Service
			04:30-17:00	Drill/Slide 10261'-10715'
			17:00-17:30	Rig Service
			17:30-23:00	Drill/Slide 10715'-10877' (Land Curve)
			23:00-24:00	Circulate Bottoms Up
10/30/2013	10877'	364'	00:00-01:00	Wiper Trip
			01:00-03:00	Circulate hole clean
			03:00-04:00	Rig Service

DATE (m/d/y)	DEPTH @ 24.00	PROGRESS (ft/24 hours)	BREAKDOWN 00:00 – 24:00	RIG ACTIVITY
			04:00-08:30	TOOH
			08:30-09:30	BHA Operations - Lay Down Tools
			09:30-24:00	7" Intermediate Casing Operations
10/31/2013	10877'	0'	00:00-05:30	Cement Operations
			05:30-24:00	Prep Rig Skid
12/2/2013	10877'	0'	00:00-17:00	Walk Rig, Nipple Up BOP, Slip/Cut, Pick up Directional Tools, TIH to Cement
			17:00-19:30	Drill out cement, FIT test
			19:30-24:00	Drill/Slide 10877'-11150'
12/3/2013	11150'	273'	00:00-24:00	Drill/Slide 11150'-12717'
12/4/2013	12717'	1567'	00:00-06:00	Drill/Slide 12717'-13133'
			06:00-10:00	Lower Bakken Silt/Pronghorn Strike: Work Stuck Pipe, Circulate
			10:00-11:00	TOOH 6 Stands
			11:00-12:30	Trough 12544'-12560'
			12:30-24:00	Time Drill 12560'-12573'
12/5/2013	12573'		00:00-06:00	Time Drill 12573'-12596'
			06:00-24:00	Drill/Slide 12596'-13784'
12/6/2013	13784'	1211'	00:00-24:00	Drill/Slide 13784'-15260'
12/7/2013	15260'	1476'	00:00-18:00	Drill/Slide 15260'-16299'
			18:00-24:00	Circulate, TOOH for new BHA
12/8/2013	16299'	1039'	00:00-04:00	TOOH
			04:00-07:30	Directional Work
			07:30-18:00	TIH
			18:00-24:00	Drill/Slide 16299'-16558'
12/9/2013	16558'	259'	00:00-24:00	Drill/Slide 16558'-18508'
12/10/2013	18508'	1950'	00:00-24:00	Drill/Slide 18508'-20053'
12/11/2013	20053'	1545'	00:00-08:00	Drill/Slide 20053'-20547'
			08:00-09:00	CRI Safety Stand Down
			09:00-24:00	Drill/Slide 20547'-21506'
12/12/2013	21506'	1453'	00:00-24:00	Drill/Slide 21506'-22618'
12/13/2013	22618'	1112'	00:00-13:00	Drill/Slide 22618'-23475' (TD Well)
			13:00-24:00	Circulate, Wiper Trip, Circulate TOOH for Liner

LITHOLOGY

30' samples were caught in the vertical and curve by NorAm Wellsite Services. Logging began at 8250'MD on October 26, 2013 at 21:30 hours. 50' samples were caught in the Lateral by the Cyclone 4 Rig Crew.

Formation tops Sample Interval (in feet)	SAMPLE DESCRIPTION
8220-8250	LIMESTONE: red orange medium gray brown, buff, light to medium gray, firm to bright, microcrystalline, moderately silica, argillaceous, trace sandy material
8220-8280	LIMESTONE: red orange medium gray brown, light to medium gray, firm to bright, microcrystalline, moderately silica, argillaceous, trace sandy material ANHYDRITE: white to gray, soft, amorphous

CHARLES: 8298' MD, 8296' TVD (-6356)

8280-8340	SALT: clear, translucent trace LIMESTONE: light to medium gray, firm to bright, microcrystalline, moderately silica, argillaceous, trace sandy material
8340-8400	SALT: clear, translucent; trace LIMESTONE: light to medium gray, firm to bright, microcrystalline, moderately silica, argillaceous, trace sandy material, trace siltstone material; trace ANHYDRITE: cream to buff,
8400-8520	SALT: translucent to transparent, off white hard, crystalline, SILTSTONE: orange brown, soft, calcareous, argillaceous
8520-8550	SALT: clear, translucent; trace LIMESTONE: light to medium gray, firm to bright, microcrystalline, moderately silica, argillaceous, trace sandy material, trace siltstone material; trace ANHYDRITE: cream to buff,
8550-8580	ANHYDRITE: white to gray, soft, amorphous; LIMESTONE: light gray brown, light to medium gray, firm to bright, microcrystalline, moderately silty, argillaceous
8580-8640	LIMESTONE: light gray brown, light to medium gray, firm to bright, microcrystalline, moderately silty, argillaceous, ANHYDRITE: white, soft, amorphous; SALT: clear, translucent, hard
8640-8700	LIMESTONE: light gray brown, light to medium gray, firm to bright, microcrystalline, moderately silty, argillaceous, ANHYDRITE: white, soft, amorphous; trace SILTSTONE: red to orange, friable to firm, calcareous, material; SALT: clear, translucent, hard

Formation tops Sample Interval (in feet)	SAMPLE DESCRIPTION
8700-8820	LIMESTONE: light gray brown, light to medium gray, firm to bright, microcrystalline, moderately silty, argillaceous, ANHYDRITE: white, soft, amorphous; SALT: clear, translucent, hard
8820-8880	SALT: clear, translucent, hard; LIMESTONE: light gray brown, light to medium gray, firm to bright, microcrystalline, moderately silty, argillaceous, ANHYDRITE: white to gray, soft, amorphous
8880-8910	ANHYDRITE: white to gray, soft, amorphous; LIMESTONE: light gray brown, light to medium gray, firm to bright, microcrystalline, moderately silty, argillaceous
8910-8940	LIMESTONE: light gray brown to tan, light gray, firm to bright, microcrystalline, moderately silty, argillaceous, ANHYDRITE: white to gray, soft, amorphous, trace SALT: clear, translucent, hard
8940-8970	SALT: clear, translucent, hard; trace LIMESTONE: light to medium gray, firm to hard, microcrystalline, moderately silty, trace argillaceous, mottled in part
8970-9000	SALT: clear, translucent, hard; trace LIMESTONE: light brown to tan, light to medium gray, firm to hard, microcrystalline, moderately silty, trace argillaceous, mottled in part
BASE LAST SALT: 8999' MD, 8997' TVD (-7057)	
9000-9030	SALT: clear, translucent, hard; trace LIMESTONE: light to medium gray, tan to light brown, firm to hard, microcrystalline, moderately silty, trace argillaceous, mottled in part
9030-9060	LIMESTONE: light to medium gray, light brown, tan, off white in part, firm to hard, microcrystalline, silty, trace argillaceous, mottled in part
9060-9210	LIMESTONE: light to medium gray, light brown, tan, off white in part, firm to hard, microcrystalline, silty, trace argillaceous, mottled in part, trace ANHYDRITE: white to gray, soft, amorphous
MISSION CANYON: 9222' MD, 9219' TVD (-7279)	
9210-9390	LIMESTONE: medium to light gray, light brown to gray, off white to tan in part, firm to hard, microcrystalline to cryptocrystalline, moderately silty, trace argillaceous, mottled in part

Formation tops Sample Interval (in feet)	SAMPLE DESCRIPTION
9390-9420	LIMESTONE: light to medium gray, light brown, tan, off white in part, firm to hard, microcrystalline, silty, trace argillaceous, mottled in part
9420-9510	LIMESTONE: medium to dark brown, light brown to tan in part, trace medium gray, mottled in part, firm, cryptocrystalline, earthy, slightly silty, argillaceous
9510-9690	LIMESTONE: medium gray brown, light to medium gray, firm to bright, microcrystalline, argillaceous, trace sandy material; ANHYDRITE: white, soft,
9690-9780	LIMESTONE: medium to dark brown, light brown to tan in part, trace medium gray, mottled in part, firm, cryptocrystalline, earthy, slightly silty, argillaceous
	LODGEPOLE: 9792' MD, 9790' TVD (-7850)
9780-9870	LIMESTONE: light to medium gray to brown, light brown to tan in part, trace medium to dark gray, mottled in part, firm, microcrystalline to cryptocrystalline, earthy, slightly silty, argillaceous
9870-9990	LIMESTONE: dark to medium gray to brown, light brown to tan in part, mottled in part, firm, microcrystalline to cryptocrystalline, earthy, slightly silty, argillaceous
9990-10500	LIMESTONE: dark to medium gray, light to medium brown, very trace tan in part, mottled in part, firm to hard, microcrystalline to cryptocrystalline, slightly to moderately silty, argillaceous, earthy texture
10500-10530	LIMESTONE: dark to medium gray, medium to dark brown gray, trace light gray, mottled in part, firm to hard, microcrystalline to cryptocrystalline, moderately silty, argillaceous, earthy texture, sub to blocky
	FALSE BAKKEN: 10537' MD, 10483' TVD (-8543)
10530-10560	SHALE: black, moderately hard, sub blocky to sub platy, carbonaceous; LIMESTONE: dark to medium gray, medium to dark brown gray, trace light gray, mottled in part, firm to hard, microcrystalline to cryptocrystalline, moderately silty, argillaceous, earthy texture, sub to blocky
	UPPER BAKKEN SHALE: 10550'MD, 10490' TVD (-8550)

Formation tops
Sample Interval
(in feet) SAMPLE DESCRIPTION

10560-10590 SHALE: black, moderately hard, sub blocky to sub platy, carbonaceous; DOLOMITE: light to medium gray, cream to off white, tan in part, firm, slightly hard, microcrystalline, silty, trace brown spotty oil stain, green to white fluorescence, moderately blue to white diffuse cut

MIDDLE BAKKEN MEMBER: 10576'MD, 10505' TVD (-8565)

10590-10620 DOLOMITE: light to medium gray, cream to off white, tan in part, firm, slightly hard, microcrystalline, silty, trace brown spotty oil stain, green to white fluorescence, moderately blue to white diffuse cut

10620-10650 DOLOMITE: light to medium gray, cream to off white, tan in part, firm, slightly hard, microcrystalline, silty, trace brown spotty oil stain, green to white fluorescence, moderately blue to white diffuse cut; SHALE: dark brown to black, firm, moderately hard, sub blocky to sub platy, carbonaceous

LOWER BAKKEN SHALE: 10641'MD, 10538' TVD (-8550)

10650-10710 SHALE: dark brown to black, firm, moderately hard, sub blocky to sub platy, carbonaceous

10710-10740 SHALE: dark brown to black, firm, moderately hard, sub blocky to sub platy, carbonaceous, DOLOMITE: light to medium brown, green to gray, firm, microcrystalline, silty, slightly calcareous, trace brown spotty oil stain, scattered yellow to green fluorescence, slow to moderately green diffuse cut

THREE FORKS: 10726'MD, 10568' TVD (-8628)

10740-10877 DOLOMITE: light to medium brown, green to gray, firm, microcrystalline, silty, slightly calcareous, trace brown spotty oil stain, scattered yellow to green fluorescence, slow to moderately green diffuse cut

10877-10900 DOLOMITE: light to medium brown, green to gray, firm, microcrystalline, silty, slightly calcareous, trace brown spotty oil stain, sample cont with cement

10900-10950 DOLOMITE: light to medium brown, green to gray, firm, microcrystalline, silty, slightly calcareous, trace brown spotty oil stain, scattered yellow to green fluorescence, slow to moderately green diffuse cut

Formation tops Sample Interval (in feet)	SAMPLE DESCRIPTION
10950-11150	DOLOMITE: pink to off white, light brown in part, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, dull yellow fluorescence, dull yellow streaming cut
11150-11250	DOLOMITE: pink to off white, light brown in part, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, dull yellow fluorescence, slow to moderately dull yellow streaming cut
11250-11450	DOLOMITE: pink to off white, tan in part, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, green to yellow fluorescence, moderately to fast green streaming cut
11450-11700	DOLOMITE: pink to off white, tan in part, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, pyrite, green to yellow fluorescence, moderately to fast green streaming cut
11700-11750	DOLOMITE: pink to off white, tan in part, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, pyrite, dull yellow fluorescence, moderately to fast green cut
11750-11800	DOLOMITE: pink to off white, tan, light brown, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous trace pyrite; trace SHALE: light blue to green gray, calcareous, laminated in part, trace pyrite, dull yellow fluorescence, slow green cut
11800-12000	DOLOMITE: pink to off white, tan, light brown, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous trace pyrite; trace SHALE: light blue to green gray, calcareous, laminated in part, trace pyrite, dull yellow fluorescence, moderately to fast green cut
12000-12300	DOLOMITE: off white, tan to light brown, trace pink, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous, trace pyrite; trace SHALE: light blue, green, gray, calcareous, laminated in part, dull yellow fluorescence, moderately to fast yellow green cut

Formation tops Sample Interval (in feet)	SAMPLE DESCRIPTION
12300-12500	DOLOMITE: off white to tan, light brown to pink, light gray, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous, disseminated and nodules pyrite; SHALE: light blue to green, light gray, calcareous, laminated in part, scattered green yellow fluorescence, moderately to fast yellow green cut
12500-12700	DOLOMITE: off white to tan, light brown to pink, light gray, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous, disseminated and nodules pyrite; SHALE: light blue to green, light gray, calcareous, laminated in part, scattered green yellow fluorescence, slow yellow green cut
12700-12800	DOLOMITE: pink to off white, tan, light brown, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous trace pyrite; trace SHALE: light blue, green, gray, calcareous, laminated in part, trace pyrite, dull yellow fluorescence, moderately to fast green cut
12800-12950	DOLOMITE: pink to off white, tan in part, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, pyrite, dull yellow fluorescence, moderately to fast green streaming cut
12950-13050	DOLOMITE: pink to off white, light gray, tan in part, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, pyrite, dull yellow fluorescence, moderately to fast green streaming cut
13050-13150	DOLOMITE: pink to off white, tan in part, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, pyrite, dull yellow fluorescence, moderately to fast green streaming cut
13150-13450	DOLOMITE: pink to off white, tan in part, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, trace pyrite, dull yellow fluorescence, moderately to fast green streaming cut
13450-13850	DOLOMITE: pink to off white, tan in part, trace light gray, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, trace pyrite, dull yellow fluorescence, moderately yellow streaming cut

Formation tops Sample Interval (in feet)	SAMPLE DESCRIPTION
13850-14000	DOLOMITE: pink to cream, off white to tan, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, very trace nodules pyrite, scattered green fluorescence, moderately yellow diffuse cut
14000-14050	DOLOMITE: pink to cream, off white to tan, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, very trace nodules pyrite, scattered green fluorescence, slow yellow diffuse cut
14050-14100	DOLOMITE: cream, off white, tan, pink, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, very trace nodules pyrite, scattered green fluorescence, slow yellow diffuse cut
14100-14200	DOLOMITE: cream, off white, tan, pink, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, very trace nodules pyrite, scattered yellow green fluorescence, slow yellow diffuse cut
14200-14300	DOLOMITE: cream, off white, tan, pink, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, very trace nodules pyrite, scattered yellow green fluorescence, slow yellow
14300-14400	DOLOMITE: cream, off white, tan, pink, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, very trace nodules pyrite, scattered yellow fluorescence, slow yellow
14400-14550	DOLOMITE: off white, tan, pink, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, very trace nodules pyrite, scattered yellow fluorescence, slow yellow
14550-14850	DOLOMITE: off white, tan, pink, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, scattered yellow fluorescence, slow yellow
14850-15250	DOLOMITE: pink to off white, tan in part, trace light gray, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, trace pyrite, dull yellow fluorescence, moderately yellow streaming cut

Formation tops Sample Interval (in feet)	SAMPLE DESCRIPTION
15250-15550	DOLOMITE: pink to cream, off white to tan, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, scattered green fluorescence, moderately to slow yellow diffuse cut
15550-15650	DOLOMITE: pink to off white, tan in part, trace light gray, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, trace pyrite, dull yellow fluorescence, moderately yellow streaming cut
15650-15850	DOLOMITE: tan, off white, pink, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, scattered yellow fluorescence, slow yellow
15850-16050	DOLOMITE: tan, off white, pink, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, scattered dull yellow fluorescence, slow yellow, cut cont by lube
16050-16150	DOLOMITE: tan, light brown, off white, pink, firm to moderately hard, microcrystalline to cryptocrystalline, slightly calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, scattered dull yellow fluorescence, slow yellow, cut cont by lube
16150-16350	DOLOMITE: cream, off white, tan, pink, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, very trace nodules pyrite, scattered yellow green fluorescence, slow yellow diffuse cut
16350-16450	DOLOMITE: off white, pink to tan, light gray firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: dull light blue gray, white to light gray, calcareous, laminated in part, scattered dull yellow fluorescence, very slow dull yellow streaming cut; sample contaminated with lube
16450-16650	DOLOMITE: off white, cream to pink, light brown in part, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; SHALE: dull light blue gray, white to light gray, calcareous, laminated in part, scattered very dull yellow fluorescence, very slow dull yellow streaming cut
16650-16950	DOLOMITE: pink to red, white to cream, light brown in part, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; SHALE: dull light blue gray, white to light gray, calcareous, laminated in part, scattered very dull yellow fluorescence, moderately to slow yellow green streaming cut

Formation tops Sample Interval (in feet)	SAMPLE DESCRIPTION
16950-17000	DOLOMITE: pink to red, cream, light brown in part, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; SHALE: dull light blue gray, white to light gray, calcareous, laminated in part, scattered very dull yellow fluorescence, moderately to slow yellow green streaming cut
17000-17250	DOLOMITE: pink, cream, light brown in part, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; SHALE: dull light blue gray, white to light gray, calcareous, laminated in part, scattered very dull yellow fluorescence, moderately to slow yellow green streaming cut
17250-17350	DOLOMITE: tan, off white, pink, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; SHALE: light blue to green gray, calcareous, laminated in part, scattered yellow fluorescence, slow dull yellow blue white cut
17350-17450	DOLOMITE: tan, off white, light gray, pink, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, scattered yellow fluorescence, slow dull yellow blue white cut
17450-17500	DOLOMITE: tan, off white, light brown, cream, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, light gray, calcareous, laminated in part, scattered yellow fluorescence, slow dull yellow blue white cut
17500-17550	DOLOMITE: tan, off white, light gray, light brown, cream, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, light gray, calcareous, laminated in part, scattered yellow fluorescence, slow dull yellow blue white cut
17550-17650	DOLOMITE: tan, off white, light gray, light brown, cream, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, scattered yellow fluorescence, slow dull yellow blue white cut
17650-17750	DOLOMITE: off white, cream, tan, light brown, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, scattered yellow fluorescence, slow dull yellow blue white cut
17750-17950	DOLOMITE: off white, cream, tan, light brown, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, light gray, calcareous, laminated in part, scattered yellow fluorescence, slow dull yellow blue white cut

Formation tops Sample Interval (in feet)	SAMPLE DESCRIPTION
17950-18150	DOLOMITE: cream, tan to light pink, off white, light brown, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, light gray, calcareous, laminated in part, scattered yellow fluorescence, slow dull yellow blue white cut
18150-18350	DOLOMITE: cream, tan to light pink, off white, light brown, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, light gray, calcareous, laminated in part, scattered yellow fluorescence, slow dull yellow blue white cut; sample contaminated with lube
18350-18550	DOLOMITE: off white, cream, tan, light brown, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, calcareous, laminated in part, scattered yellow fluorescence, slow dull yellow blue white cut
18550-18650	DOLOMITE: cream, tan to light pink, off white, light brown, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, light gray, calcareous, laminated in part, scattered yellow fluorescence, slow blue white streaming cut
18650-19100	DOLOMITE: cream, tan to light pink, off white, light brown, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue to green gray, light gray, calcareous, laminated in part, scattered yellow fluorescence, slow blue white cut
19100-19550	DOLOMITE: off white, light pink, cream, tan, light brown, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; SHALE: light blue to green gray, light gray, calcareous, laminated in part, scattered yellow fluorescence, slow blue white cut
19550-19650	DOLOMITE: off white, pink to tan, light gray firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue gray, white to light gray, calcareous, laminated in part, scattered dull yellow fluorescence, slow dull yellow streaming cut
19650-20100	DOLOMITE: off white, pink to tan, light gray firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue green gray, white to light gray, calcareous, laminated in part, trace nodules pyrite, scattered dull yellow fluorescence, slow dull yellow streaming cut

Formation tops Sample Interval (in feet)	SAMPLE DESCRIPTION
20100-20200	DOLOMITE: off white, pink to tan, light gray firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue green gray, white to light gray, calcareous, laminated in part, scattered dull yellow fluorescence, slow dull yellow streaming cut
20200-20350	DOLOMITE: off white, pink to tan, light gray firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue green gray, white to light gray, calcareous, laminated in part, scattered dull yellow fluorescence, moderately to slow green to white streaming cut
20350-20550	DOLOMITE: off white, tan, light brown, light gray, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue green gray, white to light gray, calcareous, laminated in part, scattered dull yellow fluorescence, moderately to slow green to white streaming cut
20550-20650	DOLOMITE: off white, tan, light gray, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue green gray, white to light gray, calcareous, laminated in part, scattered dull yellow fluorescence, moderately to slow green to white streaming cut
20650-20950	DOLOMITE: off white, tan, firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue green gray, white to light gray, calcareous, laminated in part, scattered dull yellow fluorescence, moderately to slow green to white streaming cut
20950-21050	DOLOMITE: off white, pink to tan, light gray firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue green gray, white to light gray, calcareous, laminated in part, scattered dull yellow fluorescence, moderately to slow green to white streaming cut
21050-21100	DOLOMITE: off white, pink to tan, light gray firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue green gray, white to light gray, calcareous, laminated in part, scattered dull yellow fluorescence, moderately to slow green to white streaming cut; sample contaminated with lube
21100-21900	DOLOMITE: off white, pink to tan, light gray firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue green gray, white to light gray, calcareous, laminated in part, scattered dull yellow fluorescence, slow green streaming cut; sample contaminated with lube

Formation tops Sample Interval (in feet)	SAMPLE DESCRIPTION
21900-22000	DOLOMITE: pink to tan, light gray firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue green gray, white to light gray, calcareous, laminated in part, scattered dull yellow fluorescence, slow green streaming cut; sample contaminated with lube
22000-22100	DOLOMITE: off white, pink to tan, light gray firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue green gray, white to light gray, calcareous, laminated in part, scattered dull yellow fluorescence, slow green streaming cut; sample contaminated with lube
22100-22750	DOLOMITE: off white, pink to tan, light brown, light gray firm to moderately hard, microcrystalline to cryptocrystalline, calcareous; trace SHALE: light blue green gray, white to light gray, calcareous, laminated in part, dull yellow fluorescence, slow green streaming cut; sample contaminated with lube
22750-22900	DOLOMITE: off white, pink to tan, light brown, light gray firm to moderately hard, microcrystalline to cryptocrystalline, calcareous, pyrite; trace SHALE: light blue green gray, white to light gray, calcareous, laminated in part, dull yellow fluorescence, slow green streaming cut; sample contaminated with lube
22900-23475	DOLOMITE: off white, tan, light brown, light gray firm to moderately hard, microcrystalline to cryptocrystalline, calcareous, pyrite; trace SHALE: light blue green gray, white to light gray, calcareous, laminated in part, dull yellow fluorescence, slow green streaming cut; sample contaminated with lube

GEOLOGICAL SUMMARY & CONCLUSIONS

Continental Resources, Inc drilled the Columbus Federal 2-16H in Sections 16, 9, and 4 of Township 153N, Range 101W into the First Bench of the Three Forks. The Well was spud using Cyclone 4 on October 25, 2013 at a surface location of 2508' FNL, and 222' FEL.

The surface was pre-drilled with surface casing set at 1965'MD. From there the 8 3/4" vertical portion was drilled to Kick Off Point (KOP) at 10135'MD. Leam provided Directional Drilling, and Measurement While Drilling (MWD) services. NorAm Wellsite Services provided both Mud Logging and Geosteering Services. No trips were necessary in the vertical.

The curve was drilled in 23.5 hours October 28-29, 2013. The wellbore entered the Three Forks top at 10726'MD, 10568'TVD, and landed 18' into the First Bench at 10877'MD, 10586'TVD.

The Lateral began December 2, 2013 at 18:45 hours. Drilling north under the river, formation took a dive down, as the wellbore struck the Lower Bakken Silt/Pronghorn calcareous shale. Cyclone 4 pulled back to 12560'MD to begin Sidetrack 1 on December 4th, 2013 at 10:00 hours. The first and only trip occurred at 16299'MD for a new Bit and Motor on December 7th, 2013 at 20:30 hours, and resumed drilling December 8th, 2013 at 17:52 hours.
The Columbus Federal 2-16 reached TD of 23,475'MD at 13:13 hours on December 13, 2013. The Columbus Federal 2-16H bottom hole location is 236.1' FNL & 1348.94' FEL Section 4, T153N, R101W.

NEWSCO
International Energy Services Inc.

Continental Resources	33326	8/13/2013
Company	Job Number	Date
Cyclone 4	Columbus Federal 2-16H	McKenzie Co., ND
Rig	Well Name	County & State

Surveyed from depth of: Surface to 1917'

GL to KB: 20'

Type of Survey: Nvader/MWD

True North

Directional Supervisor/Surveyor: David Hopper

The data and calculations for this survey have been checked by me and conform to the standards and procedures set forth by Newsco International Energy Services Inc. This report represents a true and correct directional survey of this well based on the original data obtained at the well site. Wellbore coodinates are calculated using minimum curvature .

Certified by:

Joshua Mahoney

NEWSCO
Directional Services U.S.A.

CLIENT:	Continental	**NEWSCO JOB #**	33326
DATE:	8/13/2013	**WELL NAME:**	Columbus Federal 2-16H
STATE:	North Dakota	**RIG:**	Cyclone 4
FIELD:	Baker	**County:**	Mckenzie

TIE-ON DATA

C/L (10,30,100):	100.00	Feet
MEASURED DEPTH:	0.00	Feet
TVD:	0.00	Feet
INCLINATION:	0.00	Deg.
AZIMUTH:	0.00	Deg.
N(+) S(-):	0.00	Feet
E(+) W(-):	0.00	Feet
V/SECTION PLANE:	0.00	Deg.
V/SECTION :	0.00	Feet

TARGET DATA

SENSOR TO BIT:	47.00
KB TO GL :	6.00
Cyclone 4:	20.00

All depths are measured from survey tool to Big Rigs KB

#	DEPTH	INC	AZM	CRSL	TVD	VS	+N/S-	+E/W-	DLS	/100 FEET VBUR	WALK	TF
1	142.00	0.20	326.80	142.00	142.00	0.21	0.21	-0.14	0.14	0.14	-23.38	MAG
2	220.00	0.20	353.20	78.00	220.00	0.46	0.46	-0.23	0.12	0.00	33.85	MAG
3	301.00	0.20	353.90	81.00	301.00	0.74	0.74	-0.26	0.00	0.00	0.86	MAG
4	381.00	0.10	327.50	80.00	381.00	0.94	0.94	-0.31	0.15	-0.13	-33.00	MAG
5	471.00	0.20	291.70	90.00	471.00	1.06	1.06	-0.50	0.15	0.11	-39.78	MAG
6	563.00	0.10	310.60	92.00	563.00	1.17	1.17	-0.71	0.12	-0.11	20.54	MAG
7	655.00	0.20	294.10	92.00	655.00	1.29	1.29	-0.92	0.12	0.11	-17.93	MAG
8	748.00	0.20	310.30	93.00	748.00	1.46	1.46	-1.19	0.06	0.00	17.42	MAG
9	843.00	0.20	295.90	95.00	843.00	1.64	1.64	-1.46	0.05	0.00	-15.16	MAG
10	934.00	0.10	272.70	91.00	934.00	1.71	1.71	-1.69	0.13	-0.11	-25.49	MAG
11	1026.00	0.20	237.90	92.00	1026.00	1.63	1.63	-1.90	0.14	0.11	-37.83	MAG
12	1120.00	0.40	192.50	94.00	1119.99	1.22	1.22	-2.11	0.31	0.21	-48.30	MAG
13	1213.00	0.40	241.40	93.00	1212.99	0.75	0.75	-2.47	0.36	0.00	52.58	MAG
14	1306.00	0.50	244.20	93.00	1305.99	0.42	0.42	-3.12	0.11	0.11	3.01	MAG
15	1396.00	0.40	259.70	90.00	1395.99	0.19	0.19	-3.78	0.17	-0.11	17.22	MAG
16	1490.00	0.30	281.10	94.00	1489.99	0.18	0.18	-4.34	0.17	-0.11	22.77	MAG
17	1583.00	0.40	271.30	93.00	1582.98	0.24	0.24	-4.91	0.12	0.11	-10.54	MAG
18	1677.00	0.20	323.00	94.00	1676.98	0.37	0.37	-5.34	0.34	-0.21	55.00	MAG
19	1769.00	0.20	327.20	92.00	1768.98	0.64	0.64	-5.52	0.02	0.00	4.57	MAG
20	1864.00	0.10	269.90	95.00	1863.98	0.78	0.78	-5.69	0.18	-0.11	-60.32	MAG
21	1917.00	0.30	262.10	53.00	1916.98	0.76	0.76	-5.88	0.38	0.38	-14.72	MAG
22												
23												
24												
25												
26												
27												
28												

#				CRSL	TVD	VS	+N/S-	+E/W-	DLS	/100 FEET VBUR	WALK	TF
28												
29												
30												
31												
32												
33												
34												
35												
36												
37												
38												
39												
40												
41												

LEAM Drilling Systems LLC

Survey Certification Sheet

Continental Resources	20131225D-ND	01/16/2014
Company	Job Number	Date
Section 16, T153N, R101W	Columbus Federal 2-16H	McKenzie County, ND
LOCATION	Well Name	County & State

Enclosed, please find the survey performed on the referenced well by Leam Drilling Systems, LLC. Other information required by your office is as follows:

Name & Title Of Surveyor	Drainhole Number	Surveyed Depths	Dates Performed	Type of Survey
Randy W. Rakowitz	OH	1,983'- 13,133'	10/29/2013-12/04/2013	MWD
Randy W. Rakowitz	ST	12,583'- 23,475'	12/04/2013-12/13/2013	MWD

The data and calculations for this survey have been checked and conform to the standards and procedures set forth by LEAM Drilling Systems, LLC. This report represents a true and correct Survey of this well, to the best of our knowledge, based on the original data obtained at the well site.

Nora Tucker
Well Planner

Physical & Mailing: 2010 East Davis, Conroe, TX 77301

(936) 756-7577 • (936) 756-7595 Fax • 1 (800) 756-7504

LEAM Drilling Systems, Inc.
2027A Airport Rd.
Conroe, TX 77301
(936) 569-1315

Survey Certification Form

State of North Dakota
McKenzie County

I, Randy W. Rakowitz, an employee of LEAM Drilling Systems, Inc., hereby certify that on the dates beginning on 10/29/2013 and ending on 12/4/2013, I conducted or supervised the taking of an MWD Survey from a beginning depth of 1,983' ft. MD to an ending depth of 13,133' ft. MD; that the depth is true, correct, complete, and within the limitations of the tools as set forth by LEAM Drilling Systems, Inc., that I am authorized and qualified to make this report; that this survey was conducted in reference to True North with a declination of 8.52° with respect to the well Columbus Federal 2-16H (OH) located in McKenzie County, North Dakota as requested by Continental Resources.

Randy W. Rakowitz
Sr. MWD Operations Coordinator

LEAM Drilling Systems, Inc.
2027A Airport Rd.
Conroe, TX 77301
(936) 569-1315

Survey Certification Form

State of North Dakota
McKenzie County

I, Randy W. Rakowitz, an employee of LEAM Drilling Systems, Inc., hereby certify that on the dates beginning on 12/4/2013 and ending on 12/13/2013, I conducted or supervised the taking of an MWD Survey from a beginning depth of 12,583' ft. MD to an ending depth of 23,475' ft. MD; that the depth is true, correct, complete, and within the limitations of the tools as set forth by LEAM Drilling Systems, Inc., that I am authorized and qualified to make this report; that this survey was conducted in reference to True North with a declination of 8.39° with respect to the well Columbus Federal 2-16H (ST) located in McKenzie County, North Dakota as requested by Continental Resources.

Randy W. Rakowitz
Sr. MWD Operations Coordinator

LEAM Drilling Systems LLC

Survey Report

OH

Company:	Continental Resources	**Local Co-ordinate Reference:**	Well 2-16H
Project:	McKenzie County, ND	**TVD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Site:	Columbus Federal 2	**MD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Well:	2-16H	**North Reference:**	True
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	OH	**Database:**	EDM 5000.1 Multi User DB

Project McKenzie County, ND

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	North Dakota Northern Zone		

Site Columbus Federal 2, Sec. 16 - T153N - R101W

Site Position:		**Northing:**	408,198.98 usft	**Latitude:**	48° 4' 31.258 N
From:	Lat/Long	**Easting:**	1,193,822.32 usft	**Longitude:**	103° 40' 11.343 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	0 "	**Grid Convergence:**	-2.36 °

Well 2-16H

Well Position	**+N/-S**	0.00 usft	**Northing:**	408,198.98 usft	**Latitude:**	48° 4' 31.258 N
	+E/-W	0.00 usft	**Easting:**	1,193,822.32 usft	**Longitude:**	103° 40' 11.343 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	usft	**Ground Level:**	1,920.00 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2013	10/11/13	8.52	72.97	56,411

Design OH

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	355.08

Survey Program **Date** 01/16/14

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
142.00	1,917.00	Survey #1-NEWSCO (OH)	MWD-ISCWSA	MWD - Standard
1,983.00	13,057.00	Survey #2 (OH)	LEAM MWD-ADJ	MWD - Standard
13,133.00	13,133.00	Survey #3 (OH)	Project	Projection

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,917.00	0.30	262.10	1,916.98	0.75	-5.87	1.25	0.38	0.38	-14.72
1,983.00	0.70	256.10	1,982.98	0.63	-6.44	1.18	0.61	0.61	-9.09
2,077.00	1.30	241.20	2,076.96	-0.02	-7.93	0.66	0.69	0.64	-15.85
2,170.00	1.30	238.70	2,169.94	-1.08	-9.76	-0.24	0.06	0.00	-2.69
2,263.00	1.60	243.70	2,262.91	-2.20	-11.82	-1.18	0.35	0.32	5.38
2,357.00	1.70	244.90	2,356.87	-3.37	-14.26	-2.14	0.11	0.11	1.28
2,450.00	2.10	226.30	2,449.82	-5.13	-16.74	-3.68	0.78	0.43	-20.00
2,543.00	2.30	211.90	2,542.75	-7.90	-18.96	-6.24	0.63	0.22	-15.48
2,638.00	2.20	188.10	2,637.68	-11.32	-20.22	-9.54	0.98	-0.11	-25.05

Company:	Continental Resources	**Local Co-ordinate Reference:**	Well 2-16H
Project:	McKenzie County, ND	**TVD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Site:	Columbus Federal 2	**MD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Well:	2-16H	**North Reference:**	True
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	OH	**Database:**	EDM 5000.1 Multi User DB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,732.00	2.20	173.20	2,731.61	-14.90	-20.26	-13.10	0.61	0.00	-15.85
2,825.00	1.80	154.00	2,824.56	-17.98	-19.41	-16.25	0.83	-0.43	-20.65
2,918.00	1.10	117.80	2,917.53	-19.71	-17.98	-18.10	1.20	-0.75	-38.92
3,011.00	1.40	63.50	3,010.51	-19.62	-16.18	-18.16	1.26	0.32	-58.39
3,105.00	1.70	61.20	3,104.48	-18.44	-13.93	-17.17	0.33	0.32	-2.45
3,198.00	1.60	64.70	3,197.44	-17.22	-11.54	-16.16	0.15	-0.11	3.76
3,291.00	1.70	68.40	3,290.40	-16.15	-9.09	-15.32	0.16	0.11	3.98
3,384.00	1.60	72.10	3,383.36	-15.25	-6.57	-14.63	0.16	-0.11	3.98
3,477.00	1.30	68.40	3,476.33	-14.46	-4.35	-14.03	0.34	-0.32	-3.98
3,571.00	1.10	65.10	3,570.31	-13.69	-2.54	-13.42	0.23	-0.21	-3.51
3,664.00	0.80	76.70	3,663.30	-13.16	-1.10	-13.02	0.38	-0.32	12.47
3,758.00	0.60	77.60	3,757.29	-12.91	0.02	-12.86	0.21	-0.21	0.96
3,851.00	0.50	74.90	3,850.28	-12.70	0.89	-12.73	0.11	-0.11	-2.90
3,944.00	0.60	78.40	3,943.28	-12.49	1.75	-12.60	0.11	0.11	3.76
4,038.00	0.40	74.40	4,037.28	-12.31	2.55	-12.48	0.22	-0.21	-4.26
4,132.00	0.40	89.50	4,131.27	-12.21	3.20	-12.44	0.11	0.00	16.06
4,225.00	0.40	91.40	4,224.27	-12.22	3.85	-12.50	0.01	0.00	2.04
4,319.00	0.40	103.70	4,318.27	-12.31	4.49	-12.64	0.09	0.00	13.09
4,412.00	0.30	102.50	4,411.27	-12.43	5.05	-12.82	0.11	-0.11	-1.29
4,505.00	0.30	147.30	4,504.27	-12.69	5.42	-13.11	0.25	0.00	48.17
4,599.00	0.40	191.60	4,598.27	-13.22	5.48	-13.64	0.30	0.11	47.13
4,692.00	0.40	214.70	4,691.26	-13.81	5.23	-14.20	0.17	0.00	24.84
4,785.00	0.50	181.80	4,784.26	-14.48	5.03	-14.86	0.29	0.11	-35.38
4,879.00	0.50	145.60	4,878.26	-15.23	5.25	-15.62	0.33	0.00	-38.51
4,972.00	0.30	118.90	4,971.26	-15.68	5.70	-16.11	0.29	-0.22	-28.71
5,066.00	0.60	36.80	5,065.25	-15.40	6.21	-15.88	0.67	0.32	-87.34
5,159.00	0.90	61.40	5,158.24	-14.66	7.14	-15.22	0.47	0.32	26.45
5,253.00	0.90	67.50	5,252.23	-14.03	8.47	-14.70	0.10	0.00	6.49
5,347.00	1.00	83.00	5,346.22	-13.65	9.97	-14.45	0.29	0.11	16.49
5,440.00	1.20	76.90	5,439.20	-13.33	11.72	-14.28	0.25	0.22	-6.56
5,533.00	1.40	65.40	5,532.18	-12.63	13.70	-13.76	0.35	0.22	-12.37
5,627.00	1.80	55.40	5,626.14	-11.32	15.96	-12.64	0.52	0.43	-10.64
5,720.00	1.80	46.60	5,719.10	-9.48	18.22	-11.01	0.30	0.00	-9.46
5,813.00	2.00	56.10	5,812.05	-7.57	20.63	-9.32	0.40	0.22	10.22
5,907.00	1.80	57.50	5,905.99	-5.87	23.24	-7.84	0.22	-0.21	1.49
6,000.00	1.00	48.00	5,998.97	-4.54	25.07	-6.67	0.89	-0.86	-10.22
6,094.00	0.90	44.00	6,092.95	-3.46	26.20	-5.69	0.13	-0.11	-4.26
6,187.00	0.10	18.10	6,185.95	-2.86	26.73	-5.14	0.87	-0.86	-27.85
6,281.00	0.40	343.70	6,279.95	-2.46	26.66	-4.74	0.34	0.32	-36.60
6,375.00	0.30	36.10	6,373.95	-1.95	26.71	-4.23	0.34	-0.11	55.74
6,469.00	0.30	336.70	6,467.95	-1.52	26.76	-3.81	0.32	0.00	-63.19
6,562.00	0.50	318.70	6,560.94	-1.00	26.40	-3.26	0.25	0.22	-19.35
6,655.00	0.40	312.80	6,653.94	-0.47	25.89	-2.69	0.12	-0.11	-6.34

Company:	Continental Resources	**Local Co-ordinate Reference:**	Well 2-16H
Project:	McKenzie County, ND	**TVD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Site:	Columbus Federal 2	**MD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Well:	2-16H	**North Reference:**	True
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	OH	**Database:**	EDM 5000.1 Multi User DB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,749.00	0.10	343.50	6,747.94	-0.17	25.63	-2.37	0.34	-0.32	32.66
6,843.00	0.30	69.10	6,841.94	0.00	25.83	-2.22	0.33	0.21	91.06
6,936.00	0.40	68.90	6,934.94	0.20	26.36	-2.06	0.11	0.11	-0.22
7,030.00	0.50	325.90	7,028.94	0.66	26.44	-1.61	0.75	0.11	-109.57
7,123.00	1.00	319.60	7,121.93	1.61	25.69	-0.60	0.54	0.54	-6.77
7,216.00	1.00	319.80	7,214.91	2.85	24.64	0.73	0.00	0.00	0.22
7,309.00	0.90	312.80	7,307.90	3.97	23.58	1.93	0.16	-0.11	-7.53
7,403.00	0.80	301.90	7,401.89	4.82	22.48	2.87	0.20	-0.11	-11.60
7,497.00	0.90	287.30	7,495.88	5.38	21.22	3.54	0.25	0.11	-15.53
7,590.00	0.60	274.80	7,588.87	5.64	20.03	3.90	0.37	-0.32	-13.44
7,683.00	0.60	270.70	7,681.87	5.69	19.06	4.03	0.05	0.00	-4.41
7,777.00	0.50	267.80	7,775.86	5.68	18.16	4.10	0.11	-0.11	-3.09
7,870.00	0.70	252.30	7,868.86	5.49	17.21	3.99	0.28	0.22	-16.67
7,963.00	0.80	262.70	7,961.85	5.23	16.03	3.84	0.18	0.11	11.18
8,056.00	0.40	255.60	8,054.84	5.07	15.07	3.76	0.44	-0.43	-7.63
8,149.00	0.40	252.50	8,147.84	4.89	14.45	3.63	0.02	0.00	-3.33
8,243.00	0.30	237.90	8,241.84	4.66	13.92	3.45	0.14	-0.11	-15.53
8,336.00	0.40	248.60	8,334.84	4.41	13.42	3.25	0.13	0.11	11.51
8,429.00	0.60	252.30	8,427.83	4.15	12.65	3.05	0.22	0.22	3.98
8,522.00	0.60	273.40	8,520.83	4.03	11.70	3.01	0.24	0.00	22.69
8,616.00	0.70	285.00	8,614.82	4.21	10.65	3.28	0.18	0.11	12.34
8,709.00	0.70	297.60	8,707.82	4.62	9.60	3.78	0.17	0.00	13.55
8,803.00	0.80	289.40	8,801.81	5.10	8.47	4.35	0.16	0.11	-8.72
8,896.00	1.00	280.10	8,894.80	5.46	7.06	4.83	0.27	0.22	-10.00
8,990.00	0.60	286.20	8,988.79	5.74	5.78	5.22	0.43	-0.43	6.49
9,083.00	0.40	301.10	9,081.78	6.04	5.04	5.59	0.25	-0.22	16.02
9,176.00	0.40	291.30	9,174.78	6.33	4.46	5.92	0.07	0.00	-10.54
9,270.00	0.40	288.70	9,268.78	6.55	3.84	6.20	0.02	0.00	-2.77
9,363.00	0.40	277.10	9,361.78	6.70	3.21	6.40	0.09	0.00	-12.47
9,457.00	0.40	260.40	9,455.78	6.68	2.56	6.44	0.12	0.00	-17.77
9,550.00	0.40	253.20	9,548.77	6.54	1.93	6.35	0.05	0.00	-7.74
9,643.00	0.50	253.50	9,641.77	6.33	1.23	6.20	0.11	0.11	0.32
9,736.00	0.30	222.60	9,734.77	6.03	0.68	5.95	0.31	-0.22	-33.23
9,830.00	0.30	244.20	9,828.77	5.74	0.29	5.70	0.12	0.00	22.98
9,923.00	0.30	256.70	9,921.77	5.58	-0.17	5.58	0.07	0.00	13.44
10,016.00	0.40	274.30	10,014.76	5.55	-0.73	5.59	0.16	0.11	18.92
10,081.00	0.40	256.90	10,079.76	5.52	-1.18	5.60	0.19	0.00	-26.77
10,112.00	0.40	260.70	10,110.76	5.47	-1.39	5.57	0.09	0.00	12.26
10,143.00	2.00	317.50	10,141.75	5.85	-1.86	5.99	5.85	5.16	183.23
10,174.00	7.10	328.00	10,172.65	7.88	-3.24	8.13	16.60	16.45	33.87
10,205.00	12.10	327.90	10,203.20	12.26	-5.98	12.73	16.13	16.13	-0.32
10,236.00	16.70	325.40	10,233.22	18.68	-10.24	19.49	14.97	14.84	-8.06
10,267.00	21.20	321.20	10,262.53	26.72	-16.29	28.02	15.16	14.52	-13.55

Company:	Continental Resources	**Local Co-ordinate Reference:**	Well 2-16H
Project:	McKenzie County, ND	**TVD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Site:	Columbus Federal 2	**MD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Well:	2-16H	**North Reference:**	True
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	OH	**Database:**	EDM 5000.1 Multi User DB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,298.00	24.40	318.70	10,291.11	35.90	-24.03	37.83	10.78	10.32	-8.06
10,329.00	26.90	315.20	10,319.05	45.69	-33.20	48.37	9.43	8.06	-11.29
10,361.00	29.80	312.00	10,347.21	56.15	-44.21	59.74	10.23	9.06	-10.00
10,392.00	31.70	314.30	10,373.86	66.99	-55.77	71.53	7.21	6.13	7.42
10,423.00	36.60	313.80	10,399.50	79.09	-68.27	84.65	15.83	15.81	-1.61
10,454.00	40.30	312.40	10,423.78	92.25	-82.35	98.97	12.26	11.94	-4.52
10,485.00	44.10	309.80	10,446.74	105.92	-98.05	113.94	13.49	12.26	-8.39
10,516.00	47.80	307.80	10,468.29	119.87	-115.42	129.32	12.80	11.94	-6.45
10,547.00	51.60	307.30	10,488.34	134.27	-134.16	145.28	12.32	12.26	-1.61
10,578.00	56.30	308.40	10,506.58	149.65	-153.94	162.30	15.43	15.16	3.55
10,609.00	59.90	310.10	10,522.96	166.31	-174.31	180.64	12.51	11.61	5.48
10,641.00	62.80	311.90	10,538.30	184.73	-195.50	200.82	10.32	9.06	5.63
10,672.00	66.50	313.10	10,551.57	203.66	-216.14	221.44	12.44	11.94	3.87
10,703.00	70.60	313.80	10,562.90	223.50	-237.08	243.01	13.39	13.23	2.26
10,734.00	75.30	313.50	10,571.99	243.95	-258.52	265.22	15.19	15.16	-0.97
10,765.00	79.40	312.40	10,578.78	264.55	-280.66	287.65	13.67	13.23	-3.55
10,796.00	84.20	311.00	10,583.20	284.95	-303.56	309.94	16.12	15.48	-4.52
10,821.00	87.50	310.80	10,585.01	301.28	-322.41	327.82	13.22	13.20	-0.80
10,873.00	89.00	310.80	10,586.59	335.24	-361.75	365.03	2.88	2.88	0.00
10,968.00	88.00	311.90	10,589.08	397.98	-433.04	433.65	1.56	-1.05	1.16
11,063.00	89.70	314.70	10,590.99	463.11	-502.16	504.47	3.45	1.79	2.95
11,158.00	91.40	317.30	10,590.08	531.43	-568.14	578.20	3.27	1.79	2.74
11,253.00	92.70	321.40	10,586.68	603.45	-629.97	655.25	4.52	1.37	4.32
11,348.00	91.20	324.40	10,583.44	679.16	-687.23	735.60	3.53	-1.58	3.16
11,443.00	90.90	325.90	10,581.70	757.11	-741.51	817.91	1.61	-0.32	1.58
11,538.00	90.90	329.50	10,580.21	837.39	-792.26	902.25	3.79	0.00	3.79
11,633.00	90.20	332.30	10,579.30	920.38	-838.45	988.90	3.04	-0.74	2.95
11,728.00	88.80	334.90	10,580.13	1,005.46	-880.69	1,077.29	3.11	-1.47	2.74
11,823.00	88.50	338.40	10,582.37	1,092.64	-918.32	1,167.38	3.70	-0.32	3.68
11,918.00	90.20	340.50	10,583.44	1,181.58	-951.66	1,258.85	2.84	1.79	2.21
12,013.00	90.30	343.00	10,583.03	1,271.80	-981.41	1,351.28	2.63	0.11	2.63
12,108.00	90.80	345.60	10,582.12	1,363.24	-1,007.12	1,444.59	2.79	0.53	2.74
12,203.00	90.90	348.30	10,580.71	1,455.77	-1,028.56	1,538.62	2.84	0.11	2.84
12,298.00	90.60	350.50	10,579.46	1,549.13	-1,046.04	1,633.14	2.34	-0.32	2.32
12,393.00	88.10	353.40	10,580.54	1,643.17	-1,059.34	1,727.97	4.03	-2.63	3.05
12,488.00	89.50	355.60	10,582.53	1,737.71	-1,068.44	1,822.94	2.74	1.47	2.32
12,583.00	91.20	358.30	10,581.95	1,832.56	-1,073.49	1,917.87	3.36	1.79	2.84
12,678.00	89.20	0.70	10,581.62	1,927.54	-1,074.32	2,012.58	3.29	-2.11	2.53
12,772.00	90.20	0.60	10,582.11	2,021.53	-1,073.25	2,106.13	1.07	1.06	-0.11
12,868.00	89.70	0.60	10,582.19	2,117.53	-1,072.25	2,201.69	0.52	-0.52	0.00
12,962.00	90.20	0.90	10,582.28	2,211.52	-1,071.02	2,295.23	0.62	0.53	0.32
13,057.00	87.80	0.20	10,583.93	2,306.49	-1,070.11	2,389.77	2.63	-2.53	-0.74
13,133.00	87.80	0.20	10,586.85	2,382.44	-1,069.84	2,465.41	0.00	0.00	0.00
Projection to Bit									

LEAM Drilling Systems LLC

Survey Report

ST

Company:	Continental Resources	**Local Co-ordinate Reference:**	Well 2-16H
Project:	McKenzie County, ND	**TVD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Site:	Columbus Federal 2	**MD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Well:	2-16H	**North Reference:**	True
Wellbore:	ST01	**Survey Calculation Method:**	Minimum Curvature
Design:	ST01	**Database:**	EDM 5000.1 Multi User DB

Project McKenzie County, ND

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	North Dakota Northern Zone		

Site Columbus Federal 2, Sec. 16 - T153N - R101W

Site Position:		**Northing:**	408,198.98 usft	**Latitude:**	48° 4' 31.258 N
From:	Lat/Long	**Easting:**	1,193,822.32 usft	**Longitude:**	103° 40' 11.343 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	0 "	**Grid Convergence:**	-2.36 °

Well 2-16H

Well Position	**+N/-S**	0.00 usft	**Northing:**	408,198.98 usft	**Latitude:**	48° 4' 31.258 N
	+E/-W	0.00 usft	**Easting:**	1,193,822.32 usft	**Longitude:**	103° 40' 11.343 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	usft	**Ground Level:**	1,920.00 usft

Wellbore ST01

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/06/13	8.39	73.01	56,485

Design ST01

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	12,488.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	354.94

Survey Program **Date** 01/16/14

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
142.00	1,917.00	Survey #1-NEWSCO (OH)	MWD-ISCWSA	MWD - Standard
1,983.00	12,488.00	Survey #2 (OH)	LEAM MWD-ADJ	MWD - Standard
12,583.00	23,427.00	Survey #1 (ST01)	LEAM MWD-ADJ	MWD - Standard
23,475.00	23,475.00	Survey #2 (ST01)	Project	Projection

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,488.00	89.50	355.60	10,582.53	1,737.71	-1,068.44	1,825.22	2.74	1.47	2.32
12,583.00	85.30	355.60	10,586.84	1,832.31	-1,075.72	1,920.09	4.42	-4.42	0.00
12,678.00	88.20	354.60	10,592.22	1,926.80	-1,083.82	2,014.93	3.23	3.05	-1.05
12,772.00	90.50	355.80	10,593.29	2,020.45	-1,091.68	2,108.91	2.76	2.45	1.28
12,868.00	90.80	359.00	10,592.20	2,116.34	-1,096.04	2,204.81	3.35	0.31	3.33
12,962.00	90.00	0.20	10,591.55	2,210.33	-1,096.69	2,298.49	1.53	-0.85	1.28
13,057.00	88.30	1.10	10,592.95	2,305.31	-1,095.62	2,393.00	2.02	-1.79	0.95
13,152.00	88.80	0.70	10,595.36	2,400.27	-1,094.12	2,487.46	0.67	0.53	-0.42

Company:	Continental Resources	**Local Co-ordinate Reference:**	Well 2-16H
Project:	McKenzie County, ND	**TVD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Site:	Columbus Federal 2	**MD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Well:	2-16H	**North Reference:**	True
Wellbore:	ST01	**Survey Calculation Method:**	Minimum Curvature
Design:	ST01	**Database:**	EDM 5000.1 Multi User DB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,247.00	89.50	0.70	10,596.77	2,495.25	-1,092.96	2,581.97	0.74	0.74	0.00
13,342.00	88.30	0.70	10,598.59	2,590.22	-1,091.80	2,676.47	1.26	-1.26	0.00
13,434.00	89.50	1.30	10,600.36	2,682.19	-1,090.20	2,767.93	1.46	1.30	0.65
13,526.00	89.30	1.40	10,601.32	2,774.16	-1,088.03	2,859.35	0.24	-0.22	0.11
13,618.00	88.40	1.60	10,603.17	2,866.11	-1,085.62	2,950.73	1.00	-0.98	0.22
13,710.00	88.40	1.60	10,605.74	2,958.04	-1,083.06	3,042.07	0.00	0.00	0.00
13,802.00	88.10	1.60	10,608.55	3,049.96	-1,080.49	3,133.41	0.33	-0.33	0.00
13,894.00	89.40	2.30	10,610.55	3,141.88	-1,077.36	3,224.70	1.60	1.41	0.76
13,986.00	90.10	1.10	10,610.95	3,233.84	-1,074.63	3,316.05	1.51	0.76	-1.30
14,078.00	90.50	1.30	10,610.47	3,325.81	-1,072.70	3,407.50	0.49	0.43	0.22
14,169.00	88.80	1.10	10,611.03	3,416.79	-1,070.80	3,497.96	1.88	-1.87	-0.22
14,261.00	90.20	359.90	10,611.83	3,508.78	-1,069.99	3,589.51	2.00	1.52	-1.30
14,354.00	88.40	359.30	10,612.97	3,601.76	-1,070.64	3,682.20	2.04	-1.94	-0.65
14,446.00	91.00	359.50	10,613.45	3,693.75	-1,071.61	3,773.91	2.83	2.83	0.22
14,538.00	89.40	358.80	10,613.13	3,785.74	-1,072.97	3,865.66	1.90	-1.74	-0.76
14,631.00	88.70	357.80	10,614.67	3,878.68	-1,075.73	3,958.48	1.31	-0.75	-1.08
14,723.00	91.50	359.20	10,614.51	3,970.64	-1,078.14	4,050.29	3.40	3.04	1.52
14,816.00	91.30	358.60	10,612.24	4,063.59	-1,079.92	4,143.04	0.68	-0.22	-0.65
14,908.00	91.30	358.50	10,610.15	4,155.54	-1,082.25	4,234.83	0.11	0.00	-0.11
15,001.00	90.40	0.20	10,608.77	4,248.52	-1,083.30	4,327.54	2.07	-0.97	1.83
15,093.00	91.40	0.20	10,607.33	4,340.50	-1,082.98	4,419.14	1.09	1.09	0.00
15,186.00	89.30	0.70	10,606.76	4,433.49	-1,082.25	4,511.71	2.32	-2.26	0.54
15,279.00	89.60	0.70	10,607.65	4,526.48	-1,081.12	4,604.23	0.32	0.32	0.00
15,372.00	91.10	359.00	10,607.08	4,619.48	-1,081.36	4,696.88	2.44	1.61	-1.83
15,465.00	91.70	358.80	10,604.81	4,712.43	-1,083.14	4,789.63	0.68	0.65	-0.22
15,557.00	90.00	359.50	10,603.44	4,804.41	-1,084.51	4,881.37	2.00	-1.85	0.76
15,649.00	90.80	359.70	10,602.80	4,896.40	-1,085.15	4,973.06	0.90	0.87	0.22
15,741.00	91.30	359.50	10,601.12	4,988.38	-1,085.79	5,064.74	0.59	0.54	-0.22
15,835.00	90.70	359.30	10,599.48	5,082.36	-1,086.78	5,158.44	0.67	-0.64	-0.21
15,927.00	89.90	359.90	10,598.99	5,174.36	-1,087.42	5,250.13	1.09	-0.87	0.65
16,020.00	90.30	359.90	10,598.83	5,267.36	-1,087.58	5,342.79	0.43	0.43	0.00
16,115.00	89.40	359.70	10,599.08	5,362.36	-1,087.91	5,437.44	0.97	-0.95	-0.21
16,210.00	89.00	359.30	10,600.41	5,457.34	-1,088.74	5,532.13	0.60	-0.42	-0.42
16,306.00	89.20	358.60	10,601.92	5,553.31	-1,090.50	5,627.88	0.76	0.21	-0.73
16,401.00	90.50	0.00	10,602.16	5,648.30	-1,091.66	5,722.60	2.01	1.37	1.47
16,496.00	91.30	359.90	10,600.67	5,743.29	-1,091.75	5,817.23	0.85	0.84	-0.11
16,590.00	90.50	359.20	10,599.20	5,837.27	-1,092.48	5,910.91	1.13	-0.85	-0.74
16,685.00	91.30	0.00	10,597.70	5,932.26	-1,093.15	6,005.58	1.19	0.84	0.84
16,780.00	91.20	359.00	10,595.63	6,027.23	-1,093.98	6,100.26	1.06	-0.11	-1.05
16,875.00	92.10	358.50	10,592.90	6,122.17	-1,096.05	6,195.01	1.08	0.95	-0.53
16,970.00	92.00	357.60	10,589.50	6,217.05	-1,099.28	6,289.81	0.95	-0.11	-0.95
17,065.00	92.10	358.10	10,586.10	6,311.92	-1,102.84	6,384.62	0.54	0.11	0.53
17,160.00	92.10	356.90	10,582.62	6,406.77	-1,106.98	6,479.46	1.26	0.00	-1.26

Company:	Continental Resources	**Local Co-ordinate Reference:**	Well 2-16H
Project:	McKenzie County, ND	**TVD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Site:	Columbus Federal 2	**MD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Well:	2-16H	**North Reference:**	True
Wellbore:	ST01	**Survey Calculation Method:**	Minimum Curvature
Design:	ST01	**Database:**	EDM 5000.1 Multi User DB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
17,255.00	91.50	359.30	10,579.63	6,501.66	-1,110.13	6,574.26	2.60	-0.63	2.53
17,350.00	92.90	0.90	10,575.99	6,596.58	-1,109.96	6,668.80	2.24	1.47	1.68
17,445.00	90.70	0.90	10,573.00	6,691.52	-1,108.47	6,763.23	2.32	-2.32	0.00
17,540.00	90.80	0.40	10,571.76	6,786.51	-1,107.39	6,857.75	0.54	0.11	-0.53
17,635.00	90.00	359.50	10,571.10	6,881.50	-1,107.48	6,952.39	1.27	-0.84	-0.95
17,730.00	90.00	359.70	10,571.10	6,976.50	-1,108.14	7,047.07	0.21	0.00	0.21
17,824.00	90.00	359.00	10,571.10	7,070.49	-1,109.21	7,140.79	0.74	0.00	-0.74
17,919.00	89.90	358.10	10,571.18	7,165.46	-1,111.61	7,235.60	0.95	-0.11	-0.95
18,014.00	90.00	358.30	10,571.26	7,260.41	-1,114.59	7,330.45	0.24	0.11	0.21
18,109.00	91.40	0.00	10,570.10	7,355.39	-1,116.00	7,425.18	2.32	1.47	1.79
18,204.00	90.00	359.30	10,568.94	7,450.38	-1,116.58	7,519.85	1.65	-1.47	-0.74
18,299.00	92.20	0.20	10,567.12	7,545.35	-1,117.00	7,614.49	2.50	2.32	0.95
18,394.00	90.70	0.60	10,564.71	7,640.32	-1,116.34	7,709.02	1.63	-1.58	0.42
18,489.00	89.20	0.60	10,564.79	7,735.31	-1,115.34	7,803.56	1.58	-1.58	0.00
18,584.00	89.30	0.70	10,566.04	7,830.30	-1,114.26	7,898.08	0.15	0.11	0.11
18,679.00	90.20	0.70	10,566.45	7,925.29	-1,113.10	7,992.60	0.95	0.95	0.00
18,774.00	90.00	0.90	10,566.29	8,020.28	-1,111.78	8,087.10	0.30	-0.21	0.21
18,869.00	88.90	0.60	10,567.20	8,115.26	-1,110.53	8,181.60	1.20	-1.16	-0.32
18,964.00	89.80	1.30	10,568.28	8,210.24	-1,108.96	8,276.07	1.20	0.95	0.74
19,059.00	90.60	0.60	10,567.95	8,305.23	-1,107.38	8,370.55	1.12	0.84	-0.74
19,154.00	90.70	1.10	10,566.87	8,400.21	-1,105.97	8,465.04	0.54	0.11	0.53
19,249.00	89.50	0.20	10,566.70	8,495.20	-1,104.90	8,559.56	1.58	-1.26	-0.95
19,344.00	90.60	1.80	10,566.62	8,590.18	-1,103.24	8,654.03	2.04	1.16	1.68
19,439.00	90.20	0.70	10,565.96	8,685.16	-1,101.17	8,748.45	1.23	-0.42	-1.16
19,534.00	92.20	0.20	10,563.97	8,780.13	-1,100.42	8,842.98	2.17	2.11	-0.53
19,629.00	92.70	359.90	10,559.91	8,875.04	-1,100.34	8,937.52	0.61	0.53	-0.32
19,724.00	90.70	0.40	10,557.09	8,969.99	-1,100.09	9,032.08	2.17	-2.11	0.53
19,819.00	89.40	0.90	10,557.00	9,064.98	-1,099.01	9,126.60	1.47	-1.37	0.53
19,914.00	90.00	0.70	10,557.50	9,159.97	-1,097.68	9,221.10	0.67	0.63	-0.21
20,009.00	90.90	0.40	10,556.76	9,254.96	-1,096.77	9,315.65	1.00	0.95	-0.32
20,104.00	89.30	0.70	10,556.59	9,349.96	-1,095.86	9,410.19	1.71	-1.68	0.32
20,199.00	88.50	0.60	10,558.41	9,444.93	-1,094.78	9,504.70	0.85	-0.84	-0.11
20,293.00	88.40	0.60	10,560.96	9,538.89	-1,093.80	9,598.20	0.11	-0.11	0.00
20,388.00	88.90	359.70	10,563.19	9,633.86	-1,093.55	9,692.78	1.08	0.53	-0.95
20,483.00	88.50	1.40	10,565.35	9,728.83	-1,092.64	9,787.30	1.84	-0.42	1.79
20,578.00	89.70	0.90	10,566.84	9,823.80	-1,090.73	9,881.73	1.37	1.26	-0.53
20,673.00	90.90	0.90	10,566.34	9,918.78	-1,089.24	9,976.21	1.26	1.26	0.00
20,768.00	90.70	0.20	10,565.02	10,013.77	-1,088.33	10,070.75	0.77	-0.21	-0.74
20,863.00	90.20	0.60	10,564.27	10,108.76	-1,087.66	10,165.31	0.67	-0.53	0.42
20,958.00	89.90	359.90	10,564.19	10,203.76	-1,087.25	10,259.90	0.80	-0.32	-0.74
21,053.00	89.30	0.00	10,564.85	10,298.76	-1,087.33	10,354.54	0.64	-0.63	0.11
21,148.00	90.90	0.00	10,564.69	10,393.76	-1,087.33	10,449.16	1.68	1.68	0.00
21,243.00	90.90	359.50	10,563.19	10,488.74	-1,087.75	10,543.81	0.53	0.00	-0.53

LEAM Drilling Systems LLC

Survey Report

Company:	Continental Resources	**Local Co-ordinate Reference:**	Well 2-16H
Project:	McKenzie County, ND	**TVD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Site:	Columbus Federal 2	**MD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Well:	2-16H	**North Reference:**	True
Wellbore:	ST01	**Survey Calculation Method:**	Minimum Curvature
Design:	ST01	**Database:**	EDM 5000.1 Multi User DB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
21,338.00	90.50	359.30	10,562.03	10,583.73	-1,088.74	10,638.52	0.47	-0.42	-0.21
21,433.00	89.20	359.20	10,562.28	10,678.72	-1,089.99	10,733.25	1.37	-1.37	-0.11
21,528.00	90.00	359.20	10,562.95	10,773.71	-1,091.31	10,827.98	0.84	0.84	0.00
21,623.00	89.60	358.50	10,563.28	10,868.69	-1,093.22	10,922.76	0.85	-0.42	-0.74
21,718.00	90.00	0.20	10,563.61	10,963.68	-1,094.30	11,017.47	1.84	0.42	1.79
21,813.00	89.30	0.40	10,564.19	11,058.67	-1,093.80	11,112.05	0.77	-0.74	0.21
21,908.00	90.70	0.20	10,564.19	11,153.67	-1,093.30	11,206.64	1.49	1.47	-0.21
22,003.00	90.70	359.50	10,563.03	11,248.66	-1,093.55	11,301.28	0.74	0.00	-0.74
22,098.00	89.70	359.50	10,562.70	11,343.66	-1,094.38	11,395.98	1.05	-1.05	0.00
22,193.00	89.50	359.50	10,563.36	11,438.65	-1,095.21	11,490.67	0.21	-0.21	0.00
22,288.00	89.40	359.50	10,564.27	11,533.64	-1,096.04	11,585.37	0.11	-0.11	0.00
22,383.00	90.70	359.50	10,564.19	11,628.64	-1,096.87	11,680.07	1.37	1.37	0.00
22,478.00	91.10	359.30	10,562.70	11,723.62	-1,097.86	11,774.77	0.47	0.42	-0.21
22,573.00	91.50	359.00	10,560.54	11,818.58	-1,099.27	11,869.48	0.53	0.42	-0.32
22,668.00	91.50	357.60	10,558.05	11,913.51	-1,102.09	11,964.29	1.47	0.00	-1.47
22,763.00	91.50	357.20	10,555.57	12,008.38	-1,106.40	12,059.16	0.42	0.00	-0.42
22,858.00	89.80	357.90	10,554.49	12,103.28	-1,110.46	12,154.06	1.94	-1.79	0.74
22,952.00	89.50	359.20	10,555.06	12,197.25	-1,112.83	12,247.87	1.42	-0.32	1.38
23,047.00	89.60	359.30	10,555.81	12,292.24	-1,114.08	12,342.59	0.15	0.11	0.11
23,142.00	90.00	358.60	10,556.14	12,387.22	-1,115.82	12,437.36	0.85	0.42	-0.74
23,237.00	90.60	358.50	10,555.64	12,482.19	-1,118.22	12,532.17	0.64	0.63	-0.11
23,332.00	89.60	358.10	10,555.48	12,577.14	-1,121.04	12,627.00	1.13	-1.05	-0.42
23,427.00	90.00	357.40	10,555.81	12,672.07	-1,124.77	12,721.89	0.85	0.42	-0.74
23,475.00	90.00	357.40	10,555.81	12,720.02	-1,126.95	12,769.84	0.00	0.00	0.00
Projection to Bit									

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 (09-2006)

RECEIVED SEP 2013 ND OIL & GAS DIVISION

Well File No. 25159

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

☑ Notice of Intent	Approximate Start Date: August 16, 2013	☐ 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: Cement to surface	

Well Name and Number: Columbus Federal 2-16H

Footages	Qtr-Qtr	Section	Township	Range
2508 F N L 222 F E L	SENE	16	153 N	101 W

Field	Pool	County
Bakker	Bakken	McKenzie

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

During the cement job on the Columbus Federal 2-16H, returns were lost after dropping the plug. Returns resumed temporarily but then became very low. Cement was not returned to surface. A CBL was scheduled the morning of Thursday, August 15th, and indicated the top of cement to be at approximately 500'. Cement will be brought to surface on the intermediate casing string.

"A 1" top job was performed. We got 1" pipe 180' deep. We got cement to surface and continued pumping and then staging to make sure the cement would not drop."

*The Operator is to maintain a pressure gauge on the 9-5/8" X 7" annulus for continuous monitoring and to report any pressure development or pressure management events.

Company	Telephone Number
Continental Resources, Inc.	(405) 234-9000
Address: P.O. Box 268870	
City: Oklahoma City / State: OK / Zip Code: 73126	
Signature: Becky Barnes / Printed Name: Becky Barnes	
Title: Regulatory Compliance Specialist / Date: August 19, 2013	
Email Address: becky.barnes@clr.com	

FOR STATE USE ONLY

☑ Received ☐ Approved

Date: 9-16-2013

By:

Title: Richard A. Suggs
Geologist

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)

SEP 2013
RECEIVED
ND OIL & GAS DIVISION

Well File No.
25159

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

- [x] Notice of Intent — Approximate Start Date: **October 14, 2013**
- [ ] Report of Work Done — Date Work Completed:
- [ ] 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:

- [ ] Drilling Prognosis
- [ ] Redrilling or Repair
- [ ] Casing or Liner
- [ ] Plug Well
- [ ] Supplemental History
- [ ] Temporarily Abandon
- [ ] Spill Report
- [ ] Shooting
- [ ] Acidizing
- [ ] Fracture Treatment
- [ ] Change Production Method
- [ ] Reclamation
- [x] Other **Flow back exemption**

Well Name and Number: **Columbus Federal 2-16H**

Footages	Qtr-Qtr	Section	Township	Range
2508 F N L 222 F E L	**SENE**	**16**	**153 N**	**101 W**

Field	Pool	County
Baker	**Bakken**	**McKenzie**

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

Continental Resources, Inc. requests a waiver from the tubing/pkr requirement included in NDIC 43-02-03-21: Casing, Tubing, and Cementing Requirements during the completion period immediately following the upcoming fracture stimulation. The following assurances apply:
1) The well is equipped with 26#/ft P-110 7" casing at surface with an API burst rating of 9960 psig for the 26 #/ft casing.
2) The frac design will use a safety factor of 0.85 * API burst rating to determine the max pressure.
3) Damage to the casing during the frac would be detected immediately by monitoring equipment.
4) The casing is exposed to significantly lower rates and pressures during flow back than during the frac job.
5) The frac fluid and formation fluids have very low corrosion and erosion rates
6) Production equipment will be installed as soon as possible after the well ceases flowing.
7) A 300# gauge will be installed on surface casing during flowback period.

Company	Telephone Number
Continental Resources, Inc.	**405-234-9000**
Address: **P.O. Box 269000**	
City: **Oklahoma City** / State: **OK** / Zip Code: **73126**	
Signature	Printed Name: **Jim Landrigan**
Title: **Completion Engineer**	Date: **August 29, 2013**

FOR STATE USE ONLY

- [ ] Received
- [x] Approved

Date: September 4, 2013
By:
Title: PETROLEUM ENGINEER

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 (09-2006)

RECEIVED JUL 2013 OIL AND GAS

Well File No. 25159

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

- ☑ Notice of Intent — Approximate Start Date: August 14, 2013
- ☐ Report of Work Done — Date Work Completed:
- ☐ 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:

- ☐ Drilling Prognosis
- ☐ Redrilling or Repair
- ☐ Casing or Liner
- ☐ Plug Well
- ☐ Supplemental History
- ☐ Temporarily Abandon
- ☐ Spill Report
- ☐ Shooting
- ☐ Acidizing
- ☐ Fracture Treatment
- ☐ Change Production Method
- ☐ Reclamation
- ☑ Other: Spud with Small Rig

Well Name and Number					
Columbus Federal 2-16H					
Footages	Qtr-Qtr	Section	Township	Range	
2508 F N L 222 F E L	SENE	16	153 N	101 W	
Field	Pool	County			
Bakker	Bakken	McKenzie			

24-HOUR PRODUCTION RATE

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

Name of Contractor(s)			
Advanced Energy Services, LLC			
Address	City	State	Zip Code
P.O. Box 85	South Boardman	Michigan	49680-0085

DETAILS OF WORK

Continental Resources, Inc. requests permission for suspension of drilling for up to 90 days for the referenced well under NDAC 43-02-03-55. Continental Resources, Inc. intends to drill the surface hole with freshwater based drilling mud and set surface casing with a small drilling rig and move off within 3 to 5 days. The casing will be set at a depth pre-approved by the NDIC per the Application for Permit to Drill NDAC 43-02-03-21. No saltwater will be used in the drilling and cementing operations of the surface casing. Once the surface casing is cemented, a plug or mechanical seal will be placed at the top of the casing to prevent any foreign matter from getting into the well. A rig capable of drilling to TD will move onto the location within the 90 days previously outlined to complete the drilling and casing plan as per the APD. The undersigned states that this request for suspension of drilling operations in accordance with the Subsection 4 of Section 43-02-03-55 of the NDAC, is being requested to take advantage of the cost savings and time savings of using an initial rig that is smaller than the rig necessary to drill a well to total depth but is not intended to alter or extend the terms and conditions of, or suspend any obligation under, any oil and gas lease with acreage in or under the spacing or drilling unit for the above-referenced well. Continental Resources, Inc. understands NDAC 43-02-03-31 requirements regarding confidentiality pertaining to this permit. The drilling pit will be fenced immediately after construction if the well pad is located in a pasture (NDAC 43-02-03-19 & 19.1). Continental Resources, Inc. will plug and abandon the well and reclaim the well site if the well is not drilled by the larger rotary rig within 90 days after spudding the well with the smaller drilling rig.

CR1 must notify NDIC Inspector Richard Dunn 701-770-3554 with spud & TD

Company		Telephone Number
Continental Resources, Inc.		(405) 234-9000
Address		
P.O. Box 268870		
City	State	Zip Code
Oklahoma City	OK	73126
Signature: Becky Barnes	Printed Name: Becky Barnes	
Title: Regulatory Compliance Specialist	Date: July 30, 2013	
Email Address: becky.barnes@clr.com		

FOR STATE USE ONLY

☐ Received ☑ Approved

Date: 8-02-2013

By:

Title: David Burns
Engineering Tech

25159

Oil and Gas Division

Lynn D. Helms - Director Bruce E. Hicks - Assistant Director
Department of Mineral Resources
Lynn D. Helms - Director
North Dakota Industrial Commission
www.dmr.nd.gov/oilgas

BECKY BARNES
CONTINENTAL RESOURCES, INC.
PO BOX 1032
ENID, OK 73702-1032 USA

Date: **3/18/2013**

RE: CORES AND SAMPLES

Well Name: **COLUMBUS FEDERAL 2-16H** Well File No.: **25159**
Location: **SENE 16-153-101** County: MCKENZIE
Permit Type: **Development - HORIZONTAL**
Field: **BAKER** Target Horizon: THREE FORKS

Dear BECKY BARNES:

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 on the above referenced well:

1) 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 43-02-03-38.1.

2) Samples shall include all cuttings from:

Base of the Last Charles Salt

Samples of cuttings shall be taken at 30' maximum intervals through all vertical, build and horizontal sections. Samples must be washed, dried, 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.

3) Cores: ALL CORES cut shall 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 must have written approval from the State Geologist.

4) All cores, core chips, and samples must be shipped, prepaid, to the State Geologist at the following address:

ND Geological Survey Core Library
Campus Road and Cornell
Grand Forks, ND 58202

5) NDCC Section 38-08-16 allows for a civil penalty for any violation of Chapter 38 08 not to exceed $12,500 for each offense, and each day's violation is a separate offense.

Sincerely

Richard A. Suggs
Geologist

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 (09-2006)

RECEIVED
JUN 2012
ND OIL & GAS DIVISION

Well File No. 25159

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

- ☐ Notice of Intent — Approximate Start Date
- ☐ Report of Work Done — Date Work Completed
- ☐ 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

- ☐ Drilling Prognosis
- ☐ Redrilling or Repair
- ☐ Casing or Liner
- ☐ Plug Well
- ☐ Supplemental History
- ☐ Temporarily Abandon
- ☐ Spill Report
- ☐ Shooting
- ☐ Acidizing
- ☐ Fracture Treatment
- ☐ Change Production Method
- ☐ Reclamation
- ☑ Other **Open Hole Log Waiver**

Well Name and Number: **Columbus Federal 2-16H**

Footages	Qtr-Qtr	Section	Township	Range
2508 F N L 222 F E L	SENE	16	153 N	101 W

Field	Pool	County
	Bakken	McKenzie

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

Requested variance to not run openhole logs. GR/CBL/CCL will be run from deepest point obtainable to base of surface casing.

Offset logs used will be theNance Petroleum, Corps of Engineers 31-10, Sec 10-153N-101W, McKenzie County, ND.

The Gamma Ray Log will be run all the way to surface and all mud logs will be submitted as one digital tiff formatted file and one digital LAS formatted file.

* Approved per logs run on # 10710 - Novak 1-9-3A

Company	Telephone Number
Continental Resources, Inc.	580-233-8955

Address		
P.O. Box 1032		
City: Enid	State: OK	Zip Code: 73702

Signature	Printed Name
Terry L. Olson	Terry L. Olson
Title: Regulatory Compliance Specialist	Date: June 12, 2012
Email Address: Terry.Olson@clr.com	

FOR STATE USE ONLY

☐ Received ☑ Approved

Date: 3/11/2013

By:

Title: Richard A. Suggs
~~Geologist~~

Oil and Gas Division

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

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

www.oilgas.nd.gov

March 11, 2013

Terry L. Olson
Regulatory Compliance Specialist
CONTINENTAL RESOURCES, INC.
P.O. Box 1032
Enid, OK 73702

RE: HORIZONTAL WELL
COLUMBUS FEDERAL 2-16H
SENE Section 16-153N-101W
McKenzie County
Well File # 25159

Dear Terry:

Pursuant to Commission Order No. 21551, approval to drill the above captioned well is hereby given. The approval is granted on the condition that all portions of the well bore not isolated by cement, be no closer than the **200' setback** from the north & south boundaries and **500' setback** from the east & west boundaries within the 2560 acre spacing unit consisting of Sections 4, 9, 16, & 21-T153N-R101W. **Tool error is not required pursuant to order.**

PERMIT STIPULATIONS: Due to surficial water adjacent to the well site, a dike is required surrounding the entire location. A LINER MUST BE PLACED UNDER THE LOCATION. The MOUSE AND RAT HOLE MUST BE CEMENTED. A spill contingency plan must be in place prior to spudding the wells. No Drilling Pit will be allowed. Continental must drill the Columbus Federal 2-16H, 3-16H and Tallahassee 2-16H, 3-16H back to back. One horizontal well shall be drilled and completed in the standup 1280-acre spacing unit described as Sections 4 and 9, T153N-R101W, McKenzie County, north Dakota, prior to completing any horizontal well in the 2560-acre spacing unit described as Sections 4, 9, 16, and 21-T153N-R101W McKenzie County, North Dakota. CONTINENTAL RESOURCES must contact NDIC Field Inspector Richard Dunn at 701-770-3554 prior to location construction.

Drilling pit
NDAC 43-02-03-19.4 states that "a pit may be utilized to bury drill cuttings and solids generated during well drilling and completion operations, providing the pit can be constructed, used and reclaimed in a manner that will prevent pollution of the land surface and freshwaters. Reserve and circulation of mud system through earthen pits are prohibited. All pits shall be inspected by an authorized representative of the director prior to lining and use. Drill cuttings and solids must be stabilized in a manner approved by the director prior to placement in a cuttings pit."

Form 1 Changes & Hard Lines
Any changes, shortening of casing point or lengthening at Total Depth must have prior approval by the NDIC. The proposed directional plan is at a legal location. The minimum legal coordinate from the well head at casing point is: 278' W. Also, based on the azimuth of the proposed lateral the maximum legal coordinate from the well head is: 12755' N and a minimum legal coordinate from the well head of 278' W.

Location Construction Commencement (Three Day Waiting Period)
Operators shall not commence operations on a drill site until the 3rd business day following publication of the approved drilling permit on the NDIC - OGD Daily Activity Report. If circumstances require operations to commence before the 3rd business day following publication on the Daily Activity Report, the waiting period may be waived by the Director. Application for a waiver must be by sworn affidavit providing the information necessary to evaluate the extenuating circumstances, the factors of NDAC 43-02-03-16.2 (1), (a)-(f), and any other information that would allow the Director to conclude that in the event another owner seeks revocation of the drilling permit, the applicant should retain the permit.

Permit Fee & Notification
Payment was received in the amount of $100 via credit card. It is requested that notification be given immediately upon the spudding of the well. This information should be relayed to the Oil & Gas Division, Bismarck, via telephone. The following information must be included: Well name, legal location, permit number, drilling contractor, company representative, date and time of spudding. Office hours are 8:00 a.m. to 12:00 p.m. and 1:00 p.m. to 5:00 p.m. Central Time. Our telephone number is (701) 328-8020, leave a message if after hours or on the weekend.

Survey Requirements for Horizontal, Horizontal Re-entry, and Directional Wells

NDAC Section 43-02-03-25 (Deviation Tests and Directional Surveys) states in part (that) the survey contractor shall file a certified copy of all surveys with the director free of charge within thirty days of completion. Surveys must be submitted as one electronic copy, or in a form approved by the director. However, the director may require the directional survey to be filed immediately after completion if the survey is needed to conduct the operation of the director's office in a timely manner. Certified surveys must be submitted via email in one adobe document, with a certification cover page to certsurvey@nd.gov.

Survey points shall be of such frequency to accurately determine the entire location of the well bore.

Specifically, the Horizontal and Directional well survey frequency is 100 feet in the vertical, 30 feet in the curve (or when sliding) and 90 feet in the lateral.

Confidential status

Your request for confidential status of all information furnished to the Director, or his representatives, is hereby granted. Such information, except production runs, shall remain confidential for six months commencing on the date the well is spud.

Confidential status notwithstanding, the Director and his representatives shall have access to all well records wherever located. Your company personnel, or any person performing work for your company shall permit the Director and his representatives to come upon any lease, property, well, or drilling rig operated or controlled by them, complying with all safety rules, and to inspect the records and operation of such wells and to have access at all times to any and all records of wells. The Commission's field personnel periodically inspect producing and drilling wells. Any information regarding such wells shall be made available to them at any time upon request. The information so obtained by the field personnel shall be maintained in strict confidence and shall be available only to the Commission and its staff.

Surface casing cement

Tail cement utilized on surface casing must have a minimum compressive strength of 500 psi within 12 hours, and tail cement utilized on production casing must have a minimum compressive strength of 500 psi before drilling the plug or initiating tests.

Logs

NDAC Section 43-02-03-31 requires the running of (1) a suite of open hole logs from which formation tops and porosity zones can be determined, (2) a Gamma Ray Log run from total depth to ground level elevation of the well bore, and (3) a log from which the presence and quality of cement can be determined (Standard CBL or Ultrasonic cement evaluation log) in every well in which production or intermediate casing has been set, this log must be run prior to completing the well. All logs run must be submitted free of charge, as one digital TIFF (tagged image file format) copy and one digital LAS (log ASCII) formatted copy. Digital logs may be submitted on a standard CD, DVD, or attached to an email sent to digitallogs@nd.gov Thank you for your cooperation.

Sincerely,

David Tabor
Engineering Technician IV

APPLICATION FOR PERMIT TO DRILL HORIZONTAL WELL - FORM 1H

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 54269 (08-2005)

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

Type of Work	Type of Well	Approximate Date Work Will Start	Confidential Status
New Location	**Oil & Gas**	**6 / 13 / 2012**	**Yes**

Operator	Telephone Number
CONTINENTAL RESOURCES, INC.	**580-233-8955**

Address	City	State	Zip Code
P.O. Box 1032	**Enid**	**OK**	**73702**

☑ Notice has been provided to the owner of any permanently occupied dwelling within 1,320 feet.

☑ This well is not located within five hundred feet of an occupied dwelling.

WELL INFORMATION **(If more than one lateral proposed, enter data for additional laterals on page 2)**

Well Name	Well Number
COLUMBUS FEDERAL	**2-16H**

Surface Footages	Qtr-Qtr	Section	Township	Range	County
2508 F **N** L **222** F **E** L	**SENE**	**16**	**153 N**	**101 W**	**McKenzie**
Longstring Casing Point Footages	Qtr-Qtr	Section	Township	Range	County
202 F **S** L **1176** F **E** L	**SESE**	**9**	**153 N**	**101 W**	**McKenzie**
Longstring Casing Point Coordinates From Well Head	Azimuth	Longstring Total Depth			
2709 N From WH **954 W** From WH	**341 °**	**13290** Feet MD	**10607** Feet TVD		
Bottom Hole Footages From Nearest Section Line	Qtr-Qtr	Section	Township	Range	County
200 F **N** L **1320** F **E** L	**NWNE**	**4**	**153 N**	**101 W**	**McKenzie**
Bottom Hole Coordinates From Well Head	KOP Lateral 1	Azimuth Lateral 1	Estimated Total Depth Lateral 1		
12755 N From WH **1098 W** From WH	**10166** Feet MD	**0 °**	**23354** Feet MD	**10607** Feet TVD	

Latitude of Well Head	Longitude of Well Head	NAD Reference	Description of (Subject to NDIC Approval)
48 ° 04 ' 31.26 "	**-103 ° 40 ' 11.34 "**	**NAD83**	**Spacing Unit: Sec 4, 9, 16, & 21 153 101**

Ground Elevation	Acres in Spacing/Drilling Unit	Spacing/Drilling Unit Setback Requirement	Industrial Commission Order
1921 Feet Above S.L.	**2560**	**200** Feet N/S **500** Feet E/W	**21551**

North Line of Spacing/Drilling Unit	South Line of Spacing/Drilling Unit	East Line of Spacing/Drilling Unit	West Line of Spacing/Drilling Unit
5279 Feet	**5300** Feet	**20988** Feet	**20969** Feet

Objective Horizons	Pierre Shale Top
Three Forks	**1841**

Proposed	Size	Weight	Depth	Cement Volume	
Surface Casing	**9 - 5/8 "**	**36** Lb./Ft.	**1940** Feet	**732** Sacks	**NOTE: Surface hole must be drilled with fresh water and surface casing must be cemented back to surface.**

Proposed	Size	Weight(s)	Longstring Total Depth		Cement Volume	Cement Top	Top Dakota Sand
Longstring Casing	**7 - "**	**26-32** Lb./Ft.	**13290** Feet MD	**10607** Feet TVD	**1170** Sacks	**0** Feet	**4826** Feet

Base Last Charles Salt (If Applicable)	
9031 Feet	**NOTE: Intermediate or longstring casing string must be cemented above the top Dakota Group Sand.**

Proposed Logs
CBL/GR from deepest depth obtainable to ground surface/mud

Drilling Mud Type (Vertical Hole - Below Surface Casing)	Drilling Mud Type (Lateral)
Invert	**Brine**

Survey Type in Vertical Portion of Well	Survey Frequency: Build Section	Survey Frequency: Lateral	Survey Contractor
MWD Every 100 Feet	**30** Feet	**90** Feet	**LEAM Drilling Services**

NOTE: A Gamma Ray log must be run to ground surface and a CBL must be run on intermediate or longstring casing string if set.

Surveys are required at least every 30 feet in the build section and every 90 feet in the lateral section of a horizontal well. Measurement inaccuracies are not considered when determining compliance with the spacing/drilling unit boundary setback requirement except in the following scenarios: 1) When the angle between the well bore and the respective boundary is 10 degrees or less; or 2) If Industry standard methods and equipment are not utilized. Consult the applicable field order for exceptions.

If measurement inaccuracies are required to be considered, a 2° MWD measurement inaccuracy will be applied to the horizontal portion of the well bore. This measurement inaccuracy is applied to the well bore from KOP to TD.

REQUIRED ATTACHMENTS: Certified surveyor's plat, horizontal section plat, estimated geological tops, proposed mud/cementing plan, directional plot/plan, $100 fee.

See Page 2 for Comments section and signature block.

COMMENTS, ADDITIONAL INFORMATION, AND/OR LIST OF ATTACHMENTS

Lateral 2

KOP Lateral 2 Feet MD	Azimuth Lateral 2 °	Estimated Total Depth Lateral 2 Feet MD	Feet TVD	KOP Coordinates From Well Head From WH	From WH
Formation Entry Point Coordinates From Well Head From WH	From WH	Bottom Hole Coordinates From Well Head From WH	From WH		
KOP Footages From Nearest Section Line F L	F L	Qtr-Qtr	Section	Township N	Range W	County
Bottom Hole Footages From Nearest Section Line F L	F L	Qtr-Qtr	Section	Township N	Range W	County

Lateral 3

KOP Lateral 3 Feet MD	Azimuth Lateral 3 °	Estimated Total Depth Lateral 3 Feet MD	Feet TVD	KOP Coordinates From Well Head From WH	From WH
Formation Entry Point Coordinates From Well Head From WH	From WH	Bottom Hole Coordinates From Well Head From WH	From WH		
KOP Footages From Nearest Section Line F L	F L	Qtr-Qtr	Section	Township N	Range W	County
Bottom Hole Footages From Nearest Section Line F L	F L	Qtr-Qtr	Section	Township N	Range W	County

Lateral 4

KOP Lateral 4 Feet MD	Azimuth Lateral 4 °	Estimated Total Depth Lateral 4 Feet MD	Feet TVD	KOP Coordinates From Well Head From WH	From WH
Formation Entry Point Coordinates From Well Head From WH	From WH	Bottom Hole Coordinates From Well Head From WH	From WH		
KOP Footages From Nearest Section Line F L	F L	Qtr-Qtr	Section	Township N	Range W	County
Bottom Hole Footages From Nearest Section Line F L	F L	Qtr-Qtr	Section	Township N	Range W	County

Lateral 5

KOP Lateral 5 Feet MD	Azimuth Lateral 5 °	Estimated Total Depth Lateral 5 Feet MD	Feet TVD	KOP Coordinates From Well Head From WH	From WH
Formation Entry Point Coordinates From Well Head From WH	From WH	Bottom Hole Coordinates From Well Head From WH	From WH		
KOP Footages From Nearest Section Line F L	F L	Qtr-Qtr	Section	Township N	Range W	County
Bottom Hole Footages From Nearest Section Line F L	F L	Qtr-Qtr	Section	Township N	Range W	County

I hereby swear or affirm the information provided is true, complete and correct as determined from all available records.	Date 6 / 12 / 2012
ePermit	Printed Name Terry L. Olson	Title Regulatory Compliance Specialist

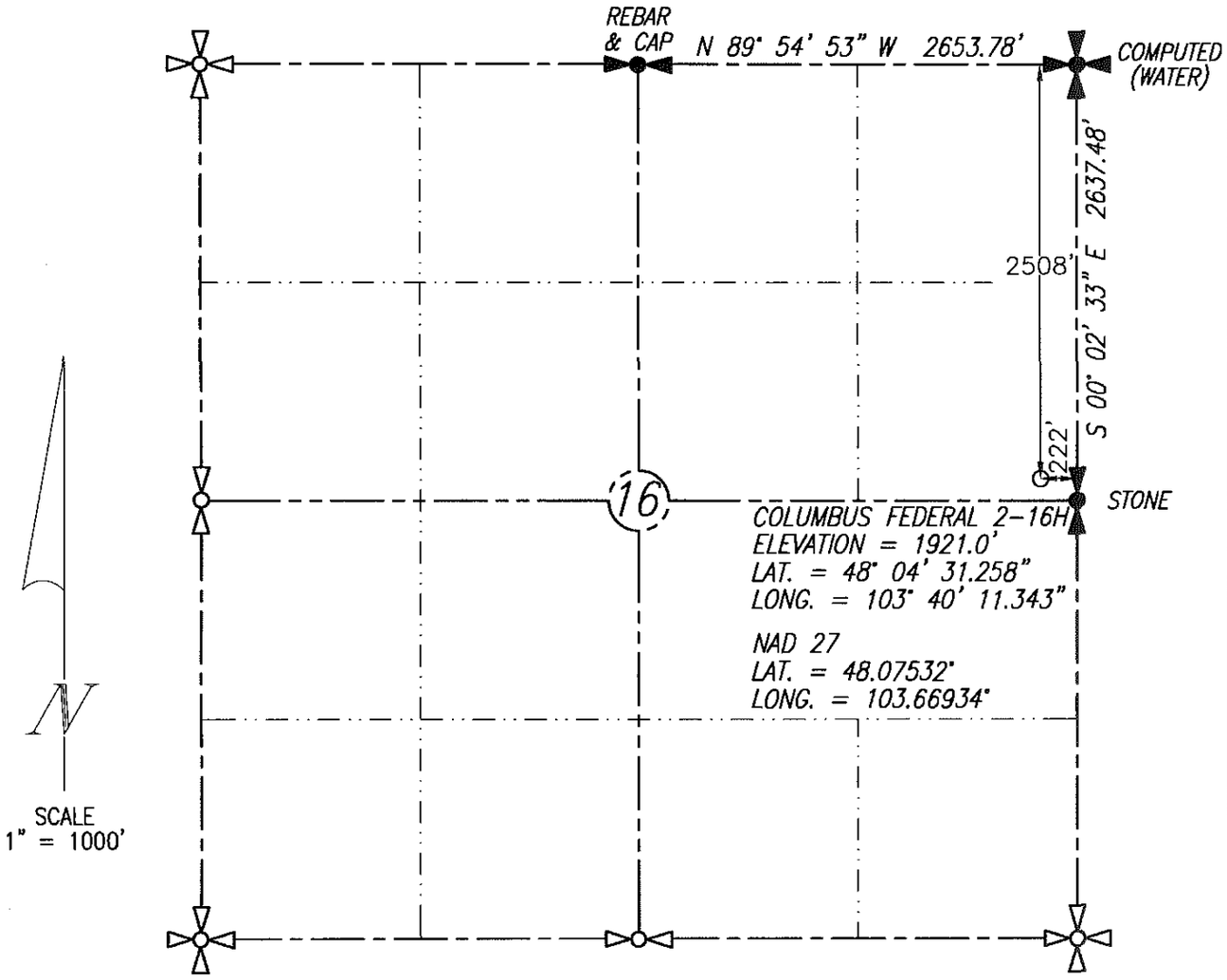
FOR STATE USE ONLY

Permit and File Number 25159	API Number 33 - 053 - 04855
Field BAKER	
Pool BAKKEN	Permit Type DEVELOPMENT

FOR STATE USE ONLY

Date Approved 3 / 11 / 2013
By David Tabor
Title Engineering Technician IV

WELL LOCATION PLAT
CONTINENTAL RESOURCES INC.
COLUMBUS FEDERAL 2-16H
SECTION 16, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA
2508' FNL & 222' FEL



I CERTIFY THAT THIS PLAT CORRECTLY REPRESENTS WORK PERFORMED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF

JOHN A. PAULSON
REGISTERED
LAND
SURVEYOR
L.S. 3366
NORTH DAKOTA

4-11-12

JOHN A. PAULSON L.S. 3366

DATE STAKED: 1-4-2012

BASIS OF VERTICAL DATUM:
NAVD 1988 GEOID 09

PERSON AUTHORIZING SURVEY;
CHAD NEWBY

EXPLANATION AREA: NAD83(CORS96)

BASIS OF BEARING: TRUE NORTH

BROSZ ENGINEERING INC.
BOX 357
BOWMAN, N.D. 58623
PHONE: 701-523-3340
FAX: 701-523-5243

PROJECT NO. 12-10

GEOLOGIC PROGNOSIS

Well Name: Columbus Fed. 2-16H
Rig: Cyclone 20
Prospect: Williston
Target: Three Forks
Spacing: 1280

☐ Pre-Staked
☑ Staked

SHL: 2508' FNL & 222' FEL
Sec. 16 - 153N - 101W
McKenzie , ND

BHL: 200' FNL & 1320' FEL
Sec. 4 - 153N - 101W
McKenzie , ND

Rig Grade Elevation: 1920'
KB: **21'**
RKB: **1941'**

	FORMATION	SUBSEA	TVD	
	Pierre Shale	100	**1,841**	
	Greenhorn	-2,484	**4,425**	
	Dakota Group (fka Mowry)	-2,885	**4,826**	
	Base of Dakota Sand	-3,764	**5,705**	
	Dunham Salt Top	-4,792	**6,733**	
	Dunham Salt Base	-4,852	**6,793**	
	Pine Salt Top	-5,162	**7,103**	
	Pine Salt Base	-5,218	**7,159**	
	Minnekahta	-5,244	**7,185**	
	Opeche Salt Top	NA		
	Opeche Salt Base	NA		
	Minnelusa Group	-5,530	**7,471**	
	Tyler	-5,686	**7,627**	
	Kibbey	-6,238	**8,179**	
	Top Charles	-6,392	**8,333**	
	Base Last Charles Salt	-7,090	**9,031**	
	Mission Canyon	-7,314	**9,255**	
	Lodgepole	-7,880	**9,821**	
	Upper Bakken Shale	-8,570	**10,511**	
	Middle Bakken Member	-8,587	**10,528**	
	Lower Bakken Shale	-8,629	**10,570**	
	Three Forks	-8,646	**10,587**	
==>	Three Forks Target	-8,666	**10,607**	20' into 3forks
	End of Lateral	-8,666	**10,607**	up 30' and down 30'

DRILLING PROGRAM

06/08/12

Lease and Well No. Columbus Fed. 2-16H

MUD PROGRAM

Depth	Type	Weight	Remarks
0 ' - 1940 '	Fresh water	8.4-8.8	Add Soap Sticks for Mud Rings
1940 ' - 6500 '	Invert	9.3-9.5	35-50 sec, 10-30 cc's
6500 ' - 13290 '	Invert	9.6-10.0	40-55 sec, 10-15 cc's O/W 70/30 to 80/20
13290 ' - 23362 '	Brine	8.7-10.0	Cuttings pit

TUBULAR PROGRAM

String Type	Hole Size	Depth	Feet	Casing Diameter	Weight, Grade, Connection	ERW/ Seamless	Critical Inspection
Surf	13 1/2 "	1940 '	1940 '	9 5/8 "	9-5/8", 36 #, J-55, STC	ERW	BCI & Drift
	Float shoe, shoe joint & float collar. Centralize bottom 3 jts and every 4th jt to surface.						
Int	8 3/4 "	80 '	80 '	7 "	7", 32#, P-110 IC, LTC	ERW	BCI & Drift
		4000 '	3920 '	7 "	7", 26#, P-110 IC, LTC	ERW	BCI & Drift
		8130 '	4130 '	7 "	7", 29#, P-110 IC, LTC	ERW	BCI & Drift
		9230 '	1100 '	7 "	7", 32#, P-110 IC, LTC	ERW	BCI & Drift
		13290 '	4060 '	7 "	7", 29#, P-110 IC, LTC	ERW	BCI & Drift
	Float shoe, shoe joint & float collar. Centralize bottom 3 joints. Centralize thru curve and across all salts.						
Liner	6 "	23362 '	13196 '	4 1/2 "	4-1/2", 11.6 #, P-110, BTC		
Tubing		10170 '	10170 '	2 7/8 "	2-7/8", 6.5 #, L-80, EUE		

Notes: Pipe to end up in hole from top to bottom as shown.

CEMENT PROGRAM

String Type	SHOE/DV Depth	Stage Lead/Tail	Cement Bottom	Cement Top	No Sacks	Cement System	Cement Yield	Cement Weight
		Lead	1360 '	0 '	431	35/65 Poz/Class "C", 3% CaCl, 12% gel	2.39	12
Surf	1940	Tail	1940 '	1360 '	301	Class "C", 2% CaCl	1.46	14.3
(Basis: Gauge hole + 55% excess, tail 30% of length, lead to surface.)								
Int	13290	Lead	7830 '	0 '	473	35/65 Poz/Class "C", 3% KCl, 5 #/sk Silica	3.21	11.3
		Tail	13290 '	7830 '	697	Class "G", 3% KCl, 35% Silica	1.59	15.6
(Basis: Gauge hole + 35% excess, Tail to 500 ft above top of Charles Salt, Lead to Surface)								

BOP PROGRAM

Hole Size	Configuration	Pressure Rating	BOP Test Press	Casing Test Press
13 1/2 "	Circulate Conductor			
8 3/4 "	RRA	5M	5000	
6 "	RRA	5M	5000	
	Utilize commercial testers every 30 days.			

LOGGING PROGRAM

FROM	TO	TOOLS
BLS	TD	2 man mud logger trailer, 30 ft samples
Surf csg	TD	MWD Surveys, 90 ft & 30 ft thru curve
KOP	TD	MWD Gamma Ray
Surface	DDO	CBL, CCL, Gr

Remarks: 4 1/2 inch Liner to be run. Liner Top @ KOP (10166 ft TVD) and 29 swell packers to be run with liner.
Liner top to be tested successfully to 4500 psi prior to riggging down.
Casing caliper to be run to determine if a frac string is needed.

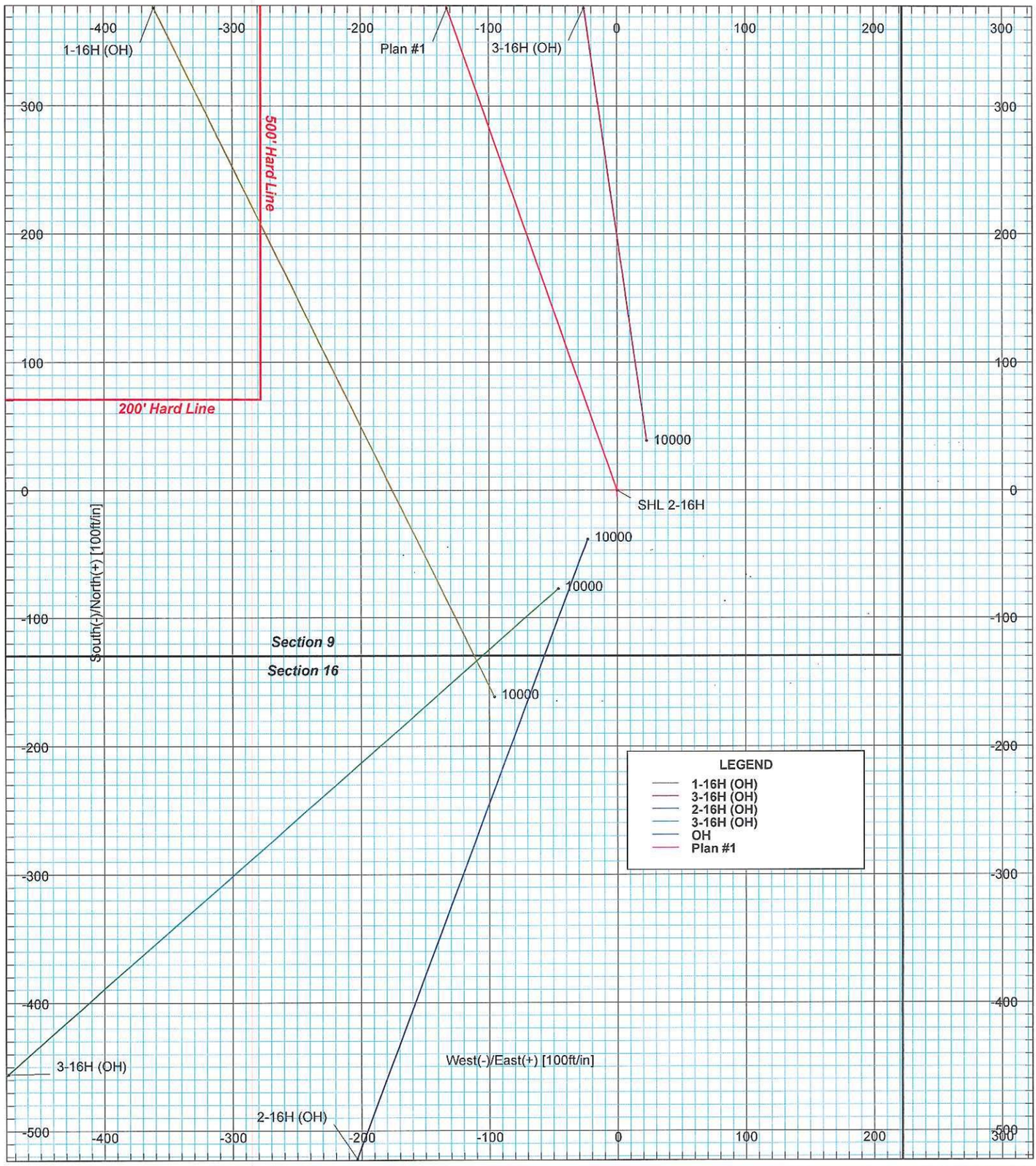
Prepared By: Pat McCollom Date: 04/17/12

Continental Resources

Field: McKenzie County, ND
Site: Columbus Federal 2
Well: 2-16H
Wellpath: OH
Plan: Plan #1

Azimuths to True North
Magnetic North: 8.65°

Magnetic Field
Strength: 56676nT
Dip Angle: 73.09°
Date: 04/18/2012
Model: IGRF2010



LEAM DRILLING SYSTEMS, INC.
2010 East Davis Conroe, Texas 77301
Phone: 936-756-7577 Fax: 936-756-7595

Plan: Plan #1 (2-16H/OH)
Created By: Justin Andoe Date: 04/23/2012
Checked: _____ Date: _____
Reviewed: _____ Date: _____

Continental
RESOURCES

To: Todd Holweger, NDIC

From: Shawn Svob

Date: 4/5/2012

Re: Continental Resources standard CCL, CBL, 4-1/2" liner running and testing procedures

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Continental Resources' standard practice for running the cement bond log and casing caliper log is to run both logs immediately after coming out of the hole after TD, prior to running the 4-1/2" liner, to the deepest depth obtainable; however, if there are well control concerns that require us to run the liner sooner, only the CBL will be run and the CCL will be run after setting the liner.

Based on the CCL results, we determine the actual API minimum burst allowance for the 7" casing. If the downgraded API burst pressure is below our minimum required frac pressures, we will run a 4-1/2" frac string; if severe wear or holes are found in the casing, we will run a 5" cemented, to surface, tie back string.

The CBL log is run in order to determine the top of cement, as required by the NDIC. Our current 4-1/2" liner program for a 1280 unit is 30, evenly spaced, stages with 29 swellable packers. The liner shoe is set approximately 180 feet off bottom. The shoe stage below the last packer has 2 joints, a double valved float, one joint, and a ported guide shoe – appx 130 ft. The liner is run using a running tool on the end of 4" DP. The 7" packer/hanger is set about 40 ft above KOP between two casing collars but conditions occasionally occur that require setting higher, either through unexpected failure or in order to isolate casing wear close to KOP. Recently we have tried 40 stage liners and the trend to explore the optimum stage count will continue.. Once the liner is at depth, a ball is dropped through the DP, the ball is pressured up against the setting tool to approximately 2500 psi, and the 7" packer/hanger is set.

A push pull test is done to confirm the hanger has set. Then, a 4500 psi pressure test is completed on the back side of the 4" DP to confirm the packer has set. The setting tool is then backed off and the 4" DP/running tool is laid down.

Immediately after the rotary rig has been moved off the well location, the 7" csg and liner packer/ hanger are tested to the frac pressure. The testers will rig up and test the tubing head to 5000 psi. Next a test plug will be run and set, using wire line, in the top of the 7" packer/hanger. Testers will pressure up to our frac pressure, typically 8500 psi, to confirm the 7" is ready for completion.

Shawn Svob
Drilling Operations Coordinator

302 N. Independence
P. O. Box 1032 Enid, Oklahoma 73702
(580) 233-8955

Continental Resources

Field: McKenzie County, ND
Site: Columbus Federal 2
Well: 2-16H
Wellpath: OH
Plan: Plan #2

SITE DETAILS

Columbus 2
Sec. 16 - T153N - R101W
SHL 2508' FNL & 222' FEL
PBHL 200' FNL & 1320' FEL

Latitude: 48°04'31.258N
Longitude: 103°40'11.343W

Ground Level: 1920.00
KB: 21.00

Azimuths to True North
Magnetic North: 8.65°

Magnetic Field
Strength: 56676nT
Dip Angle: 73.09°
Date: 04/18/2012
Model: IGRF2010

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
SHL 2-16H	0.00	0.00	0.00	408199.81	1193824.71	48°04'31.258N	103°40'11.343W	Point
PBHL 2-16H	10607.00	12755.00	-1098.00	420989.19	1193252.59	48°06'37.136N	103°40'27.523W	Point

SECTION DETAILS

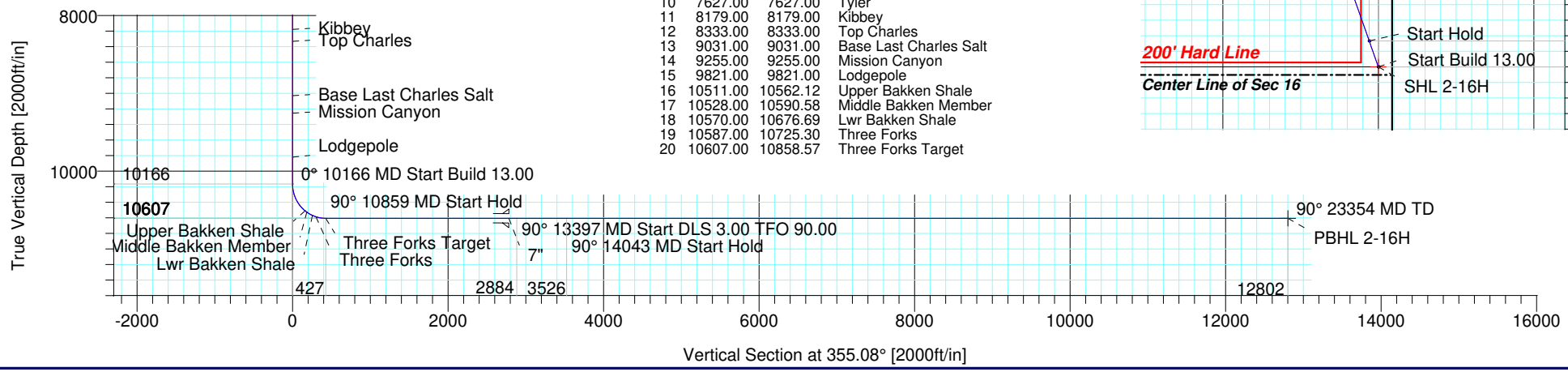
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	10166.26	0.00	0.00	10166.26	0.00	0.00	0.00	0.00	0.00	
3	10858.57	90.00	340.60	10607.00	415.71	-146.41	13.00	340.60	426.73	
4	13396.57	90.00	340.60	10607.00	2809.57	-989.54	0.00	0.00	2884.09	
5	14043.31	90.00	0.00	10607.00	3444.03	-1098.00	3.00	90.00	3525.51	
6	23354.29	90.00	0.00	10607.00	12755.00	-1098.00	0.00	0.00	12802.17	PBHL 2-16H

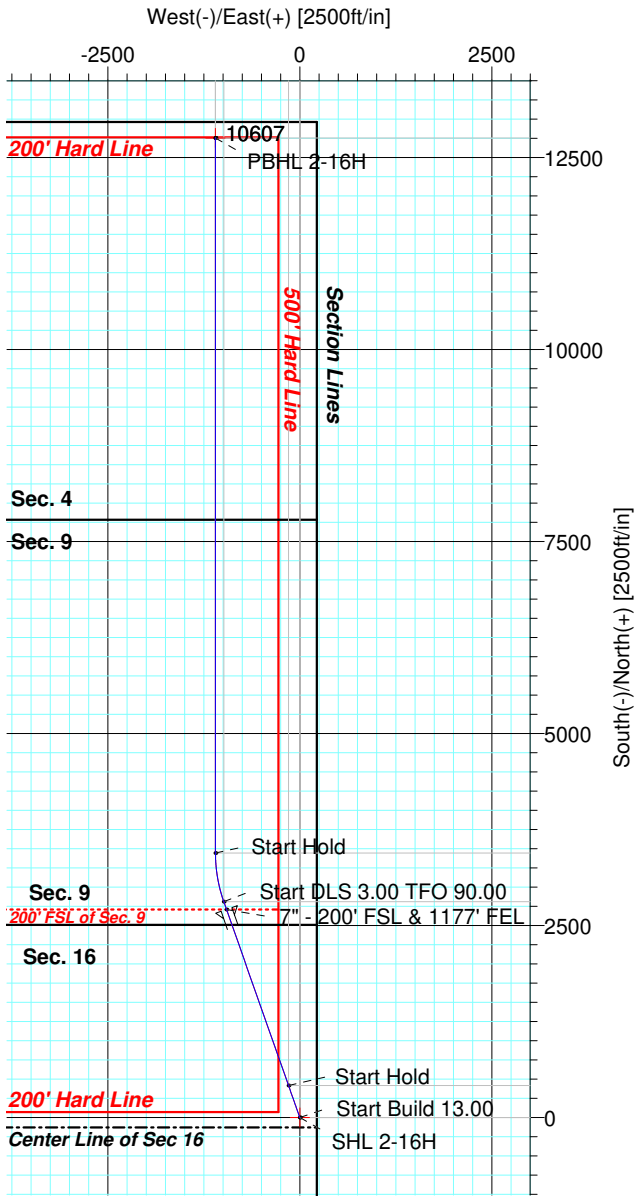
CASING DETAILS

No.	TVD	MD	Name	Size
1	10607.00	13290.00	7"	7.00

FORMATION TOP DETAILS

No.	TVDPath	MDPath	Formation
1	1841.00	1841.00	Pierre Shale
2	4425.00	4425.00	Greenhorn
3	4826.00	4826.00	Dakota Group
4	5705.00	5705.00	Dunham Salt Top
5	6793.00	6793.00	Dunham Salt Base
6	7103.00	7103.00	Pine Salt Top
7	7159.00	7159.00	Pine Salt Base
8	7185.00	7185.00	Minnekahta
9	7471.00	7471.00	Minnelusa Group
10	7627.00	7627.00	Tyler
11	8179.00	8179.00	Kibbey
12	8333.00	8333.00	Top Charles
13	9031.00	9031.00	Base Last Charles Salt
14	9255.00	9255.00	Mission Canyon
15	9821.00	9821.00	Lodgepole
16	10511.00	10562.12	Upper Bakken Shale
17	10528.00	10590.58	Middle Bakken Member
18	10570.00	10676.69	Lwr Bakken Shale
19	10587.00	10725.30	Three Forks
20	10607.00	10858.57	Three Forks Target





LEAM Drilling Systems LLC
2010 East Davis, Conroe, Texas 77301
Phone: 936-756-7577 Fax: 936-756-7595

Plan: Plan #2 (2-16H/OH)
Created By: David Vogler Date: 02/13/2013
Checked: _____ Date: _____
Reviewed: _____ Date: _____
Approved: _____ Date: _____

LEAM Drilling Systems LLC
Planning Report

Company:	Continental Resources	**Date:** 02/13/2013	**Time:** 16:18:50	**Page:**	1
Field:	McKenzie County, ND	**Co-ordinate(NE) Reference:**	Well: 2-16H, True North		
Site:	Columbus Federal 2	**Vertical (TVD) Reference:**	GL 1920+KB 21 1941.0		
Well:	2-16H	**Section (VS) Reference:**	Well (0.00N,0.00E,355.08Azi)		
Wellpath:	OH	**Survey Calculation Method:**	Minimum Curvature	**Db:**	Adapti

Field: McKenzie County, ND

Map System:	US State Plane Coordinate System 1983	**Map Zone:**	North Dakota, Northern Zone
Geo Datum:	GRS 1980	**Coordinate System:**	Well Centre
Sys Datum:	Mean Sea Level	**Geomagnetic Model:**	IGRF2010

Site: Columbus Federal 2
Sec. 16 - T153N - R101W
2508' FNL & 222' FEL

Site Position:		**Northing:**	408199.81	ft	**Latitude:**	48	4	31.258 N
From:	Geographic	**Easting:**	1193824.71	ft	**Longitude:**	103	40	11.343 W
Position Uncertainty:	0.00 ft				**North Reference:**			True
Ground Level:	1920.00 ft				**Grid Convergence:**			-2.36 deg

Well: 2-16H **Slot Name:**

Well Position:	**+N/-S**	0.00 ft	**Northing:**	408199.81	ft	**Latitude:**	48	4	31.258 N
	+E/-W	0.00 ft	**Easting :**	1193824.71	ft	**Longitude:**	103	40	11.343 W
Position Uncertainty:		0.00 ft							

Wellpath: OH

		Drilled From:	Surface
		Tie-on Depth:	0.00 ft
Current Datum:	GL 1920+KB 21 **Height** 1941.00 ft	**Above System Datum:**	Mean Sea Level
Magnetic Data:	04/18/2012	**Declination:**	8.65 deg
Field Strength:	56676 **nT**	**Mag Dip Angle:**	73.09 deg

Vertical Section:	**Depth From (TVD)** ft	**+N/-S** ft	**+E/-W** ft	**Direction** deg
	0.00	0.00	0.00	355.08

Plan: Plan #2 **Date Composed:** 04/18/2012
Version: 1
Principal: Yes **Tied-to:** User Defined

Plan Section Information

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	TFO deg	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
10166.26	0.00	0.00	10166.26	0.00	0.00	0.00	0.00	0.00	0.00	
10858.57	90.00	340.60	10607.00	415.71	-146.41	13.00	13.00	0.00	340.60	
13396.57	90.00	340.60	10607.00	2809.57	-989.54	0.00	0.00	0.00	0.00	
14043.31	90.00	0.00	10607.00	3444.03	-1098.00	3.00	0.00	3.00	90.00	
23354.29	90.00	0.00	10607.00	12755.00	-1098.00	0.00	0.00	0.00	0.00	PBHL 2-16H

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
10166.26	0.00	0.00	10166.26	0.00	0.00	0.00	0.00	0.00	0.00	
10175.00	1.14	340.60	10175.00	0.08	-0.03	0.08	13.00	13.00	0.00	
10200.00	4.39	340.60	10199.97	1.22	-0.43	1.25	13.00	13.00	0.00	
10225.00	7.64	340.60	10224.83	3.69	-1.30	3.78	13.00	13.00	0.00	
10250.00	10.89	340.60	10249.50	7.48	-2.63	7.68	13.00	13.00	0.00	
10275.00	14.14	340.60	10273.90	12.59	-4.43	12.92	13.00	13.00	0.00	
10300.00	17.39	340.60	10297.96	18.99	-6.69	19.50	13.00	13.00	0.00	
10325.00	20.64	340.60	10321.59	26.67	-9.39	27.38	13.00	13.00	0.00	
10350.00	23.89	340.60	10344.72	35.60	-12.54	36.55	13.00	13.00	0.00	
10375.00	27.14	340.60	10367.28	45.76	-16.12	46.97	13.00	13.00	0.00	
10400.00	30.39	340.60	10389.20	57.10	-20.11	58.62	13.00	13.00	0.00	
10425.00	33.64	340.60	10410.39	69.60	-24.51	71.45	13.00	13.00	0.00	
10450.00	36.89	340.60	10430.80	83.21	-29.31	85.42	13.00	13.00	0.00	
10475.00	40.14	340.60	10450.36	97.89	-34.48	100.49	13.00	13.00	0.00	
10500.00	43.39	340.60	10469.01	113.60	-40.01	116.61	13.00	13.00	0.00	

LEAM Drilling Systems LLC
Planning Report

Company:	Continental Resources	**Date:** 02/13/2013	**Time:** 16:18:50	**Page:**	2
Field:	McKenzie County, ND	**Co-ordinate(NE) Reference:**	Well: 2-16H, True North		
Site:	Columbus Federal 2	**Vertical (TVD) Reference:**	GL 1920+KB 21 1941.0		
Well:	2-16H	**Section (VS) Reference:**	Well (0.00N,0.00E,355.08Azi)		
Wellpath:	OH	**Survey Calculation Method:**	Minimum Curvature	**Db:**	Adapti

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
10525.00	46.64	340.60	10486.68	130.27	-45.88	133.73	13.00	13.00	0.00	
10550.00	49.89	340.60	10503.32	147.86	-52.08	151.79	13.00	13.00	0.00	
10562.12	51.46	340.60	10511.00	156.70	-55.19	160.86	13.00	13.00	0.00	Upper Bakken Shale
10575.00	53.14	340.60	10518.88	166.32	-58.58	170.73	13.00	13.00	0.00	
10590.58	55.16	340.60	10528.00	178.23	-62.77	182.95	13.00	13.00	0.00	Middle Bakken Member
10600.00	56.39	340.60	10533.30	185.57	-65.36	190.50	13.00	13.00	0.00	
10625.00	59.64	340.60	10546.54	205.57	-72.40	211.02	13.00	13.00	0.00	
10650.00	62.89	340.60	10558.56	226.24	-79.68	232.24	13.00	13.00	0.00	
10675.00	66.14	340.60	10569.32	247.53	-87.18	254.09	13.00	13.00	0.00	
10676.69	66.36	340.60	10570.00	248.99	-87.69	255.59	13.00	13.00	0.00	Lwr Bakken Shale
10700.00	69.39	340.60	10578.78	269.35	-94.87	276.49	13.00	13.00	0.00	
10725.00	72.64	340.60	10586.91	291.64	-102.72	299.38	13.00	13.00	0.00	
10725.30	72.67	340.60	10587.00	291.91	-102.81	299.65	13.00	13.00	0.00	Three Forks
10750.00	75.89	340.60	10593.69	314.34	-110.71	322.67	13.00	13.00	0.00	
10775.00	79.14	340.60	10599.10	337.36	-118.82	346.30	13.00	13.00	0.00	
10800.00	82.39	340.60	10603.11	360.63	-127.01	370.19	13.00	13.00	0.00	
10825.00	85.64	340.60	10605.72	384.08	-135.27	394.26	13.00	13.00	0.00	
10850.00	88.89	340.60	10606.91	407.63	-143.57	418.44	13.00	13.00	0.00	
10858.57	90.00	340.60	10607.00	415.71	-146.41	426.73	13.00	13.00	0.00	Three Forks Target
10900.00	90.00	340.60	10607.00	454.79	-160.18	466.85	0.00	0.00	0.00	
11000.00	90.00	340.60	10607.00	549.11	-193.40	563.67	0.00	0.00	0.00	
11100.00	90.00	340.60	10607.00	643.43	-226.62	660.49	0.00	0.00	0.00	
11200.00	90.00	340.60	10607.00	737.75	-259.84	757.32	0.00	0.00	0.00	
11300.00	90.00	340.60	10607.00	832.07	-293.06	854.14	0.00	0.00	0.00	
11400.00	90.00	340.60	10607.00	926.39	-326.28	950.96	0.00	0.00	0.00	
11500.00	90.00	340.60	10607.00	1020.71	-359.50	1047.78	0.00	0.00	0.00	
11600.00	90.00	340.60	10607.00	1115.03	-392.72	1144.61	0.00	0.00	0.00	
11700.00	90.00	340.60	10607.00	1209.35	-425.94	1241.43	0.00	0.00	0.00	
11800.00	90.00	340.60	10607.00	1303.67	-459.16	1338.25	0.00	0.00	0.00	
11900.00	90.00	340.60	10607.00	1397.99	-492.38	1435.07	0.00	0.00	0.00	
12000.00	90.00	340.60	10607.00	1492.32	-525.60	1531.89	0.00	0.00	0.00	
12100.00	90.00	340.60	10607.00	1586.64	-558.82	1628.72	0.00	0.00	0.00	
12200.00	90.00	340.60	10607.00	1680.96	-592.04	1725.54	0.00	0.00	0.00	
12300.00	90.00	340.60	10607.00	1775.28	-625.26	1822.36	0.00	0.00	0.00	
12400.00	90.00	340.60	10607.00	1869.60	-658.48	1919.18	0.00	0.00	0.00	
12500.00	90.00	340.60	10607.00	1963.92	-691.70	2016.01	0.00	0.00	0.00	
12600.00	90.00	340.60	10607.00	2058.24	-724.92	2112.83	0.00	0.00	0.00	
12700.00	90.00	340.60	10607.00	2152.56	-758.14	2209.65	0.00	0.00	0.00	
12800.00	90.00	340.60	10607.00	2246.88	-791.36	2306.47	0.00	0.00	0.00	
12900.00	90.00	340.60	10607.00	2341.20	-824.58	2403.30	0.00	0.00	0.00	
13000.00	90.00	340.60	10607.00	2435.52	-857.80	2500.12	0.00	0.00	0.00	
13100.00	90.00	340.60	10607.00	2529.85	-891.02	2596.94	0.00	0.00	0.00	
13200.00	90.00	340.60	10607.00	2624.17	-924.24	2693.76	0.00	0.00	0.00	
13290.00	90.00	340.60	10607.00	2709.05	-954.14	2780.90	0.00	0.00	0.00	7"
13300.00	90.00	340.60	10607.00	2718.49	-957.46	2790.59	0.00	0.00	0.00	
13396.57	90.00	340.60	10607.00	2809.57	-989.54	2884.09	0.00	0.00	0.00	
13400.00	90.00	340.70	10607.00	2812.81	-990.68	2887.41	3.00	0.00	3.00	
13500.00	90.00	343.70	10607.00	2908.01	-1021.24	2984.88	3.00	0.00	3.00	
13600.00	90.00	346.70	10607.00	3004.68	-1046.78	3083.39	3.00	0.00	3.00	
13700.00	90.00	349.70	10607.00	3102.56	-1067.23	3182.66	3.00	0.00	3.00	
13800.00	90.00	352.70	10607.00	3201.37	-1082.52	3282.42	3.00	0.00	3.00	
13900.00	90.00	355.70	10607.00	3300.85	-1092.63	3382.39	3.00	0.00	3.00	
14000.00	90.00	358.70	10607.00	3400.72	-1097.51	3482.31	3.00	0.00	3.00	

LEAM Drilling Systems LLC
Planning Report

Company:	Continental Resources	**Date:** 02/13/2013	**Time:** 16:18:50	**Page:**	3
Field:	McKenzie County, ND	**Co-ordinate(NE) Reference:**	Well: 2-16H, True North		
Site:	Columbus Federal 2	**Vertical (TVD) Reference:**	GL 1920+KB 21 1941.0		
Well:	2-16H	**Section (VS) Reference:**	Well (0.00N,0.00E,355.08Azi)		
Wellpath:	OH	**Survey Calculation Method:**	Minimum Curvature	**Db:**	Adapti

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
14043.31	90.00	0.00	10607.00	3444.03	-1098.00	3525.51	3.00	0.00	3.00	
14100.00	90.00	0.00	10607.00	3500.71	-1098.00	3581.98	0.00	0.00	0.00	
14200.00	90.00	0.00	10607.00	3600.71	-1098.00	3681.62	0.00	0.00	0.00	
14300.00	90.00	0.00	10607.00	3700.71	-1098.00	3781.25	0.00	0.00	0.00	
14400.00	90.00	0.00	10607.00	3800.71	-1098.00	3880.88	0.00	0.00	0.00	
14500.00	90.00	0.00	10607.00	3900.71	-1098.00	3980.51	0.00	0.00	0.00	
14600.00	90.00	0.00	10607.00	4000.71	-1098.00	4080.14	0.00	0.00	0.00	
14700.00	90.00	0.00	10607.00	4100.71	-1098.00	4179.77	0.00	0.00	0.00	
14800.00	90.00	0.00	10607.00	4200.71	-1098.00	4279.40	0.00	0.00	0.00	
14900.00	90.00	0.00	10607.00	4300.71	-1098.00	4379.04	0.00	0.00	0.00	
15000.00	90.00	0.00	10607.00	4400.71	-1098.00	4478.67	0.00	0.00	0.00	
15100.00	90.00	0.00	10607.00	4500.71	-1098.00	4578.30	0.00	0.00	0.00	
15200.00	90.00	0.00	10607.00	4600.71	-1098.00	4677.93	0.00	0.00	0.00	
15300.00	90.00	0.00	10607.00	4700.71	-1098.00	4777.56	0.00	0.00	0.00	
15400.00	90.00	0.00	10607.00	4800.71	-1098.00	4877.19	0.00	0.00	0.00	
15500.00	90.00	0.00	10607.00	4900.71	-1098.00	4976.83	0.00	0.00	0.00	
15600.00	90.00	0.00	10607.00	5000.71	-1098.00	5076.46	0.00	0.00	0.00	
15700.00	90.00	0.00	10607.00	5100.71	-1098.00	5176.09	0.00	0.00	0.00	
15800.00	90.00	0.00	10607.00	5200.71	-1098.00	5275.72	0.00	0.00	0.00	
15900.00	90.00	0.00	10607.00	5300.71	-1098.00	5375.35	0.00	0.00	0.00	
16000.00	90.00	0.00	10607.00	5400.71	-1098.00	5474.98	0.00	0.00	0.00	
16100.00	90.00	0.00	10607.00	5500.71	-1098.00	5574.61	0.00	0.00	0.00	
16200.00	90.00	0.00	10607.00	5600.71	-1098.00	5674.25	0.00	0.00	0.00	
16300.00	90.00	0.00	10607.00	5700.71	-1098.00	5773.88	0.00	0.00	0.00	
16400.00	90.00	0.00	10607.00	5800.71	-1098.00	5873.51	0.00	0.00	0.00	
16500.00	90.00	0.00	10607.00	5900.71	-1098.00	5973.14	0.00	0.00	0.00	
16600.00	90.00	0.00	10607.00	6000.71	-1098.00	6072.77	0.00	0.00	0.00	
16700.00	90.00	0.00	10607.00	6100.71	-1098.00	6172.40	0.00	0.00	0.00	
16800.00	90.00	0.00	10607.00	6200.71	-1098.00	6272.04	0.00	0.00	0.00	
16900.00	90.00	0.00	10607.00	6300.71	-1098.00	6371.67	0.00	0.00	0.00	
17000.00	90.00	0.00	10607.00	6400.71	-1098.00	6471.30	0.00	0.00	0.00	
17100.00	90.00	0.00	10607.00	6500.71	-1098.00	6570.93	0.00	0.00	0.00	
17200.00	90.00	0.00	10607.00	6600.71	-1098.00	6670.56	0.00	0.00	0.00	
17300.00	90.00	0.00	10607.00	6700.71	-1098.00	6770.19	0.00	0.00	0.00	
17400.00	90.00	0.00	10607.00	6800.71	-1098.00	6869.82	0.00	0.00	0.00	
17500.00	90.00	0.00	10607.00	6900.71	-1098.00	6969.46	0.00	0.00	0.00	
17600.00	90.00	0.00	10607.00	7000.71	-1098.00	7069.09	0.00	0.00	0.00	
17700.00	90.00	0.00	10607.00	7100.71	-1098.00	7168.72	0.00	0.00	0.00	
17800.00	90.00	0.00	10607.00	7200.71	-1098.00	7268.35	0.00	0.00	0.00	
17900.00	90.00	0.00	10607.00	7300.71	-1098.00	7367.98	0.00	0.00	0.00	
18000.00	90.00	0.00	10607.00	7400.71	-1098.00	7467.61	0.00	0.00	0.00	
18100.00	90.00	0.00	10607.00	7500.71	-1098.00	7567.25	0.00	0.00	0.00	
18200.00	90.00	0.00	10607.00	7600.71	-1098.00	7666.88	0.00	0.00	0.00	
18300.00	90.00	0.00	10607.00	7700.71	-1098.00	7766.51	0.00	0.00	0.00	
18400.00	90.00	0.00	10607.00	7800.71	-1098.00	7866.14	0.00	0.00	0.00	
18500.00	90.00	0.00	10607.00	7900.71	-1098.00	7965.77	0.00	0.00	0.00	
18600.00	90.00	0.00	10607.00	8000.71	-1098.00	8065.40	0.00	0.00	0.00	
18700.00	90.00	0.00	10607.00	8100.71	-1098.00	8165.03	0.00	0.00	0.00	
18800.00	90.00	0.00	10607.00	8200.71	-1098.00	8264.67	0.00	0.00	0.00	
18900.00	90.00	0.00	10607.00	8300.71	-1098.00	8364.30	0.00	0.00	0.00	
19000.00	90.00	0.00	10607.00	8400.71	-1098.00	8463.93	0.00	0.00	0.00	
19100.00	90.00	0.00	10607.00	8500.71	-1098.00	8563.56	0.00	0.00	0.00	

LEAM Drilling Systems LLC
Planning Report

Company:	Continental Resources	**Date:** 02/13/2013	**Time:** 16:18:50	**Page:**	4
Field:	McKenzie County, ND	**Co-ordinate(NE) Reference:**	Well: 2-16H, True North		
Site:	Columbus Federal 2	**Vertical (TVD) Reference:**	GL 1920+KB 21 1941.0		
Well:	2-16H	**Section (VS) Reference:**	Well (0.00N,0.00E,355.08Azi)		
Wellpath:	OH	**Survey Calculation Method:**	Minimum Curvature	**Db:**	Adapti

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
19200.00	90.00	0.00	10607.00	8600.71	-1098.00	8663.19	0.00	0.00	0.00	
19300.00	90.00	0.00	10607.00	8700.71	-1098.00	8762.82	0.00	0.00	0.00	
19400.00	90.00	0.00	10607.00	8800.71	-1098.00	8862.46	0.00	0.00	0.00	
19500.00	90.00	0.00	10607.00	8900.71	-1098.00	8962.09	0.00	0.00	0.00	
19600.00	90.00	0.00	10607.00	9000.71	-1098.00	9061.72	0.00	0.00	0.00	
19700.00	90.00	0.00	10607.00	9100.71	-1098.00	9161.35	0.00	0.00	0.00	
19800.00	90.00	0.00	10607.00	9200.71	-1098.00	9260.98	0.00	0.00	0.00	
19900.00	90.00	0.00	10607.00	9300.71	-1098.00	9360.61	0.00	0.00	0.00	
20000.00	90.00	0.00	10607.00	9400.71	-1098.00	9460.24	0.00	0.00	0.00	
20100.00	90.00	0.00	10607.00	9500.71	-1098.00	9559.88	0.00	0.00	0.00	
20200.00	90.00	0.00	10607.00	9600.71	-1098.00	9659.51	0.00	0.00	0.00	
20300.00	90.00	0.00	10607.00	9700.71	-1098.00	9759.14	0.00	0.00	0.00	
20400.00	90.00	0.00	10607.00	9800.71	-1098.00	9858.77	0.00	0.00	0.00	
20500.00	90.00	0.00	10607.00	9900.71	-1098.00	9958.40	0.00	0.00	0.00	
20600.00	90.00	0.00	10607.00	10000.71	-1098.00	10058.03	0.00	0.00	0.00	
20700.00	90.00	0.00	10607.00	10100.71	-1098.00	10157.67	0.00	0.00	0.00	
20800.00	90.00	0.00	10607.00	10200.71	-1098.00	10257.30	0.00	0.00	0.00	
20900.00	90.00	0.00	10607.00	10300.71	-1098.00	10356.93	0.00	0.00	0.00	
21000.00	90.00	0.00	10607.00	10400.71	-1098.00	10456.56	0.00	0.00	0.00	
21100.00	90.00	0.00	10607.00	10500.71	-1098.00	10556.19	0.00	0.00	0.00	
21200.00	90.00	0.00	10607.00	10600.71	-1098.00	10655.82	0.00	0.00	0.00	
21300.00	90.00	0.00	10607.00	10700.71	-1098.00	10755.45	0.00	0.00	0.00	
21400.00	90.00	0.00	10607.00	10800.71	-1098.00	10855.09	0.00	0.00	0.00	
21500.00	90.00	0.00	10607.00	10900.71	-1098.00	10954.72	0.00	0.00	0.00	
21600.00	90.00	0.00	10607.00	11000.71	-1098.00	11054.35	0.00	0.00	0.00	
21700.00	90.00	0.00	10607.00	11100.71	-1098.00	11153.98	0.00	0.00	0.00	
21800.00	90.00	0.00	10607.00	11200.71	-1098.00	11253.61	0.00	0.00	0.00	
21900.00	90.00	0.00	10607.00	11300.71	-1098.00	11353.24	0.00	0.00	0.00	
22000.00	90.00	0.00	10607.00	11400.71	-1098.00	11452.88	0.00	0.00	0.00	
22100.00	90.00	0.00	10607.00	11500.71	-1098.00	11552.51	0.00	0.00	0.00	
22200.00	90.00	0.00	10607.00	11600.71	-1098.00	11652.14	0.00	0.00	0.00	
22300.00	90.00	0.00	10607.00	11700.71	-1098.00	11751.77	0.00	0.00	0.00	
22400.00	90.00	0.00	10607.00	11800.71	-1098.00	11851.40	0.00	0.00	0.00	
22500.00	90.00	0.00	10607.00	11900.71	-1098.00	11951.03	0.00	0.00	0.00	
22600.00	90.00	0.00	10607.00	12000.71	-1098.00	12050.66	0.00	0.00	0.00	
22700.00	90.00	0.00	10607.00	12100.71	-1098.00	12150.30	0.00	0.00	0.00	
22800.00	90.00	0.00	10607.00	12200.71	-1098.00	12249.93	0.00	0.00	0.00	
22900.00	90.00	0.00	10607.00	12300.71	-1098.00	12349.56	0.00	0.00	0.00	
23000.00	90.00	0.00	10607.00	12400.71	-1098.00	12449.19	0.00	0.00	0.00	
23100.00	90.00	0.00	10607.00	12500.71	-1098.00	12548.82	0.00	0.00	0.00	
23200.00	90.00	0.00	10607.00	12600.71	-1098.00	12648.45	0.00	0.00	0.00	
23300.00	90.00	0.00	10607.00	12700.71	-1098.00	12748.09	0.00	0.00	0.00	
23354.29	90.00	0.00	10607.00	12755.00	-1098.00	12802.17	0.00	0.00	0.00	PBHL 2-16H

Targets

Name	Description Dip.	Dir.	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<---- Latitude ----> Deg Min Sec	<--- Longitude ---> Deg Min Sec
SHL 2-16H			0.00	0.00	0.00	408199.81	1193824.71	48 4 31.258 N	103 40 11.343 W
PBHL 2-16H			10607.00	12755.00	-1098.00	420989.19	1193252.59	48 6 37.136 N	103 40 27.523 W

LEAM Drilling Systems LLC
Planning Report

Company:	Continental Resources	**Date:** 02/13/2013	**Time:** 16:18:50	**Page:**	5
Field:	McKenzie County, ND	**Co-ordinate(NE) Reference:**	Well: 2-16H, True North		
Site:	Columbus Federal 2	**Vertical (TVD) Reference:**	GL 1920+KB 21 1941.0		
Well:	2-16H	**Section (VS) Reference:**	Well (0.00N,0.00E,355.08Azi)		
Wellpath:	OH	**Survey Calculation Method:**	Minimum Curvature	**Db:**	Adapti

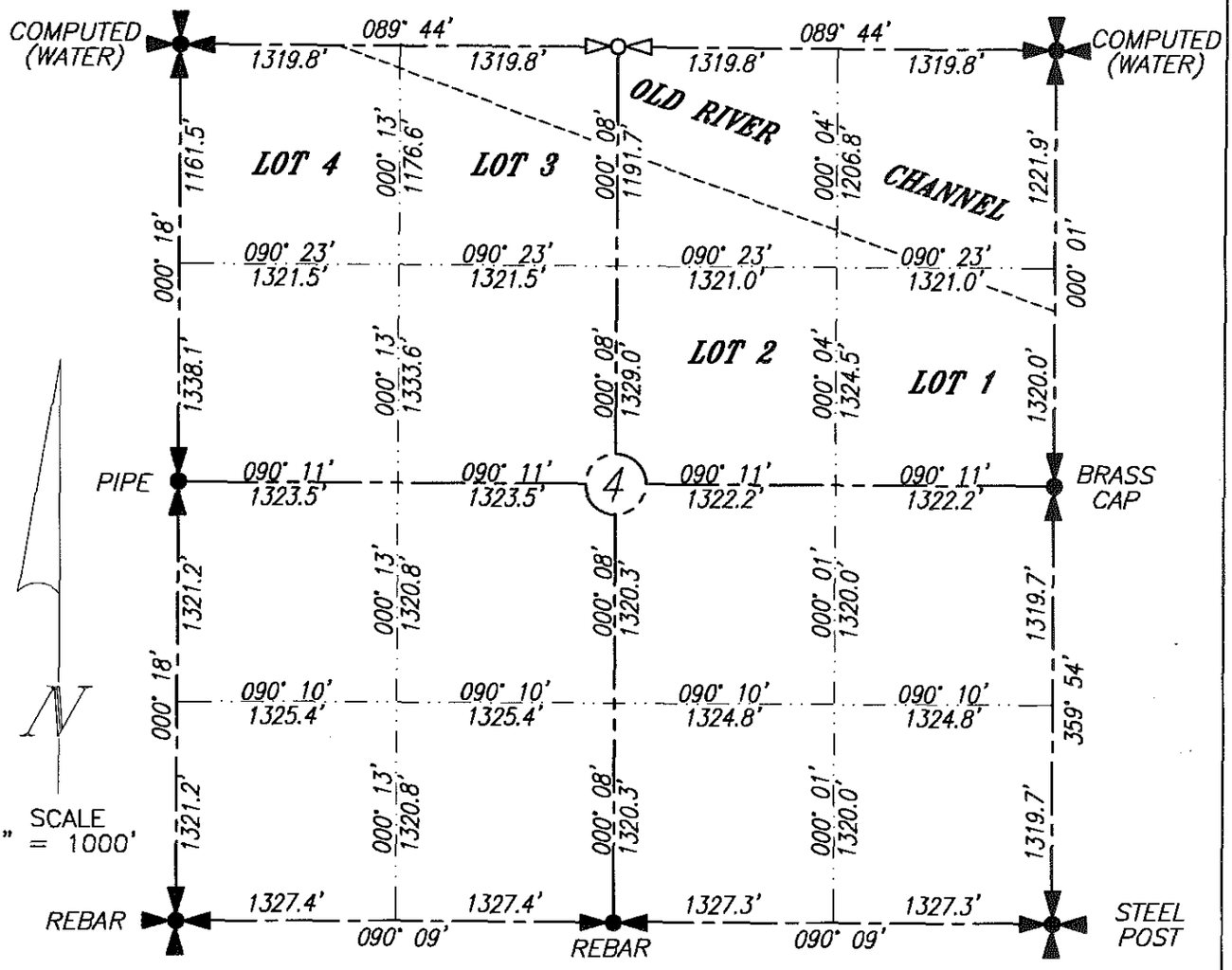
Casing Points

MD ft	TVD ft	Diameter in	Hole Size in	Name
13290.00	10607.00	7.00	8.50	7"

Formations

MD ft	TVD ft	Formations	Lithology	Dip Angle deg	Dip Direction deg
1841.00	1841.00	Pierre Shale		0.00	0.00
4425.00	4425.00	Greenhorn		0.00	0.00
4826.00	4826.00	Dakota Group		0.00	0.00
5705.00	5705.00	Dunham Salt Top		0.00	0.00
6793.00	6793.00	Dunham Salt Base		0.00	0.00
7103.00	7103.00	Pine Salt Top		0.00	0.00
7159.00	7159.00	Pine Salt Base		0.00	0.00
7185.00	7185.00	Minnekahta		0.00	0.00
7471.00	7471.00	Minnelusa Group		0.00	0.00
7627.00	7627.00	Tyler		0.00	0.00
8179.00	8179.00	Kibbey		0.00	0.00
8333.00	8333.00	Top Charles		0.00	0.00
9031.00	9031.00	Base Last Charles Salt		0.00	0.00
9255.00	9255.00	Mission Canyon		0.00	0.00
9821.00	9821.00	Lodgepole		0.00	0.00
10562.12	10511.00	Upper Bakken Shale		0.00	0.00
10590.58	10528.00	Middle Bakken Member		0.00	0.00
10676.69	10570.00	Lwr Bakken Shale		0.00	0.00
10725.30	10587.00	Three Forks		0.00	0.00
10858.57	10607.00	Three Forks Target		0.00	0.00

HORIZONTAL SECTION PLAT
CONTINENTAL RESOURCES INC.
COLUMBUS FEDERAL 2-16H
SECTION 4, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA



ALL CORNERS SHOWN ON THIS PLAT WERE FOUND IN THE FIELD
DISTANCES TO ALL OTHERS ARE CALCULATED.
ALL BEARINGS SHOWN ARE ASSUMED.

JOHN PAULSON
REGISTERED
LAND
SURVEYOR
3366
NORTH DAKOTA

I CERTIFY THAT THIS PLAT CORRECTLY REPRESENTS WORK PERFORMED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF

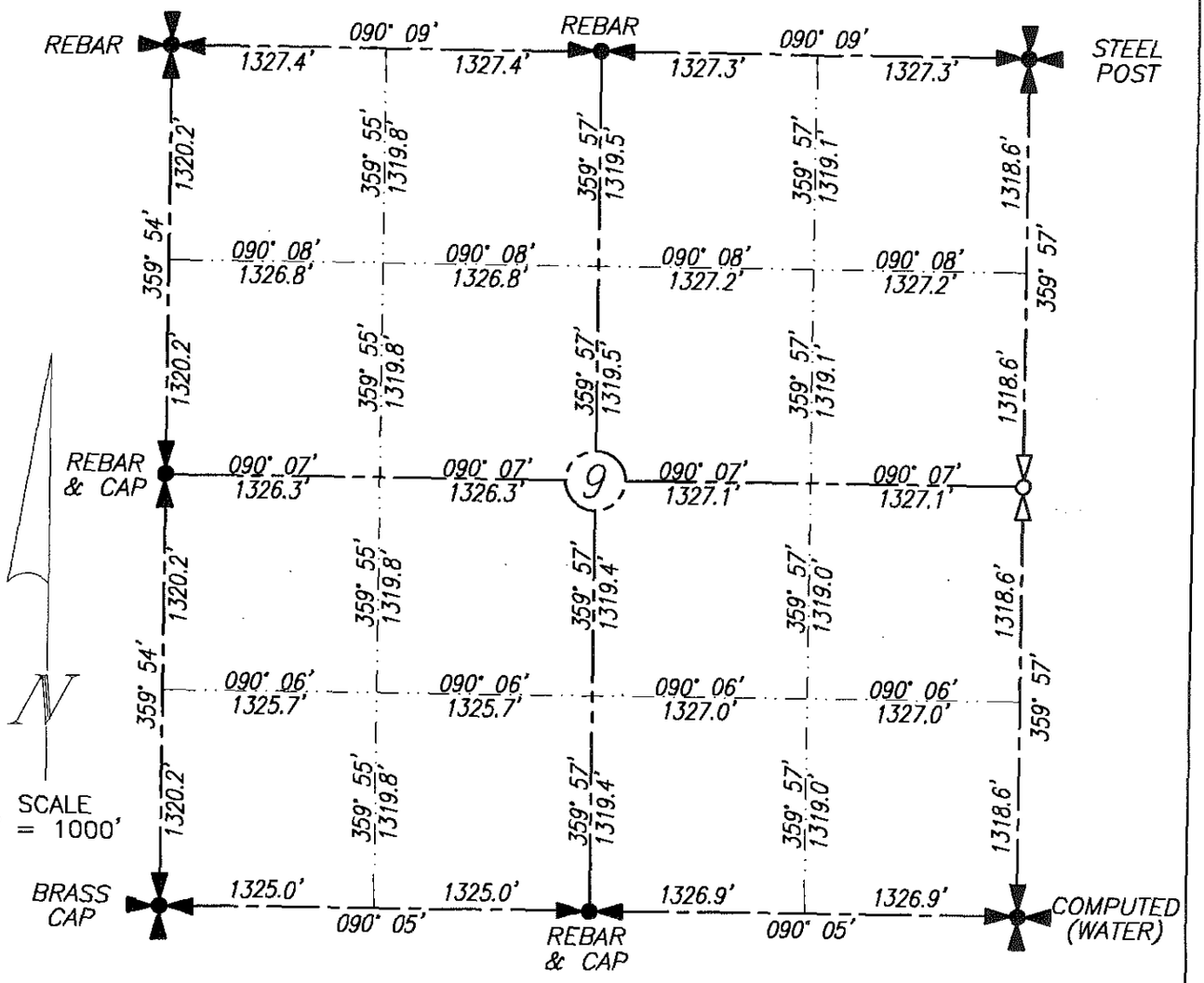
4-11-12

JOHN PAULSON R.L.S. 3366

BROSZ ENGINEERING INC.
BOX 357
BOWMAN, N.D. 58623
PHONE: 701-523-3340
FAX: 701-523-5243

PROJECT NO. 12-10

HORIZONTAL SECTION PLAT
CONTINENTAL RESOURCES INC.
COLUMBUS FEDERAL 2-16H
SECTION 9, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA



ALL CORNERS SHOWN ON THIS PLAT WERE FOUND IN THE FIELD
DISTANCES TO ALL OTHERS ARE CALCULATED.
ALL BEARINGS SHOWN ARE ASSUMED.

JOHN PAULSON
REGISTERED
LAND SURVEYOR
L.S. 3366

I CERTIFY THAT THIS PLAT CORRECTLY REPRESENTS WORK PERFORMED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF

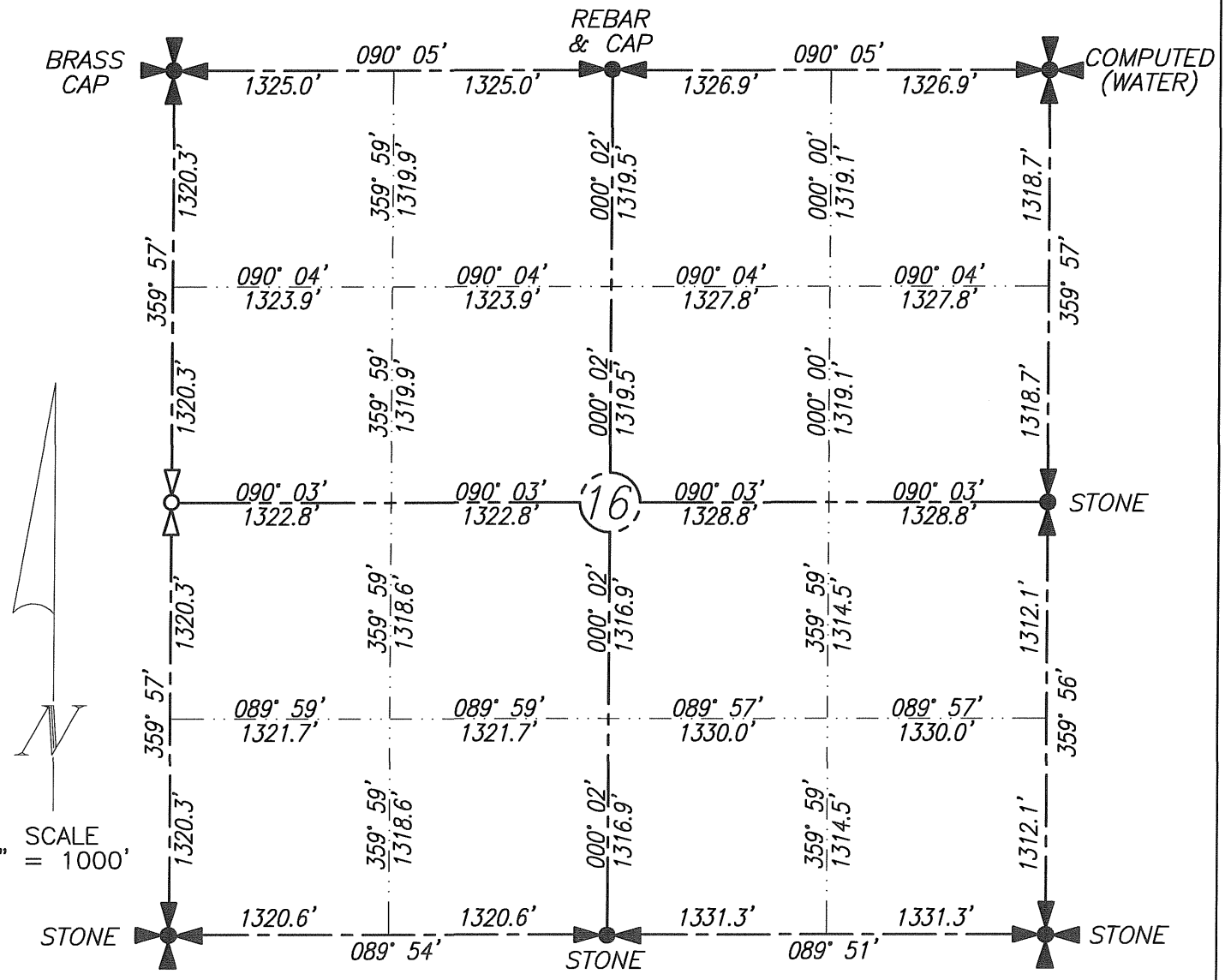
11-17-12

JOHN PAULSON R.L.S. 3366

BROSZ ENGINEERING INC.
BOX 357
BOWMAN, N.D. 58623
PHONE: 701-523-3340
FAX: 701-523-5243

PROJECT NO. 12-10

HORIZONTAL SECTION PLAT
CONTINENTAL RESOURCES INC.
COLUMBUS FEDERAL 2-16H
SECTION 16, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA



ALL CORNERS SHOWN ON THIS PLAT WERE FOUND IN THE FIELD
DISTANCES TO ALL OTHERS ARE CALCULATED.
ALL BEARINGS SHOWN ARE ASSUMED.

I CERTIFY THAT THIS PLAT CORRECTLY REPRESENTS WORK PERFORMED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF

JOHN PAULSON REGISTERED LAND SURVEYOR L.S. 3366 NORTH DAKOTA

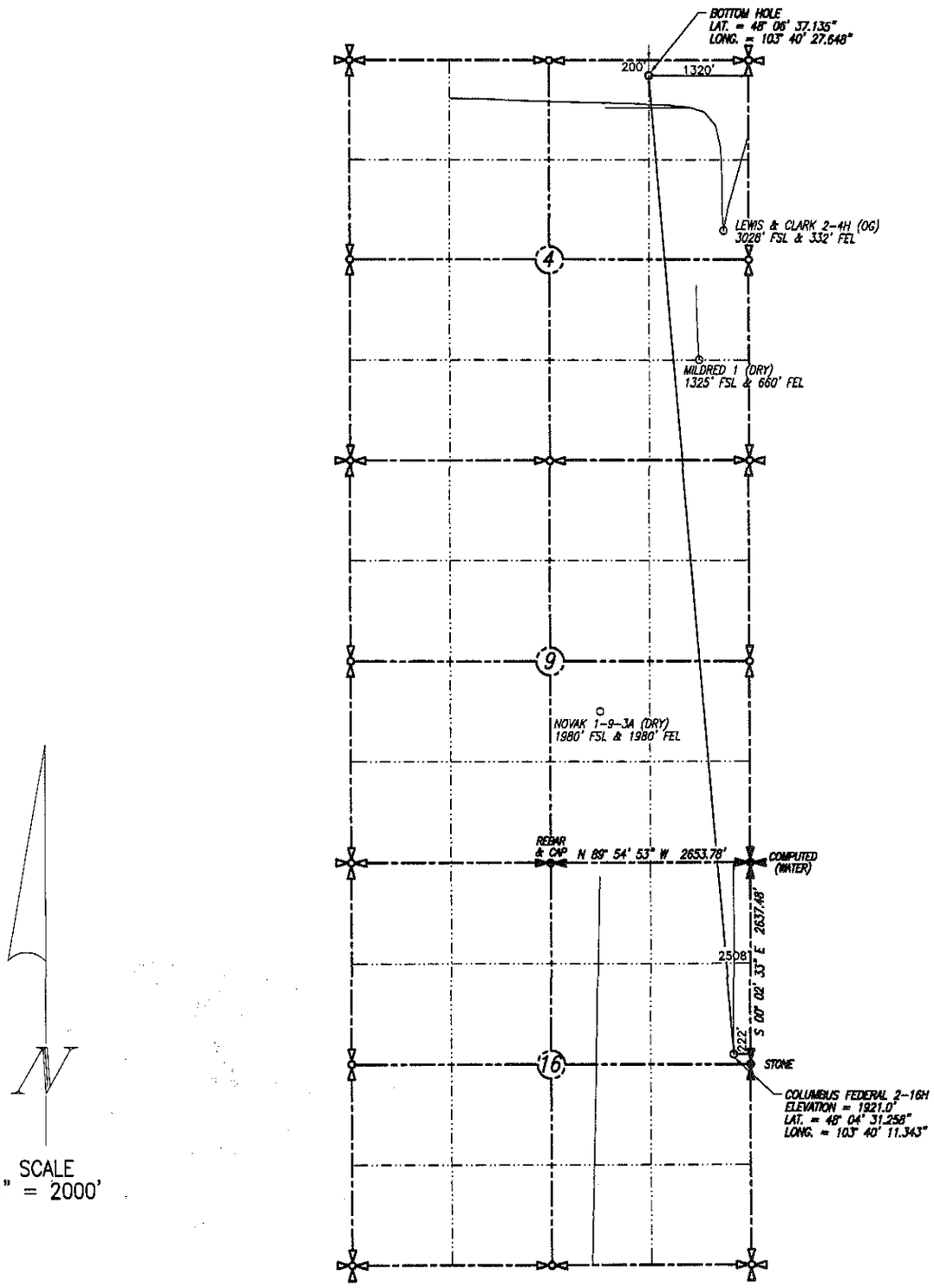
4-11-12

JOHN PAULSON, R.L.S. 3366

BROSZ ENGINEERING INC.
BOX 357
BOWMAN, N.D. 58623
PHONE: 701-523-3340
FAX: 701-523-5243

PROJECT NO. 12-10

BOTTOM HOLE LOCATION PLAT
CONTINENTAL RESOURCES INC.
COLUMBUS FEDERAL 2-16H
SECTION 16, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA
2508' FNL & 222' FEL



I CERTIFY THAT THIS PLAT CORRECTLY REPRESENTS WORK PERFORMED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF

4-11-12

JOHN PAULSON R.L.S. 3366

REGISTERED LAND SURVEYOR L.S. 3366 NORTH DAKOTA

DATE STAKED: 1-4-2012

BASIS OF VERTICAL DATUM: NAVD 1988 GEOID 09

PERSON AUTHORIZING SURVEY: CHAD NEWBY

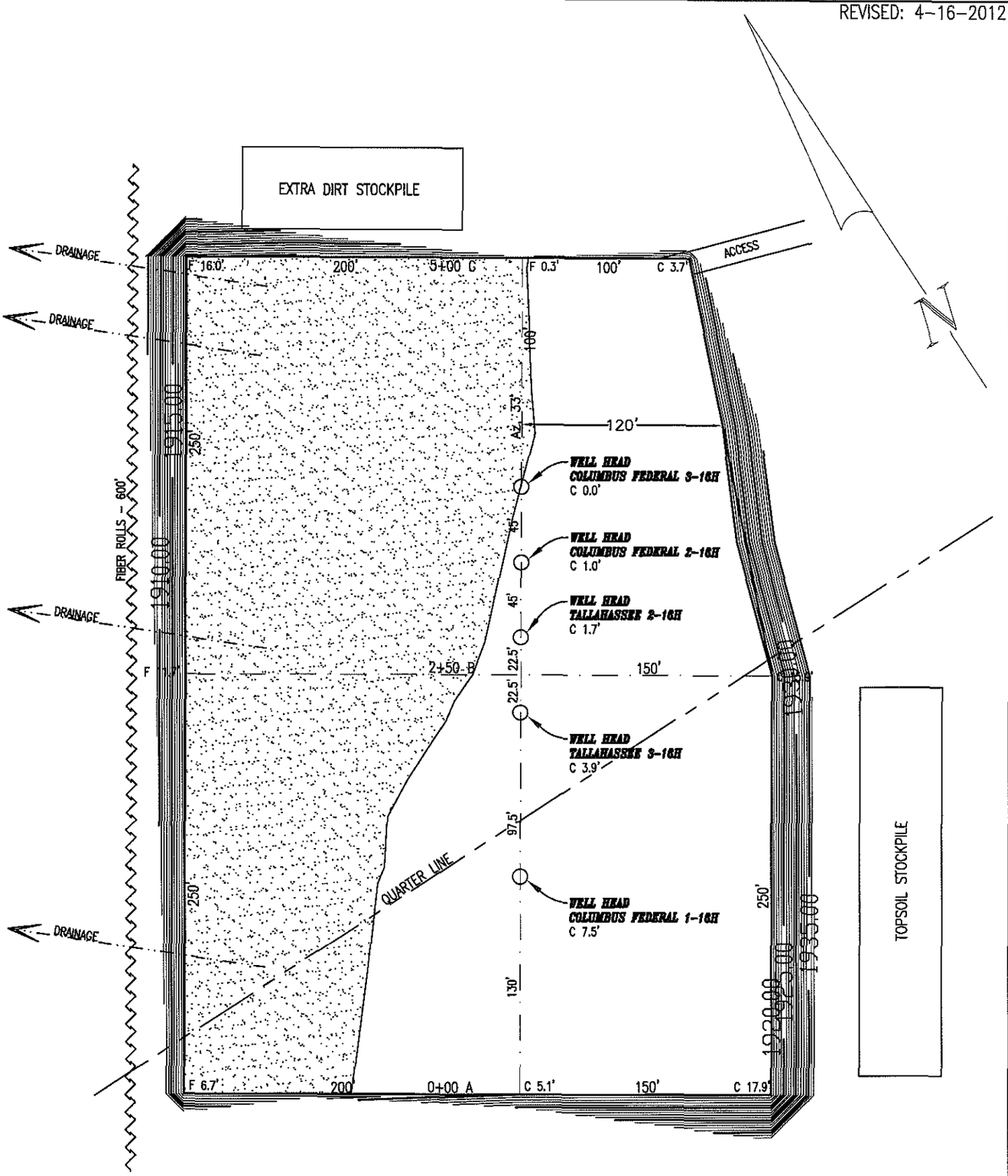
EXPLANATION AREA: NAD83(CORS96)

BASIS OF BEARING: TRUE NORTH

BROSZ ENGINEERING INC.
BOX 357
BOWMAN, N.D. 58623
PHONE: 701-523-3340
FAX: 701-523-5243

PROJECT NO. 12-10

REVISED: 4-16-2012



CONTINENTAL RESOURCES INC.
PO BOX 1032
ENID, OKLAHOMA 73702

CUT & FILL
EXHIBIT 6

COLUMBUS FEDERAL 2-16H
SECTION 16, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA

ESTIMATED EARTH QUANTITIES

TOP-SOIL:	3,125	CUBIC YARDS
SUB-SOIL:	28,719	CUBIC YARDS
TOTAL CUT:	31,844	CUBIC YARDS
TOTAL FILL:	27,716	CUBIC YARDS

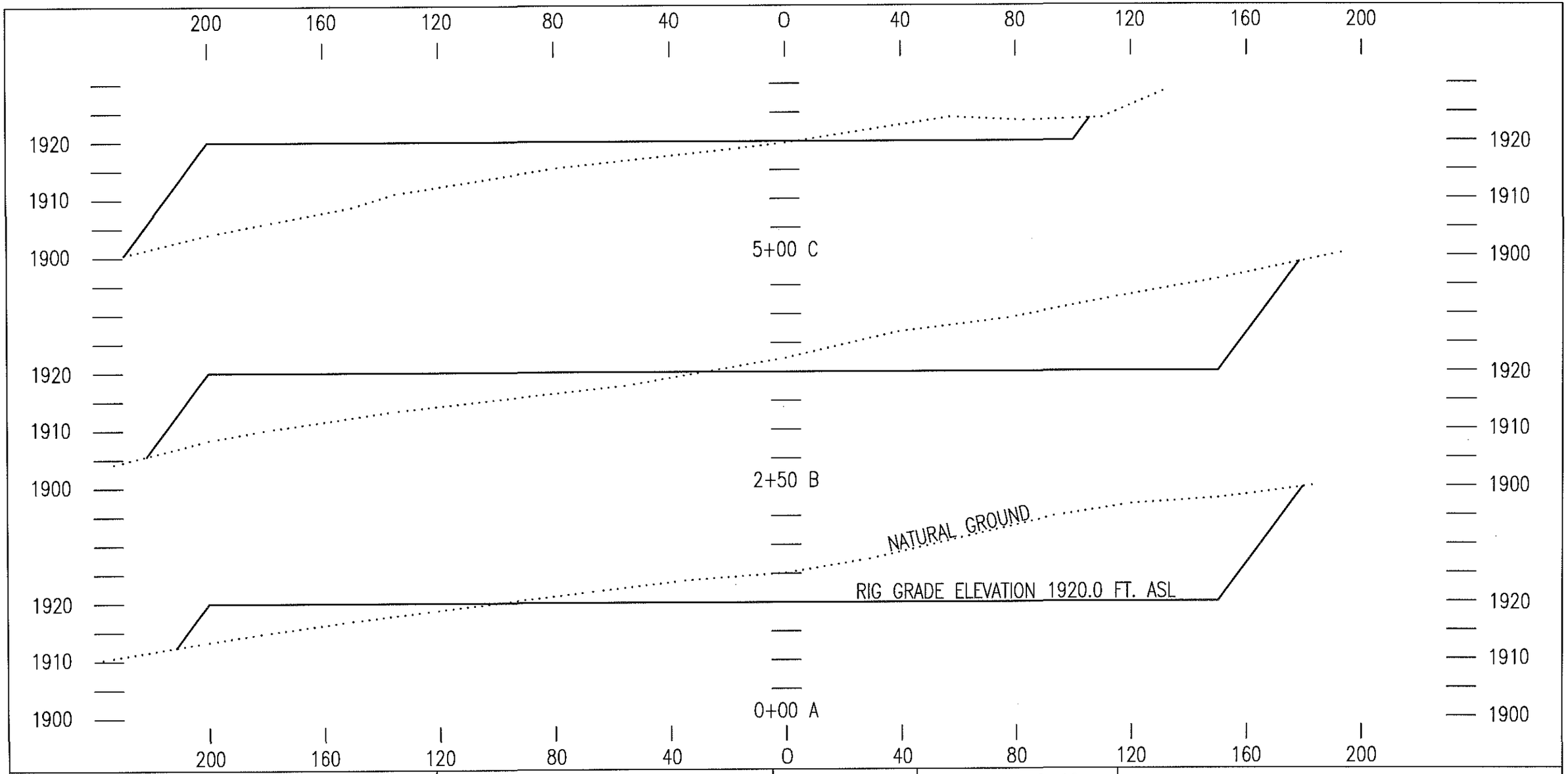
Use excess materials in access road fill

ALL INDICATED CUTS & FILLS ARE STAKED GRADE ELEVATIONS.

BACKSLOPES ASSUMED AT 1 1/2 : 1 %

Ground Elevation at Well Head: 1921.0 ft. ASL
Finished Rig Grade Elevation: 1920.0 ft. ASL

DRAFT: HEDGE	SCALE 1" = 80'	DATE: 1-4-2012	PROJECT NO. 12-10



CONTINENTAL RESOURCES INC.
PO BOX 1032
ENID, OKLAHOMA 73702

DRILL PAD PROFILE
EXHIBIT 7

COLUMBUS FEDERAL 2-16H
SECTION 16, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA

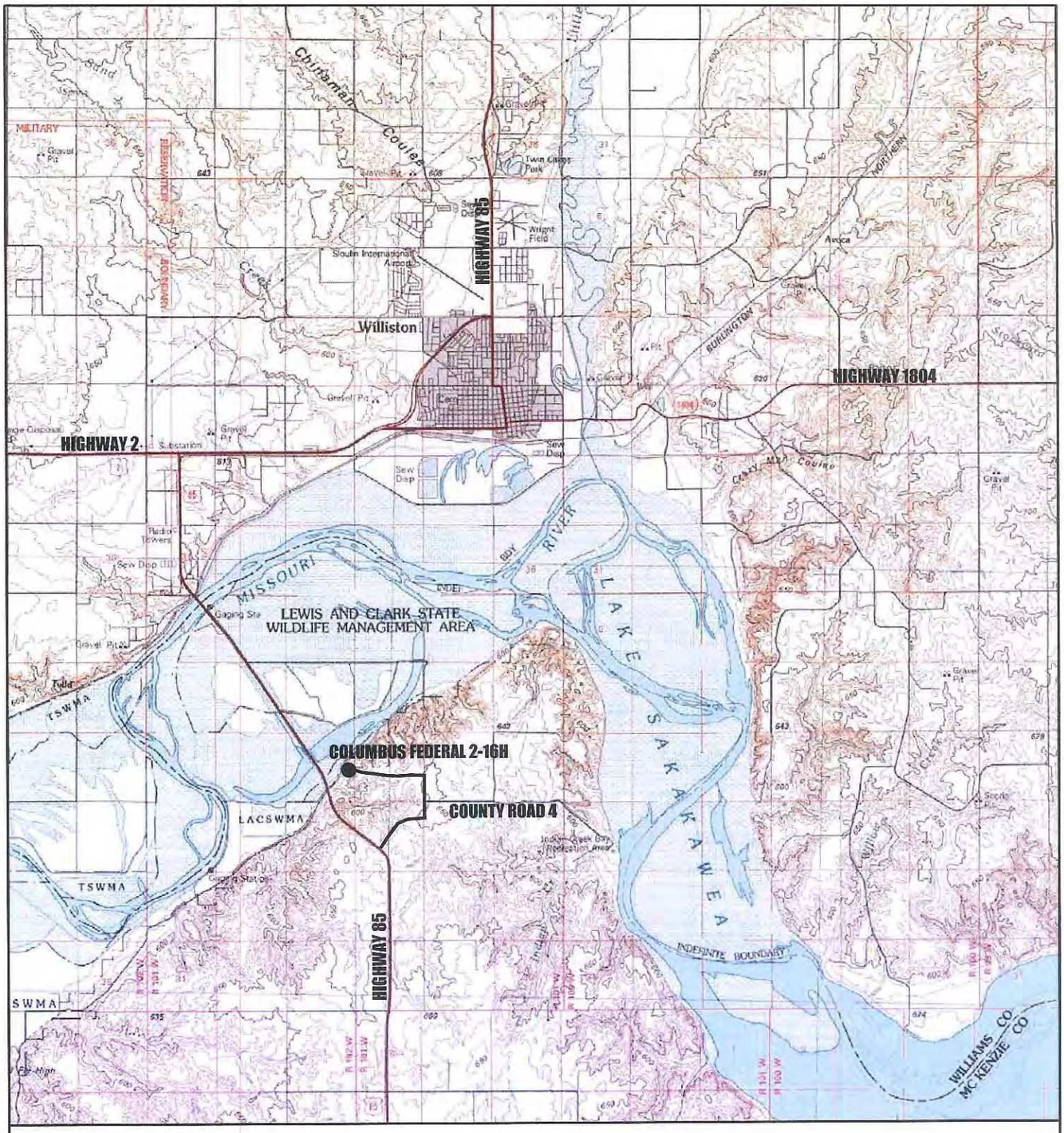
DRAWN BY: JH | PROJ. NO. 12-10

SCALE: Horz. 1" = 40' Vert: 1" =20'

BROSZ ENGINEERING INC.
BOX 357
BOWMAN, N.D. 58623
PHONE: 701-523-3340

ESTIMATED QUANTITIES

TOP-SOIL:	3,125	CUBIC YARDS
SUB-SOIL:	28,719	CUBIC YARDS
TOTAL CUT:	31,844	CUBIC YARDS
TOTAL FILL:	27,716	CUBIC YARDS

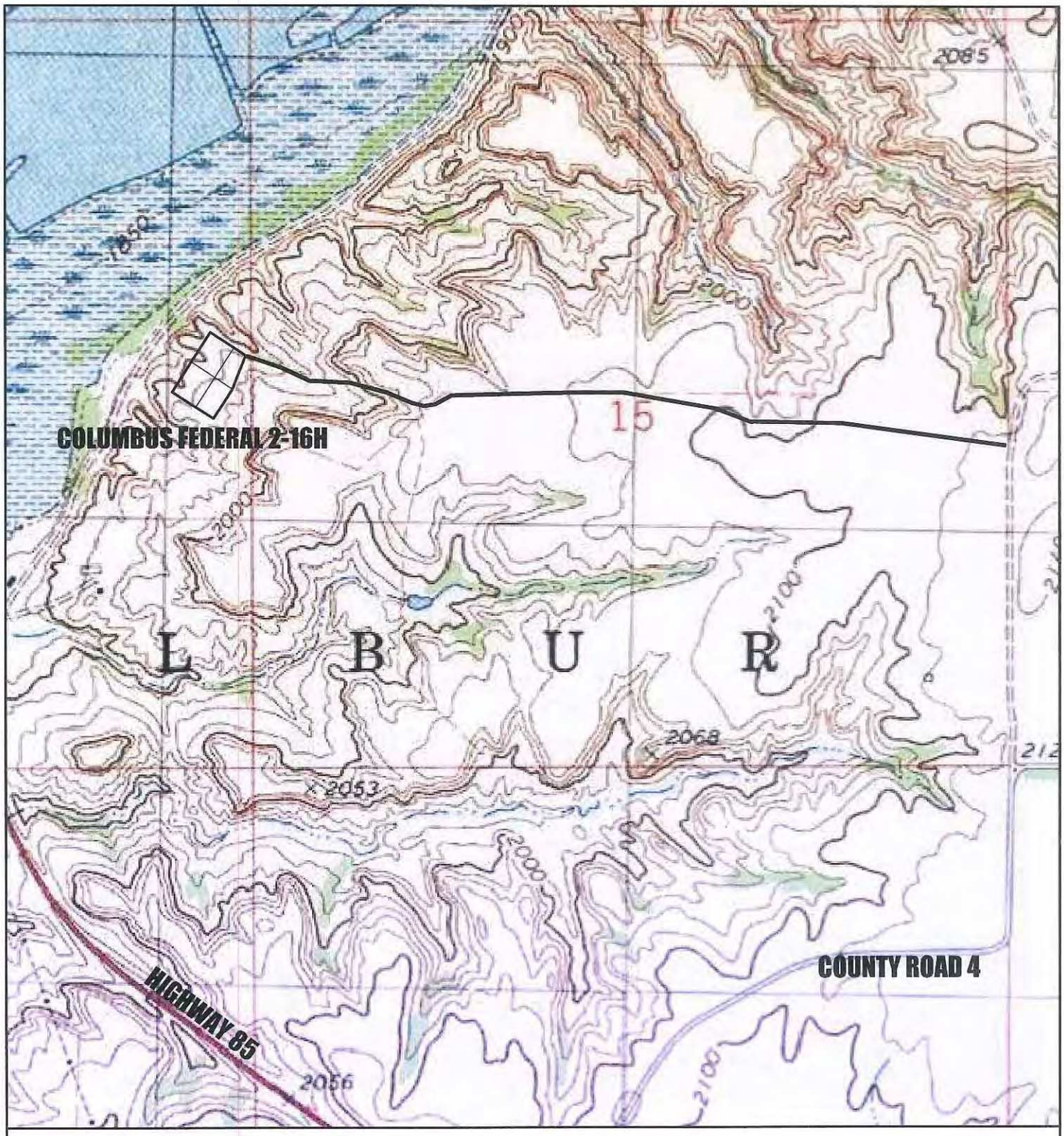


CONTINENTAL RESOURCES INC.

EXHIBIT 1

VICINITY MAP

COLUMBUS FEDERAL 2-16H
SECTION 16, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA



CONTINENTAL RESOURCES INC.

EXHIBIT 2

QUAD ACCESS

COLUMBUS FEDERAL 2-16H
SECTION 16, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA

N

Tabor, David

From: Tabor, David
Sent: Wednesday, March 06, 2013 2:25 PM
To: Tabor, David
Subject: FW: Columbus Federal 3-16H and pad.

From: Robert Sandbo [mailto:Robert.Sandbo@clr.com]
Sent: Friday, March 01, 2013 4:48 PM
To: Tabor, David
Subject: RE: Columbus Federal 3-16H and pad.

Thanks David. I got the email. Here is our schedule for the pad as of right now:

Columbus Federal 1-16H to spud on 3/24/2013 (may spud with the small rig around one week earlier if possible). We had planned on drilling the Columbus 1-16H first and then come back in a year or so and drill the other 4 but if we get the permits for all and the order on the 1280 allows us to drill them all back to back, we will most likely go ahead and drill them all at once. We will take a look at the 1280 order that covers the Columbus 1-16H and see if we can batch drill them.

You should have everything on the 3-16H and the affidavit sometime Monday.

Thanks for the help,

Bob Sandbo
Regulatory Compliance Supervisor

Continental Resources, Inc.
20 N. Broadway
OKC, OK 73102
P: 405-234-9020
F: 405-234-9562
C: 405-708-0691
robert.sandbo@clr.com
www.**clr**.com

Continental
RESOURCES

March 7, 2013

Industrial Commission of North Dakota
Oil & Gas Division
600 East Boulevard, Dept 405
Bismarck, North Dakota 58505

Continental Resources, Inc. (CRI) respectfully submits the following information concerning the drilling of the Columbus Federal 1-16H, 2-16H & 3-16H1, and the Tallahassee 2-21H & 3-21H1

Township 153N, Range 101W
Section 16, NE/4 SE/4 & SE/4 NE/4 McKenzie County, North Dakota.

The Columbus Federal and Tallahassee well(s) are located in an environmentally sensitive area in close proximity to the Missouri River. Therefore, Continental Resources Inc. would like to propose the following automatic shut down equipment and level sensing monitoring equipment be deployed on the site to aid in the prevention of any accidental release or safety issue. A schematic diagram and pictures of an existing tank battery with emergency shutdown equipment has been included with this affidavit.

1) Tank Side (oil & water tanks)
    a. ABB Levelmaster dual float
    b. High level switch as backup
    c. Battery box with solar backup

2) Treater & Separator
    a. Temperature device in each vessel
    b. Pressure transducer in each vessel
    c. Level switch in each vessel
    d. Battery box with solar backup

3) Wellhead
    a. TotalFlow Controller
    b. Emergency Shutdown Valve Package
    c. Battery box with solar backup
    d. Pressure transducer on casing & tubing

4) Flare
    a. Scrubber pot high level switch
    b. Monitoring flare for low temp output – alarm if flare goes out

5) System Automation through the proposed equipment will provide an independent control system on all equipment on site which will be able to shut the well(s) in should any of the other equipment be incapacitated or functioning improperly.

Don Kennedy

Don Kennedy, Sr. Production Engineer
Continental Resources, Inc.

STATE OF OKLAHOMA)
)ss:
COUNTY OF OKLAHOMA)

On the 7th day of March, 2013, before me, a Notary Public in and for said County and State, personally appeared **Don Kennedy**, known to me to be the Sr. Production Engineer of Continental Resources, Inc., the Corporation that executed the within instrument, and acknowledged to me that such Corporation executed the same.

Becky Barnes

Notary Public

Oklahoma County, Oklahoma

My Commission Expires: 7/5/2015

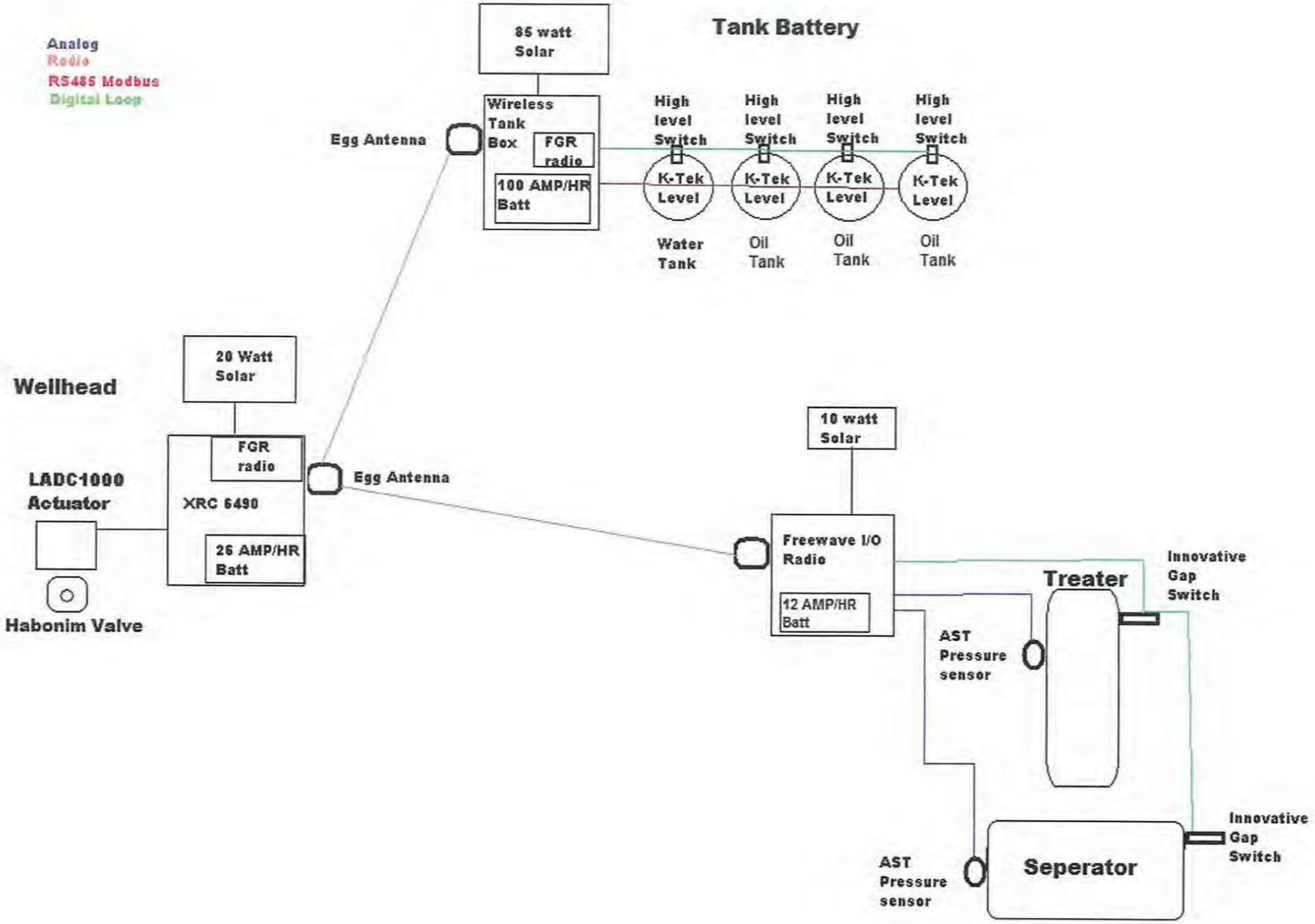
Commission No.: 11006023

BECKY BARNES NOTARY # 11006023 EXP. 7/5/2015 PUBLIC STATE OF OKLAHOMA

Sincerely,

CONTINENTAL RESOURCES, INC.

Becky Barnes
Regulatory Compliance Specialist


Analog
Radio
RS485 Modbus
Digital Loop
85 watt Solar
Tank Battery
Wireless Tank Box
FGR radio
100 AMP/HR Batt
Egg Antenna
High level Switch
High level Switch
High level Switch
High level Switch
K-Tek Level
K-Tek Level
K-Tek Level
K-Tek Level
Water Tank
Oil Tank
Oil Tank
Oil Tank
Wellhead
20 Watt Solar
FGR radio
XRC 6490
26 AMP/HR Batt
LADC1000 Actuator
Habonim Valve
Egg Antenna
10 watt Solar
Freewave I/O Radio
12 AMP/HR Batt
Treater
Innovative Gap Switch
AST Pressure sensor
Seperator
Innovative Gap Switch
AST Pressure sensor

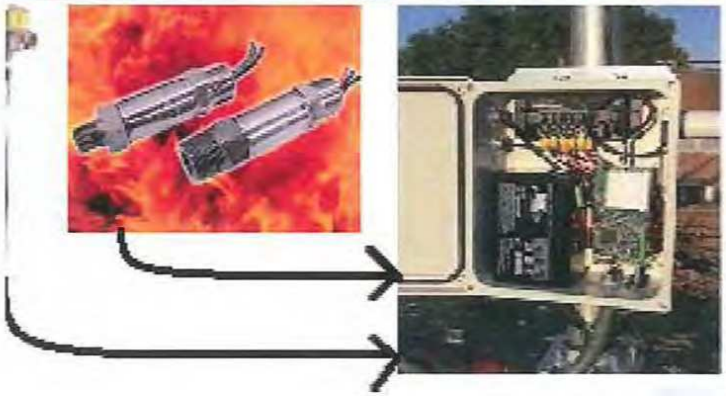
U003 Gap Switch and AST 4600 Transducer monitor pressures and liquid content of Flare and Sales Lines, transmitted to XRC via FreeWave Radio.

ABB TotalFlow XRC 6490

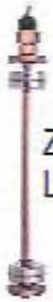
All well information is passed to your SCADA system via FreeWave Network (Future)

Winn-Marion's Well Hea Kit with FGRIO Radio and Power Supply

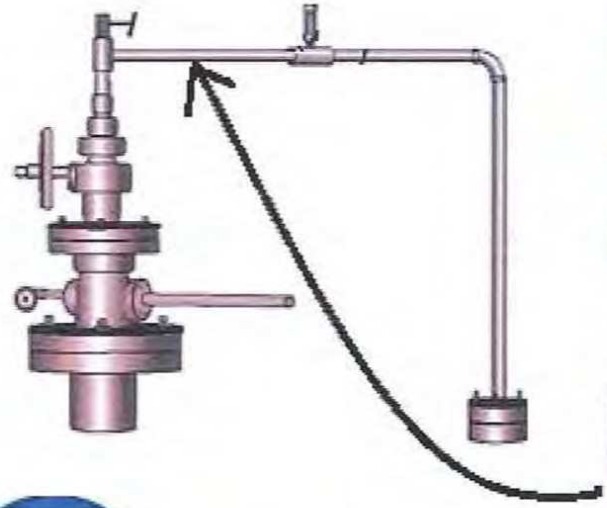
Tank Level information is passed from Tank Battery to XRC via FreeWave Radio



K-Tek MT5100 Guided Wave Radar



Z-Bend High Level Switch



ESD Valve Package
Standard Port Ball Valve rated to 6000 psi topped with a 12 VDC Actuator w/ Battery Backup

Winn-Marion, Inc.

Continental Resources, Inc. (CRI) respectfully submits the following information concerning the prevention of a wellbore collision while drilling the Columbus Federal 3-16H, SENE of Sec. 16, T153N, R101W, Dunn County, North Dakota.

The Mildred 1, NDIC File No. 12306, is a plugged and abandoned, Red River formation, directional well with a SHL of 1325' FSL, 660' FEL of Sec. 4, T153N, R101W. The directional wellbore lies approximately 660' FEL of Sec. 4, T153N, R101W, terminating at a BHL 769' N. of SHL, 2094' FSL of Sec. 4, T153N, R101W. Bottom hole TVD of the existing directional well is 13451'. The deepest casing string is 8-5/8" set at a depth of 3035' TVD.

The proposed Columbus Federal 3-16H is a horizontal well targeting the Middle Bakken formation. Surface hole location for the Columbus Federal 3-16H is 2469' FSL and 199' FEL of Sec. 16, T153N, R101W. The majority of the Columbus Federal 3-16H lateral will lie 760' FEL in order to avoid the existing Mildred 1 wellbore by approximately 100'. The lateral will taper back to 660' FEL, at 10155' N. of SHL, after adequately clearing the segment of the Mildred 1 wellbore within this Baker-Bakken pool.

The Baker-Bakken pool, as defined by NDIC Order No. 21551, is the interval from 50 feet above the top of the Bakken Formation to above the top of the Birdbear Formation. CRI has assessed the geology of the area and has determined this Bakken interval to be approximately 10461' TVD to 10,771' TVD. On the surface planar, the Mildred 1 wellbore exist in this interval for approximately 38', from 1874' FSL to 1912' FSL of Sec. 4, T153N, R94W.

The completion of the Columbus Federal 3-16H will protect the integrity of the Mildred 1 wellbore. Stimulation plans will be made to include a buffer zone with swell packers of a minimum 500' from either side of the Mildred 1 wellbore existing within the Baker-Bakken pool. This zone will not be perforated or completed.

CRI believes adequate precautions have been taken to prevent the possibility of a wellbore collision and accepts all responsibility should such a collision occur.

Sarah Madden, PD Engineer
Continental Resources, Inc.

STATE OF OKLAHOMA)
)ss:
COUNTY OF OKLAHOMA)

On the 6th day of March 2013, before me, a Notary Public in and for said County and State, personally appeared **Sarah Madden**, known to me to be a PD Engineer of Continental Resources, Inc., the Corporation that executed the within instrument, and acknowledged to me that such Corporation executed the same.

Becky Barnes
Notary Public

Oklahoma County, Oklahoma

My Commission Expires: 7/5/2015

Commission No.: 11006023

BECKY BARNES NOTARY # 11006023 EXP. 7/5/2015 PUBLIC STATE OF OKLAHOMA

CLR Spill Trailer Inventory

(To be Checked After Each Use)

Supplies	Quantity	Actual	Supplies	Quantity	Actual
Personal Protection			**Miscellaneous**		
Trauma/1st Aid Kit	1		EnviroClean (5-gal units of concentrate)	2	
Eye Wash	1		Duct Tape (Case)	3	
Hand Cleaner	2		Flashlights	6	
Nitrile Gloves (L & XL Case)	2		Flood Lights	2	
FRC Rain Coat - Extra Large	3		Extension Cord 50' 12-gauge	5	
FRC Rain Coat - Large	3		55-gal. Drums w/lids	2	
Rubber Safety Toed Boots - Size 10	2		Large Trash Cans	2	
Rubber Safety Toed Boots - Size 11	2		HD Drum Liners - boxes	2	
Rubber Safety Toed Boots - Size 12	2		Hoses - Kit (Blue & Green)	5	
FRC Tyvex Suits - Case XL	1		Plastic Buckets	5	
Neoprene Chest Waders - L	1		Propane Cylinders - 20-lb.	2	
Neoprene Chest Waders - L	1		Propane Weed Burner W/Hose	1	
Containment			Pump - Trash	2	
Absorbent (sphag)	10		Pump - 115V Water Transfer	2	
Absorbent Boom 3" x 10'	2		Gas Powered Generator (3-5K Watt)	1	
Absorbent Boom 5" x 10'	10		Misc. Ratchet Straps	6	
Absorbent Boom 8" x 10'	8		Rope 1/2" x 100'	2	
Containment Boom - Fast Water	3		Rope 1/4" x 50'	4	
Absorbent Pads (Hydrocarbon)	10		Rope 3/8" x 100'	2	
Absorbent Pads (Universal)	5		Shop Towels - box	2	
Absorbent Pillows 18" x 18" box	3		Caulking Gun	2	
Absorbent Pom Pom Cube	7		Silicon Tubes	10	
Absorbent Sweep - 16" x 100' - Bag	5		Metal Stakes/Spikes	8	
Miscellaneous			Metal T-Posts	6	
Antifreeze	2		Bungee Cords	3	
Push Broom	2		Wire - 25' roll - smooth	1	
Shovels	2		Fire Extinquisher	1	
Rake	5		Equipment Hooks	6	
Squeegees	2		Shelving	4	
Scoop	2		Drawers	1	
Spark Resistant Scoop	1		Misc. Building Supplies	1	

Continental Resources, Inc. (CRI) respectfully submits the following information concerning the drilling of the Columbus Federal 1-16H, 2-16H and 3-16H and the Tallahassee 2-16H and 3-16H, Sec. 16, T153N, R101W, Williams County, North Dakota.

CRI would like to propose the following safeguards and precautions to be taken while drilling the Columbus Federal-Tallahassee wells to prevent any contamination to freshwater sources during the drilling and completion of the wells:

1) During construction of the location, the entire location will be constructed per NDIC permit stipulations, ensuring any spills or runoff which occur on location do not penetrate the fresh ground water and are contained on the surface of the location. These modifications include, but are not limited to, the inclusion of a liner being placed under the location, and cementing of the rathole and mousehole.
2) Drainage will be re-routed to avoid the location, and erosion controls will be employed, as appropriate, around the site to reduce erosion and the resulting sediment contamination to freshwater runoff due to weather events.
3) The earthen berm, constructed to keep any freshwater runoff off the location, will also eliminate any spills from leaving the location
4) No reserve pit or dry cuttings pit will be utilized on location.
5) The conductor will be drilled to a depth of 80', and 20" pipe will be run to depth and cemented to surface.
6) During drilling operations, a freshwater protection string of 13-3/8" 48# H40 casing will be set to a depth of 500' and cemented to surface to protect the shallow freshwater zones. Standard 9-5/8" 36# J-55 surface casing will be set 100' into the Pierre Shale, to a depth of 1940', and cemented to surface.
7) A frac string will be used to protect the intermediate casing during hydraulic fracturing of the well.
8) CRI is submitting a comprehensive rig specific Spill Prevention Containment and Countermeasure Plan to prepare for any event which may occur during drilling and completion operations. A spill trailer will be located on location for spill response, if necessary.

CRI believes adequate planning and precautions are being taken to prevent any contamination to ground water and surface waters.

Sarah Madden, Project Development Engineer
Continental Resources, Inc.

STATE OF OKLAHOMA)
)ss:
COUNTY OF OKLAHOMA)

On the 7th day of March 2013, before me, a Notary Public in and for said County and State, personally appeared **Sarah Madden**, known to me to be a Project Development Engineer of Continental Resources, Inc., the Corporation that executed the within instrument, and acknowledged to me that such Corporation executed the same.

Notary Public

Oklahoma County, Oklahoma

My Commission Expires: 7/5/2015

Commission No.: 11006023

BECKY BARNES NOTARY # 11006023 EXP. 7/5/2015 PUBLIC STATE OF OKLAHOMA

SPILL PREVENTION CONTAINMENT

AND COUNTERMEASURE PLAN

FOR

CYCLONE DRILLING, INC.
P.O. BOX 908
GILLETTE, WYOMING 82717-908

PREPARED BY;

TOP LINE ENGINEERING, LLC
12635 HWY 200, P.O. BOX 884
SIDNEY, MONTANA 59270
PH; (701)570-2844

TABLE OF CONTENTS

APPENDIX

TYPICAL DRILL RIG LOCATION PLAN

DISCHARGE REPORTING FORM

DISCHARGE SOURCE INSPECTION RECORD

SPILL PREVENTION CONTAINMENT
AND COUNTERMEASURE PLAN (SPCC)

PER 40 CFR 112.7 DATED: SEPTEMBER 14, 2012

This plan will follow the guidelines and format of 40 CFR part 112.7 and will replace the self-certified plan currently in affect.

112.7(a)(1) Discussion of facilities' conformance with the requirements listed in this part. The storage tanks on site store petroleum based drilling mud, diesel fuel, the invert tanks being the base for the drilling mud, salt water tanks, fresh water tanks, crude oil storage tanks and empty tanks for emergency storage. In addition to the storage tanks, other operations that can produce contaminants are the drilling operation itself and the cuttings drying operation. It is the purpose of this plan to define the prevention containment and countermeasure plan for discharges from any of these sources on the site. All the actions taken in this regard are per approved policies of this part of 40 CFR 112. Universally and in setting up the drilling operation on the site prevention measures are taken by grading the site to contain discharges, building in effective valves and other related operational and control mechanisms to prevent discharges. This equipment is installed and tested prior to beginning drilling operations. The tanks and equipment are installed within secondary containment berms and containment trenches and sumps are installed around the facilities prior to beginning drilling operations with capacity to contain with freeboard a rupture of the largest vessel associated with the containment. In the event of a discharge the sites are equipped with vacuums that are capable of picking up the spilled material and loading it into containers where it can be transferred to an approved disposal location. In the event of a discharge larger than can be handled by Cyclone and other manpower on location or that leaks offsite and potentially into navigable waters of the US, the operator, under his directions will arrange for trained contract personnel to immediately contain and clean-up the discharge.

112.7(a)(2) This plan will comply with all applicable items of this part. With no deviations anticipated.

112.7(a)(3) The attached sketch shows a typical layout of the drill rig sites depicting the location, size and contents of the tanks. There are no underground tanks nor are there any mobile or portable containers associated with these drilling locations. The site is prepared in advance of the drill rig coming onto the site. The sites are designed and constructed to contain spills and tank ruptures on the site. The drill rig and associated tanks and equipment are laid out in an efficient and effective manner to streamline the drilling operation. Frack tanks are located in such a manner that they have easy access to the mud tanks with valves located on both ends of transfer lines. The drilling mud tanks are plumbed to the drill rig with valves appropriately located to

stop flow from the tanks to the rig or from the rig to the tanks. The cuttings from the drilling operation are screened from the recycled drilling mud and directed to a container were they are dried using fly ash or some other equally effective absorbent material and are then transferred to the lined cuttings disposal pit onsite. The fuel tank is tied into the fuel lines providing fuel flow to the generators. Blowout preventers are placed over the drill hole casing and tested prior to beginning the drilling.

112.7(a)(3)(i) The type of oil in each fixed container and its storage capacity. No mobile or portable containers anticipated.

SOURCE	MAJOR TYPE OF FAILURE	TOTAL CAP. (BBLS.) (Type Fluid)	RATE (BBLS/MIN)	DIRECTION OF FLOW	SECONDARY CONTAINMENT
Diesel Fuel Tank	Leak or rupture	14,000 Maximum (Diesel)	Depends on size	Dams and/or Trenches	Site Perimeter Containment
Pumps & Engines	Leakage	½ - gal/hr. (lube oil)	½ - 1 gal/hr.	Drip Pans or Trenches	Site Perimeter Containment
Crude Oil Tanks	Rupture or Leak	400 BBLS	Depends on Type of Failure	Contained within Berm	Tank Battery Berm
Mud Tanks, Vibrator Rotary Hoses	Leak or rupture	450 BBLS Maximum per tank (Petroleum based drilling fluid)	Varies	Drip Pans for Hoses, Trench & Sump or Berms for Tanks	Site Perimeter Containment
Wellhead Blowout Preventer	Blowout or kicking well	Depends on severity (Well bore fluids)	Will vary	Away from well head to Trench and Sump	Site Perimeter Containment

112.7(a)(3)(ii) Discharge Prevention Measures including procedures for routine handling of products (loading, unloading and facility transfers, etc.); Before the drill rig moves on, the site is prepared for discharges associated with tank ruptures, as the site is graded to contain all discharges and storm runoff. When the rig is moved onto the site and set up additional discharge prevention and containment measures are taken. Equipment inspection records

are reviewed and the equipment is inspected following written procedures, the written procedures are attached in the appendix of the plan. A dated record of the inspection, signed by the appropriate supervisor or inspector is recorded and filed with time sheets or safety meeting minutes, when the drill rig changes locations and notes of deficiencies or acceptance are included. Operation and maintenance of equipment is designed to prevent discharges. Personnel are trained and made aware of the discharge prevention procedures and applicable pollution control laws, rules and regulations. The tool pusher in charge of the drill rig will have in his possession a copy of the Cyclone Drilling SPCC Plan and it is his responsibility to instruct the employees and make them aware of the discharge prevention measures contained in the plan. Scheduled briefings and refreshers are to be conducted with all the employees prior to and during rig up operations, such briefings are to be held during regularly scheduled safety meetings.

Employees are assigned to make routine inspections of valves, hose connections and other fluid connections for leaks. These inspections are made and documented on a monthly basis at a minimum. These leaks are provided drip pans and reported to the appropriate personnel for repair. If repairs cannot be readily made then regular emptying of the drip pans is required until the repairs can be made. Inspections of trenches and sumps are made on a regular basis to insure that they are free flowing and functional. The containment berms are also inspected periodically to insure their stability and function.

112.7(a)(3)(iii) Discharge or drainage controls such as secondary containment around containers and other structures, equipment, and procedures for the control of the discharge; Containment berms are placed around the tanks containing crude oil, the invert drilling fluid, salt water tanks and the empty tanks to be used for emergency storage, as secondary containment. The containment berms are of adequate height to contain a rupture and total failure of the largest tank contained within it amounting to 400 BBLS requiring a containment capacity of 3,000 cu. ft. Similarly, berms are built around the crude oil storage tanks on the site and requiring the same containment volume. Berms or trenches and sumps are constructed around the drill rig itself, the drilling mud tanks and diesel fuel tank, the sumps and trenches are sized to contain the volume of the largest tank in the case of a rupture and complete failure. Additionally, drip pans are placed under leaking valves, hose joints and other sources of small leaks until the item can be replaced or repaired to not leak. Regular inspections of these facilities are made to insure that they will function per plan.

112.7(a)(3)(iv) Countermeasures for discharge discovery, response, and cleanup (both the facility's capability and those that might be required of a contractor); Regular inspections may reveal a discharge such as a leaking valve or hose joint. These instances can readily be cleaned up by employees of Cyclone Drilling using on site vacuums and containers. Larger spills up to and

beyond the reporting limits can also be handled by Cyclone Drilling employees. Spills that exceed the limitations of the onsite cleanup equipment or in the event of a spill migrating offsite, will require the tool pushers' notification of the operator/owner of the site and they will contact the clean-up contractor thay have contracted with to contain and clean-up such events.

112.7(a)(3)(v) Methods of disposal of recovered materials in accordance with applicable legal requirements: When spills occur the fluids will be either soaked up with absorptive material and placed in a container for transporting to an approved disposal site or vacuumed up and placed in a storage container for transportation to an approved disposal site. It is understood by all Cyclone Drilling employees that there is not an approved disposal site on or around the drilling rig to dispose of these recovered materials or fluids, other than drying drilling cuttings and disposing of them in the cuttings pit.

112.7(a)(3)(vi) Contact list and phone numbers for the facility response coordinator, National Response Center, cleanup contractors with whom operator has an agreement for response, and all appropriate Federal, State, and local agencies who must be contacted in the event of a discharge as described in § 112.1(b). Facility Response Coordinator for Cyclone Drilling HSE Dept. (Ph. 307-682-4161) is responsible for contacting the operators environmental group so they can contact the appropriate Federal, State and Local personnel in the event of a discharge as described in § 112.1(b).

112.7(a)(4) Information and procedures to enable a person reporting a discharge as described in § 112.1(b) to relate information on the exact address or location and phone number of the facility; the date and time of the discharge, the type of material discharged; estimates of the total quantity discharged; estimates of the quantity discharged as described in § 112.1(b); the source of the discharge: a description of all affected media; the cause of the discharge; any damages or injuries caused by the discharge; actions being used to stop, remove, and mitigate the effects of the discharge; whether an evacuation may be needed; and, the names of individuals and/or organizations who have also been contacted. In the event of a discharge as described in §112.1(b) it is the responsibility of the tool pusher to relate the above information to the operators environmental group so they can contact, any emergency organizations and provide the reporting necessary to the Federal, State and Local agencies that require reporting of such a discharge. The tool pusher on the rig is the person in charge and either he or the drilling superintendent have the responsibility of reporting the answers to the above questions. These questions are spelled out on a "Discharge Reporting Form" that each has at his disposal in the appendix of "Cyclone Drilling Oil Spill Contingency Plan" In reporting a discharge a list of all individuals and or organizations that received the report will be listed.

112.7(a)(5) Plan procedures to be used when a discharge occurs:

1) Immediately extinguish any heater or fire that may ignite the spill.
2) No smoking during spill control operations.
3) Close all associated valves.
4) Direct discharge to ditches or drains that will carry the discharge to a safe holding sump or reserve pit.
5) Distribute hill, fibertex, gel, barite, or any other absorptive material available as required to contain the discharge not entering the ditch, sump or reserve pit.
6) Inspect area to ensure that all of the discharge is contained in ditches, sumps or reserve pits. Add ditches or diversion structures as required to contain the discharge onsite.
7) Start jet or sump pumps and transfer discharged material from sumps to reserve pit or holding tanks.
8) After discharge is stopped, collect all used hulls, fibertex and similar absorptive material for disposal per instruction from the drilling superintendent or the tool pusher. No oil is to remain in the ditches or sumps that may create a fire hazard.
9) Hold collected discharged material for hauling and disposal in an approved location.
10) If discharge migrates from the drill rig location Cyclone Drilling personnel will use these same procedures stop and recover the discharge. Additionally the tool pusher will notify the owners representative to notify the contract clean-up company for clean-up and mitigation of the offsite discharge migration.
11) Fill out Site Discharge Reporting Form and distribute to appropriate agencies and personnel. (Form included in Appendix of Plan)

112.7(a)(5)(b) Flow diagram of potential discharges from significant sources as a result of facilities failure: Flow diagrams and quantities included in appendix of the plan.

112.7(a)(5)(c) Site discharge containment system: The site discharge containment system for the Cyclone Drilling Rigs is a combination of containment berms, confinement trenches, sumps and reserve pits. Drip pans will be used for small discharges until repairs are make or equipment replaced. (See typical site plan included in appendix.)

112.7(a)(5)(d) Not applicable as all measures spelled out in this part are practical as describe in each section.

112.7(a)(5)(e) Inspections, tests and records: Written procedures are provided on the "Discharge Source Inspection Record", these inspections are recorded at least on a monthly basis or whenever a leak or discharge is detected and reported, using the "Discharge Source Inspection Record" in the appendix. These records are signed by the tool pusher onsite and maintained by Cyclone Drilling for a period of 3 years.

112.7(a)(5)(f) Personnel Training and Discharge Prevention Procedures: The personnel working on the drilling crews are trained in the maintenance and operation of all the equipment to prevent discharges, the discharge procedures and general facility operations. They are also made aware of the contents of the SPCC Plan. The tool pusher on each crew is the person on the location who is accountable for discharge prevention and who reports to the Cyclone Drilling Management. The tool pusher is responsible for conducting discharge prevention briefings and assuring an adequate understanding of the Cyclone Drilling SPCC Plan for the facility and any recent developments of new precautionary measures due to failures or malfunctions are implemented.

112.7(a)(5)(g) Site Security: All persons entering the site are required to check in with the tool pusher of the on duty crew. Unauthorized persons are not allowed on the site. Unauthorized visitors are easily detected, questioned regarding there presents and appropriately escorted to take care of their business.

112.7(a)(5)(h) Facility Tank Truck Loading/Unloading: The tank truck loading and unloading areas on the Cyclone Drilling Sites are located adjacent to the frack tank or crude oil tank batteries the area adjacent to the tank battery, where tank trucks are loaded and unloaded will be graded to drain into the containment trenches and associated sump, surrounding the drill rig, mud tanks, fuel tank, etc. Wheel chocks are used to prevent the truck from moving while connected to the tanks during loading/unloading operations. Before departure the vehicle is inspected for leaks in the lowermost drains and outlets and if they are any detected the associated valves are tightened or adjusted to prevent discharge while in transit. All above ground containers are checked and evaluated for risk of discharge or failure and as necessary appropriate action shall be taken.

APPENDIX

Continental
RESOURCES

June 12, 2012

Industrial Commission of North Dakota
Oil & Gas Division
600 East Boulevard, Dept 405
Bismarck, North Dakota 58505

Re: Columbus Federal 2-16H

Continental Resources, Inc., would like to request all filings and information regarding the above captioned well be considered "Tight Hole".

Please charge the Continental Resources, Inc., credit card that is on file with your agency for the application fee of this well.

Thank you for your prompt attention to this matter. If you have any questions, you may contact me at 580-548-5139 or email the following Terry.Olson@clr.com.

Sincerely,

CONTINENTAL RESOURCES, INC.

Terry L. Olson

Terry L. Olson
Regulatory Compliance Specialist

P.O. Box 1032 • 302 N. Independence • Enid, OK 73702
Voice (580) 233-8955 • Fax (580) 242-4703