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. 25160

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	Qtr-Qtr	Section	Township	Range
F L F L			N	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: Field 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	

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/

September 19, 2017

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

RE:

MONTPELIER 1-14H	VADER 1-7H	COLUMBUS FEDERAL 3-16H
NENE 14-153N-101W	LOT 3 7-153N-100W	SENE 16-153N-101W
MCKENZIE COUNTY	MCKENZIE COUNTY	MCKENZIE COUNTY
WELL FILE NO.: 20566	WELL FILE NO.: 21696	WELL FILE NO.: 25160

Dear Bob Sandbo:

A Sundry notice (Form 4) is needed for the above wells, detailing the changeover from flowing to well now on rod pump. If you have any questions, feel free to contact our office.

Sincerely,

Tom Delling

Tom Delling
Petroleum Engineer - Field Inspector

TKD/RSD/RLR

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.
25160

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 31, 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 3-16H**

Footages	Qtr-Qtr	Section	Township	Range
2469 F N L 199 F E L	SENE	16	153 N	101 W

Field	Pool	County
Baker	Bakken	McKenzie

24-HOUR PRODUCTION RATE

	Before		After	
Oil	85	Bbls	86	Bbls
Water	83	Bbls	153	Bbls
Gas	93	MCF	25	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 7/31/2016. New Tubing: 2 1/2 Depth: 9871

Company	Telephone Number
Continental Resources	(405) 234-9688
Address: P.O. Box 268870	
City: Oklahoma City	State: OK — Zip Code: 73126
Signature	Printed Name: Zach Green
Title: Regulatory Specialist	Date: 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

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)

RECEIVED
JAN 2014
ND OIL & GAS DIVISION

Well File No.
25160
NDIC CTB No.
125160

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 3-16H	**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**	**January 2, 2014**

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**		**January 2, 2014**

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: **January 7, 2014**

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	Jennifer Swenson
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. **25160**

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 3-16H	~~Sec 4 & 16~~-153N-101W See 4, 9, 16, & 21

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
2469 F N L 199 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)
8/10/2013	**12/27/2013**	**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		101	20				8 yds	
	Surface	9 5/8		1975	13 1/2	36			1762	
	Intermediate	7		10968	8 3/4	29-32			1109	1680
	Liner	4 1/2	9999	22933	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	23122	Perforations	10968	23122	10070	1680	12/29/2013			

PRODUCTION

Current Producing Open Hole or Perforated Interval(s), This Completion, Top and Bottom, (MD Ft): **Bakken 10,968'/23,122'**
Name of Zone (If Different from Pool Name):

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**	**18 /64**		**749**	**557**	**662**	**40.0 °**	**Sold**

Flowing Tubing Pressure (PSI)	Flowing Casing Pressure (PSI)	Calculated 24-Hour Rate	Oil (Bbls)	Gas (MCF)	Water (Bbls)	Gas-Oil Ratio
2300	**N/A**		**749**	**557**	**662**	**744**

GEOLOGICAL MARKERS

Formation	MD (Ft)	TVD (Ft)
Greenhorn		**4428**
Dunham Salt		**6680**
Pine Salt		**7082**
Minnelusa		**7438**
Kibbey Lime		**8169**
Mission Canyon		**9235**
Middle Bakken		**10505**

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 (ºF)	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 (ºF)	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 (ºF)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)
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Drill Pipe Recovery								
Sample Chamber Recovery								

Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (ºF)	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
3/2/2014	Bakken	10968	23122	41	74589	Barrels

Type Treatment	Acid %	Lbs Proppant	Maximum Treatment Pressure (PSI)	Maximum Treatment Rate (BBLS/Min)
Sand Frac		3788746	7979	31.0

Details
Pumped 285982# 40/70 mesh, 2418523# 20/40 sand and 1084241# 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 4/23/2014
Signature Becky Barnes	Printed Name **Becky Barnes**	Title **Regulatory Compliance Specialist**

INDEX

SYNOPSIS

OPERATOR	Continental Resources Inc.
WELL NAME	Columbus Federal 3-16H
SURFACE LOCATION	2469' FNL & 199' FEL: Sec 16, T153N, R101W
BOTTOM HOLE LOCATION	244' FNL & 680.4' FEL: Sec 4, T153N, R101W
FIELD	Williston
COUNTY/STATE	McKenzie Co., North Dakota
API NUMBER	33-053-04856
NorAm FILE NUMBER	NR2690
ELEVATIONS	**G.L.** = 1920' **K.B.** = 1940'
SPUD DATE	October 16, 2013
T.D. DATE	December 27, 2013
DRILLING CONTRACTOR	Cyclone 4
HOLE SIZE	10 3/4" to 1975', 8 3/4" to 10983, 6" to 23122'
CASING SIZE & DEPTH	9 5/8" to 1975', 7" to 10967, 5" to
DRILLING MUD COMPANY	GEO Drilling Fluids Inc
DRILLING FLUID TYPE	Invert OBM to 10983', Saltwater Brine to 23122'
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	23122'

FORMATION TOPS (ft)

KB =1940'

GL =1920'

FORMATION	PROGNOSIS			SAMPLES		
	MD	TVD	SS	MD	TVD	SS
Top Charles Salts	-	8329	-6389	8299	8298	-6358
Base Last Salt	-	9025	-7085	8998	8997	-7057
Mission Canyon	-	9250	-7310	9222	9221	-7279
Lodgepole	-	9817	-7877	9788	9787	-7847
False Bakken	-	-	-	10599	10483	-8543
Upper Bakken Shale	-	10505	-8565	10621	10494	-8554
Middle Bakken	-	10522	-8582	10672	10506	-8566
7" Casing Point	-	10542	-8602	10967	10524	8584
End of Lateral	-	10542	-8602	23122	10518	-8578

DEVIATION SURVEY RECORD (Teledrift and Wireline Data)

Depth	Incl	Azim	TVD	VS	Coordinates		DLS
(ft)	(?)	(?)	(ft)	(ft)	N/S (ft)	E/W (ft)	(?/100')
1928	0.10	221.00	1927.98	5.38	5.47	2.38	0.00
1990	0.10	213.40	1989.98	5.30	5.38	2.31	0.02
2084	0.80	242.80	2083.98	4.95	5.02	1.69	0.76
2177	1.10	251.10	2176.96	4.42	4.43	0.26	0.35
2271	1.10	253.20	2270.95	3.93	3.88	-1.45	0.04
2364	1.90	247.50	2363.91	3.16	3.03	-3.73	0.87
2457	2.10	248.20	2456.86	2.05	1.81	-6.74	0.22
2550	2.30	248.90	2549.79	0.87	0.50	-10.06	0.22
2645	1.80	236.60	2644.73	-0.53	-1.01	-13.09	0.70
2739	1.20	222.60	2738.70	-2.00	-2.54	-14.98	0.74
2832	1.30	224.50	2831.67	-3.42	-4.01	-16.38	0.12
2925	0.70	277.80	2924.66	-4.04	-4.69	-17.69	1.12
3019	0.90	343.00	3018.65	-3.23	-3.90	-18.47	0.93
3112	0.90	341.60	3111.64	-1.82	-2.51	-18.91	0.02
3205	0.80	346.10	3204.63	-0.49	-1.19	-19.30	0.13
3298	0.50	357.00	3297.63	0.55	-0.15	-19.48	0.35
3391	0.30	355.80	3390.62	1.20	0.49	-19.52	0.22
3484	0.20	22.00	3483.62	1.59	0.89	-19.47	0.16
3578	0.80	49.30	3577.62	2.15	1.47	-18.92	0.67
3671	0.50	67.40	3670.61	2.70	2.05	-18.05	0.39
3765	0.60	87.40	3764.61	2.85	2.23	-17.18	0.23
3858	0.30	72.80	3857.60	2.92	2.32	-16.46	0.34
3952	0.40	64.90	3951.60	3.11	2.53	-15.93	0.12
4045	0.20	51.20	4044.60	3.33	2.77	-15.51	0.23
4139	0.20	86.90	4138.60	3.43	2.88	-15.21	0.13
4232	0.30	148.80	4231.60	3.22	2.68	-14.93	0.29
4326	0.30	161.80	4325.60	2.77	2.24	-14.72	0.07
4419	0.30	142.20	4418.60	2.34	1.82	-14.50	0.11
4512	0.40	181.80	4511.60	1.82	1.30	-14.36	0.27
4606	0.60	201.70	4605.59	1.04	0.51	-14.55	0.28
4699	1.10	199.40	4698.58	-0.23	-0.78	-15.03	0.54
4792	0.90	190.10	4791.57	-1.78	-2.34	-15.45	0.28
4886	0.40	148.60	4885.56	-2.79	-3.35	-15.41	0.70
4979	0.30	38.50	4978.56	-2.88	-3.43	-15.09	0.62
5073	1.20	29.00	5072.55	-1.85	-2.38	-14.46	0.96
5166	1.00	120.30	5165.54	-1.46	-1.94	-13.29	1.70
5260	0.80	55.80	5259.53	-1.55	-1.98	-12.04	1.04
5354	0.90	65.90	5353.52	-0.92	-1.31	-10.82	0.19
5447	1.10	63.50	5446.51	-0.28	-0.62	-9.35	0.22
5540	1.30	59.80	5539.49	0.59	0.31	-7.64	0.23
5634	1.10	56.60	5633.47	1.56	1.34	-5.97	0.22

Depth	Incl	Azim	TVD	VS	Coordinates		DLS
(ft)	(?)	(?)	(ft)	(ft)	N/S (ft)	E/W (ft)	(?/100')
5727	1.90	58.80	5726.43	2.77	2.64	-3.90	0.86
5821	1.90	55.60	5820.38	4.37	4.32	-1.28	0.11
5914	2.00	55.40	5913.33	6.06	6.12	1.32	0.11
6007	1.80	55.10	6006.28	7.73	7.87	3.86	0.22
6101	1.80	49.80	6100.23	9.44	9.67	6.20	0.18
6194	1.00	53.10	6193.20	10.80	11.10	7.96	0.86
6288	0.60	83.70	6287.19	11.31	11.65	9.11	0.61
6382	0.80	98.50	6381.19	11.22	11.60	10.24	0.29
6476	1.10	98.30	6475.17	10.94	11.38	11.79	0.32
6569	0.40	83.40	6568.16	10.81	11.28	12.99	0.78
6662	0.60	3.90	6661.16	11.32	11.81	13.35	0.71
6756	1.10	355.50	6755.15	12.71	13.20	13.31	0.55
6850	1.10	333.00	6849.13	14.43	14.90	12.83	0.46
6943	1.50	341.00	6942.11	16.40	16.85	12.03	0.47
7037	1.70	327.90	7036.07	18.78	19.19	10.89	0.44
7130	2.10	323.50	7129.02	21.38	21.73	9.14	0.46
7223	1.60	295.90	7221.98	23.40	23.67	6.96	1.08
7316	1.30	264.90	7314.95	23.95	24.14	4.74	0.89
7411	1.50	258.80	7409.92	23.70	23.80	2.45	0.26
7504	1.90	264.80	7502.88	23.42	23.43	-0.28	0.47
7597	1.90	262.80	7595.83	23.20	23.09	-3.35	0.07
7690	1.80	245.60	7688.78	22.51	22.30	-6.21	0.60
7784	1.10	237.30	7782.75	21.49	21.20	-8.31	0.78
7877	0.80	208.50	7875.74	20.47	20.15	-9.37	0.60
7970	1.10	199.00	7968.72	19.08	18.73	-9.97	0.36
8063	1.10	200.30	8061.71	17.42	17.05	-10.57	0.03
8156	1.10	209.70	8154.69	15.84	15.44	-11.33	0.19
8250	1.00	212.00	8248.67	14.39	13.96	-12.21	0.12
8343	1.10	227.00	8341.66	13.14	12.66	-13.29	0.31
8436	1.10	230.70	8434.64	12.01	11.49	-14.63	0.08
8529	1.00	213.60	8527.62	10.81	10.25	-15.77	0.35
8623	1.10	219.90	8621.61	9.48	8.87	-16.81	0.16
8716	1.00	226.80	8714.59	8.28	7.63	-17.97	0.17
8810	1.10	238.00	8808.58	7.29	6.59	-19.33	0.24
8903	1.30	248.20	8901.56	6.49	5.73	-21.07	0.31
8997	1.10	236.10	8995.54	5.65	4.83	-22.81	0.34
9090	1.20	233.60	9088.52	4.63	3.75	-24.33	0.12
9183	1.10	236.80	9181.50	3.62	2.69	-25.86	0.13
9277	0.90	213.40	9275.49	2.55	1.58	-27.03	0.48
9370	0.30	111.70	9368.48	1.86	0.88	-27.20	1.08
9464	0.70	59.10	9462.48	2.04	1.08	-26.48	0.61
9557	0.60	58.40	9555.47	2.55	1.63	-25.58	0.11

Depth	Incl	Azim	TVD	VS	Coordinates		DLS
(ft)	(?)	(?)	(ft)	(ft)	N/S (ft)	E/W (ft)	(?/100')
9650	0.70	60.30	9648.47	3.06	2.16	-24.67	0.11
9744	0.60	67.40	9742.46	3.50	2.64	-23.72	0.14
9837	0.60	67.00	9835.46	3.84	3.01	-22.82	0.00
9930	0.30	71.80	9928.45	4.08	3.28	-22.14	0.32
10024	0.30	82.50	10022.45	4.17	3.39	-21.66	0.06
10049	0.20	36.90	10047.45	4.21	3.43	-21.57	0.86
10081	2.70	330.70	10079.44	4.93	4.13	-21.91	8.21
10112	7.80	330.00	10110.30	7.44	6.59	-23.32	16.45
10143	12.50	333.50	10140.80	12.35	11.42	-25.87	15.28
10174	15.80	334.40	10170.86	19.28	18.23	-29.19	10.67
10205	18.50	333.10	10200.48	27.61	26.43	-33.24	8.80
10236	22.00	331.70	10229.56	37.29	35.93	-38.22	11.40
10267	25.10	330.50	10257.97	48.34	46.76	-44.21	10.12
10298	28.80	329.30	10285.60	60.73	58.91	-51.26	12.06
10330	32.40	329.10	10313.14	75.02	72.90	-59.60	11.25
10361	36.80	329.80	10338.65	90.49	88.06	-68.54	14.25
10392	41.80	329.80	10362.63	107.80	105.02	-78.42	16.13
10423	45.80	329.60	10385.00	126.70	123.55	-89.24	12.91
10454	50.00	331.20	10405.78	147.17	143.62	-100.43	14.08
10485	53.50	330.20	10424.97	168.81	164.84	-112.35	11.57
10516	58.10	329.50	10442.39	191.43	187.01	-125.22	14.96
10547	60.90	329.80	10458.13	214.95	210.05	-138.72	9.07
10578	63.40	330.90	10472.61	239.25	233.87	-152.27	8.65
10610	66.40	332.30	10486.18	265.22	259.36	-166.05	10.18
10641	71.10	333.00	10497.41	291.34	285.02	-179.32	15.31
10672	76.20	333.30	10506.14	318.34	311.55	-192.75	16.48
10703	79.30	333.70	10512.71	345.92	338.66	-206.26	10.08
10734	80.90	333.50	10518.04	373.75	366.01	-219.84	5.20
10765	84.40	333.50	10522.01	401.74	393.52	-233.56	11.29
10797	89.80	333.10	10523.63	430.78	422.06	-247.91	16.92
10828	91.00	333.00	10523.41	458.91	449.69	-261.96	3.88
10859	91.40	333.10	10522.76	487.02	477.32	-276.01	1.33
10890	89.40	333.70	10522.54	515.23	505.04	-289.89	6.74
10935	88.70	333.70	10523.29	556.26	545.37	-309.82	1.56
10969	88.60	333.30	10524.09	587.21	575.79	-324.99	1.21
11064	89.30	332.80	10525.83	673.38	660.46	-368.04	0.91
11159	90.00	335.60	10526.41	760.35	745.98	-409.38	3.04
11253	90.20	338.60	10526.25	848.20	832.56	-445.95	3.20
11348	90.70	342.80	10525.50	938.92	922.20	-477.34	4.45
11443	90.70	345.60	10524.34	1031.19	1013.60	-503.20	2.95
11538	90.70	348.60	10523.18	1124.48	1106.18	-524.41	3.16
11633	90.00	350.90	10522.60	1218.51	1199.66	-541.31	2.53

Depth	Incl	Azim	TVD	VS	Coordinates		DLS
(ft)	(?)	(?)	(ft)	(ft)	N/S (ft)	E/W (ft)	(?/100')
11728	90.00	353.40	10522.60	1313.02	1293.76	-554.29	2.63
11823	90.10	356.20	10522.52	1407.87	1388.36	-562.89	2.95
11918	89.50	357.90	10522.85	1502.86	1483.23	-567.78	1.90
12013	87.70	0.00	10525.17	1597.80	1578.17	-569.52	2.91
12108	88.40	359.30	10528.40	1692.70	1673.12	-570.10	1.04
12203	89.20	359.30	10530.39	1787.66	1768.09	-571.26	0.84
12298	91.10	359.90	10530.14	1882.61	1863.08	-571.93	2.10
12393	90.00	1.60	10529.23	1977.48	1958.06	-570.68	2.13
12488	87.70	1.80	10531.14	2072.25	2052.99	-567.87	2.43
12583	87.80	0.00	10534.87	2167.05	2147.91	-566.38	1.90
12678	88.80	359.50	10537.69	2261.96	2242.86	-566.79	1.18
12773	89.90	359.20	10538.76	2356.92	2337.85	-567.87	1.20
12867	88.20	0.70	10540.32	2450.84	2431.83	-567.95	2.41
12960	89.30	1.10	10542.35	2543.69	2524.79	-566.49	1.26
13051	90.00	0.70	10542.91	2634.56	2615.78	-565.06	0.89
13143	88.00	2.00	10544.51	2726.38	2707.73	-562.89	2.59
13235	88.00	1.80	10547.72	2818.10	2799.63	-559.85	0.22
13327	88.60	1.60	10550.45	2909.86	2891.55	-557.12	0.69
13420	88.70	1.60	10552.64	3002.64	2984.48	-554.52	0.11
13511	90.00	1.60	10553.68	3093.45	3075.44	-551.98	1.43
13603	90.70	1.30	10553.11	3185.27	3167.41	-549.65	0.83
13695	90.30	0.60	10552.31	3277.14	3259.39	-548.13	0.88
13787	91.50	1.60	10550.87	3368.98	3351.36	-546.36	1.70
13880	90.00	0.60	10549.65	3461.83	3444.33	-544.58	1.94
13972	89.70	359.50	10549.89	3553.76	3536.33	-544.50	1.24
14064	89.60	358.80	10550.45	3645.74	3628.32	-545.86	0.77
14156	90.70	359.90	10550.21	3737.71	3720.31	-546.90	1.69
14249	91.00	358.50	10548.83	3830.67	3813.29	-548.20	1.54
14341	90.20	358.10	10547.87	3922.66	3905.24	-550.93	0.97
14433	91.10	358.80	10546.82	4014.65	3997.20	-553.42	1.24
14526	91.50	358.30	10544.71	4107.62	4090.14	-555.77	0.69
14619	89.90	357.00	10543.58	4200.61	4183.05	-559.59	2.22
14712	91.50	359.20	10542.44	4293.59	4275.99	-562.67	2.92
14805	90.80	359.00	10540.57	4386.55	4368.96	-564.13	0.78
14897	92.20	359.20	10538.17	4478.50	4460.91	-565.57	1.54
14990	90.50	0.90	10535.98	4571.40	4553.88	-565.49	2.58
15082	91.20	0.60	10534.61	4663.28	4645.86	-564.29	0.83
15174	89.60	1.60	10533.97	4755.13	4737.84	-562.52	2.05
15267	90.00	0.70	10534.29	4847.98	4830.82	-560.66	1.06
15360	90.50	0.90	10533.89	4940.86	4923.81	-559.36	0.58
15453	91.50	0.20	10532.26	5033.75	5016.79	-558.46	1.31
15545	89.80	2.80	10531.22	5125.55	5108.74	-556.06	3.38

Depth	Incl	Azim	TVD	VS	Coordinates		DLS
(ft)	(?)	(?)	(ft)	(ft)	N/S (ft)	E/W (ft)	(?/100')
15640	89.90	2.50	10531.47	5220.23	5203.63	-551.66	0.33
15735	90.70	1.40	10530.97	5314.99	5298.58	-548.43	1.43
15830	90.10	1.60	10530.31	5409.80	5393.54	-545.95	0.67
15925	91.70	3.20	10528.82	5504.49	5488.44	-541.97	2.38
16020	88.90	2.30	10528.32	5599.15	5583.32	-537.41	3.10
16115	90.70	2.80	10528.65	5693.83	5678.22	-533.18	1.97
16210	89.30	3.40	10528.65	5788.44	5773.08	-528.05	1.60
16305	90.30	4.40	10528.98	5882.92	5867.86	-521.59	1.49
16400	87.50	1.10	10530.81	5977.54	5962.71	-517.03	4.55
16495	88.40	1.10	10534.20	6072.33	6057.63	-515.21	0.95
16590	90.00	0.90	10535.53	6167.18	6152.60	-513.55	1.70
16685	91.10	0.20	10534.62	6262.08	6247.59	-512.64	1.37
16780	90.30	0.40	10533.46	6356.99	6342.58	-512.14	0.87
16874	91.10	1.10	10532.31	6450.87	6436.56	-510.91	1.13
16971	92.30	0.40	10529.43	6547.70	6533.51	-509.64	1.43
17066	91.70	0.70	10526.12	6642.54	6628.45	-508.73	0.71
17161	91.40	0.70	10523.55	6737.40	6723.40	-507.57	0.32
17256	91.40	0.40	10521.23	6832.27	6818.37	-506.66	0.32
17351	91.50	359.50	10518.82	6927.18	6913.34	-506.74	0.95
17446	91.70	359.70	10516.17	7022.10	7008.30	-507.40	0.30
17541	92.00	359.50	10513.10	7117.01	7103.25	-508.06	0.38
17636	91.70	358.80	10510.04	7211.94	7198.19	-509.47	0.80
17731	91.50	359.30	10507.38	7306.88	7293.14	-511.05	0.57
17826	90.00	358.60	10506.14	7401.85	7388.11	-512.79	1.74
17921	90.30	358.30	10505.89	7496.85	7483.08	-515.36	0.45
18016	89.50	359.30	10506.06	7591.84	7578.05	-517.35	1.35
18111	89.80	358.80	10506.64	7686.82	7673.04	-518.92	0.61
18206	89.90	358.10	10506.89	7781.81	7768.00	-521.49	0.74
18301	91.40	357.60	10505.81	7876.80	7862.93	-525.06	1.66
18396	90.20	357.60	10504.48	7971.79	7957.83	-529.03	1.26
18491	90.20	356.90	10504.15	8066.78	8052.72	-533.59	0.74
18586	89.20	358.30	10504.65	8161.78	8147.63	-537.57	1.81
18681	89.40	357.60	10505.81	8256.77	8242.56	-540.97	0.77
18776	89.60	359.30	10506.64	8351.76	8337.52	-543.54	1.80
18871	89.30	358.50	10507.55	8446.74	8432.50	-545.36	0.90
18966	89.90	358.30	10508.21	8541.73	8527.46	-548.01	0.67
19061	90.00	357.40	10508.30	8636.73	8622.39	-551.58	0.95
19156	90.30	357.40	10508.05	8731.73	8717.29	-555.89	0.32
19251	90.70	357.00	10507.22	8826.71	8812.18	-560.53	0.60
19346	90.70	358.30	10506.06	8921.70	8907.09	-564.42	1.37
19440	90.60	359.50	10504.99	9015.68	9001.06	-566.23	1.28
19535	89.30	359.50	10505.07	9110.64	9096.06	-567.06	1.37

Depth	Incl	Azim	TVD	VS	Coordinates		DLS
(ft)	(?)	(?)	(ft)	(ft)	N/S (ft)	E/W (ft)	(?/100')
19630	89.9	359.2	10505.737	9205.612	9191.05	-568.133	0.70612
19725	90	359.2	10505.819	9300.588	9286.04	-569.46	0.10526
19820	90.2	359.5	10505.654	9395.558	9381.03	-570.537	0.37953
19915	90.7	359.3	10504.907	9490.523	9476.02	-571.532	0.56686
20009	89.2	358.6	10504.99	9584.505	9570	-573.255	1.76094
20104	88.8	359.3	10506.648	9679.474	9664.97	-574.995	0.84856
20199	90.2	0.7	10507.477	9774.403	9759.96	-574.995	2.08404
20294	90.90	0.60	10506.56	9869.29	9854.95	-573.92	0.74
20389	88.50	0.70	10507.06	9964.17	9949.94	-572.84	2.53
20484	90.00	1.60	10508.31	10059.01	10044.91	-570.93	1.84
20579	91.00	1.40	10507.48	10153.82	10139.87	-568.45	1.07
20674	90.2	2.1	10506.482	10248.6	10234.8	-565.546	1.11893
20769	90.7	1.6	10505.736	10343.38	10329.8	-562.479	0.74431
20864	88.9	1.6	10506.067	10438.18	10424.7	-559.826	1.89474
20959	89.3	1.3	10507.559	10532.98	10519.7	-557.423	0.52629
21054	91.2	2.8	10507.145	10627.73	10614.6	-554.025	2.5481
21150	89.40	3.00	10506.64	10723.36	10710.49	-549.17	1.89
21244	89.00	2.70	10507.95	10817.00	10804.36	-544.49	0.53
21339	89.40	2.50	10509.28	10911.68	10899.25	-540.19	0.47
21434	90.00	2.30	10509.78	11006.39	10994.17	-536.21	0.67
21529	90.70	2.10	10509.20	11101.12	11089.09	-532.56	0.77
21529	90.70	2.10	10509.20	11101.12	11089.09	-532.56	0.77
21624	88.20	2.70	10510.11	11195.82	11184.00	-528.58	2.71
21719	88.30	2.00	10513.01	11290.49	11278.87	-524.69	0.74
21813	88.40	1.80	10515.72	11384.22	11372.78	-521.57	0.24
21905	89.50	2.80	10517.40	11475.93	11464.69	-517.88	1.62
22000	89.70	2.80	10518.07	11570.59	11559.58	-513.24	0.21
22095	90.00	2.50	10518.32	11665.26	11654.47	-508.85	0.45
22190	89.70	1.80	10518.56	11760.00	11749.41	-505.29	0.80
22285	90.40	1.60	10518.48	11854.80	11844.36	-502.47	0.77
22380	90.10	0.90	10518.07	11949.63	11939.34	-500.40	0.80
22475	90.50	0.90	10517.57	12044.50	12034.33	-498.90	0.42
22570	90.30	2.80	10516.91	12139.27	12129.27	-495.84	2.01
22665	89.50	2.50	10517.07	12233.95	12224.17	-491.44	0.90
22760	89.90	2.70	10517.57	12328.63	12319.07	-487.14	0.47
22855	90.50	2.30	10517.24	12423.33	12413.98	-482.99	0.76
22949	90.00	1.40	10516.83	12517.10	12507.92	-479.96	1.10
23044	89.30	0.60	10517.41	12611.96	12602.91	-478.30	1.12
23072	89.40	0.70	10517.73	12639.93	12630.90	-477.98	0.51
23122	89.40	0.70	10518.25	12689.87	12680.90	-477.37	0.00

BIT RECORD

BIT #	TYPE	SIZE (IN)	IN (FT)	OUT (FT)	TOTAL (FT)	HOURS DRLG	WOB (K)	RPM
1	PDC MM65D	8.75	1975	10075	8100	77.5	20-30	50-70
2	Halliburton MMD55M	8.75	10075	10983	913	22.5	30-90	15-25
3	Reed SKHE711M	6	10983	17000	6017	83	15-25	50-60
4	Reed SKHI713M	6	17000	21862	4862	87.5	12-25	45-50
5	Smith MDSi613	6	21862	23122	1260	18.5	20-25	40-45

DRILLING FLUID PARAMETERS

DATE	WT	VIS	PV	YP	PH	NaCL	Ca	% SOL
10/18/2013	9.3	59	12	8	-	37k	2.73	8.83
10/19/2013	9.6	47	9	10	-	36k	4.03	8.91
10/20/2013	9.6	46	10	8	-	35k	3.2	8.94
10/21/2013	10.5	47	12	12	-	44k	3.4	12.79
10/22/2013	10.2	46	13	11	-	44k	3.4	11.53
12/17/2013	9.6	30	1	1	8.5	148,800	30,500	0.66
12/18/2013	9.6	30	1	1	8.5	148,800	30,500	0.66
12/19/2013	9.6	30	1	1	8.5	148,800	30,500	0.66
12/20/2013	9.85	29	1	1	9.0	172,000	32,000	0.39
12/21/2013	9.85	29	1	1	9.0	172,000	32,000	0.39
12/22/2013	9.9	31	1	1	8.5	175,000	33,600	0.49
12/23/2013	9.9	31	1	1	8.5	175,000	33,600	0.49
12/24/2013	9.65	28	1	1	8.0	148,000	32,000	0.54
12/25/2013	10.0	29	1	1	8.5	188,700	33,600	0.54
12/26/2013	10.0	29	1	1	8.5	188,700	33,600	0.54
12/27/2013	10	29	1	1	8.5	188,700	33,600	0.54

DAILY DRILLING CHRONOLOGY

DATE (m/d/y)	DEPTH @ 24.00	PROGRESS (ft/24 hours)	BREAKDOWN 00:00 – 24:00	RIG ACTIVITY
10/16/2013	1895'		00:00-24:00	BOP Testing, Casing pressure Fit test, Safety meetings, Pick up drill pipe
10/17/2013	1975'	80'	00:00-20:00	Pick up Directional tools, pick up drill pipe, safety meetings, rig down laydown truck, drill out cement, float and shoe
			20:00-20:30	Fit test
			20:30-21:00	Drill/Slide 1975'-2130'
			21:00-23:00	Trouble Shoot MWD Tool
			23:00-24:00	Drill 2130'-2225'
10/18/2013	2225'	250'	00:00-01:00	Trouble shoot MWD Tool
			01:00-02:00	Drill 2225'-2411'
			02:00-03:30	TOOH for MWD Tool
			03:30-04:30	BHA Operations
			04:30-06:00	TIH
			06:00-17:00	Drill 2411'-5307'
			17:00-17:30	Rig Service
			17:30-24:00	Drill 5307'-6361'
10/19/2013	6361'	4136'	00:00-03:30	Drill 6361'-6709'
			03:30-04:00	Rig Service
			04:00-17:00	Drill/Slide 6709'-7924'
			17:00-17:30	Rig Service
			17:30-24:00	Drill/Slide 7924'-8356'
10/20/2013	8356'	1995'	00:00-03:30	Drill/Slide 8356'-8576'
			03:30-04:00	Rig Service
			04:00-16:00	Drill/Slide 8576'-9230'
		1	16:00-16:30	Rig Service
			16:30-24:00	Drill/Slide 9230'-9513'
10/21/2013	9513	1157	00:00-00:30	Rig Service
			00:30-13:00	Drill/Slide 9513'-10070'
			13:00-13:30	Circulate, Build Slug
			13:30-14:00	Rig Service
			14:00-20:30	TOOH for Curve Assembly
			20:30-22:00	BHA Operations
			22:00-22:30	Rig Service
			22:30-24:00	TIH
10/22/2013	10070'	557'	00:00-04:00	TIH
			04:00-17:00	Build Curve 10070'-10553'
			17:00-17:30	Rig Service
			17:30-24:00	Build Curve 10553'-10845'

DATE (m/d/y)	DEPTH @ 24.00	PROGRESS (ft/24 hours)	BREAKDOWN 00:00 – 24:00	RIG ACTIVITY
10/23/2013	10983'	913'	00:00-03:00	Build Curve 10845'-10983'
			03:00-03:30	Rig Service
			03:30-04:00	Circulate Bottoms Up
			04:00-05:00	Wiper Trip
			05:00-06:00	Circulate Bottoms Up
			06-11:30	TOOH for Intermediate Casing Operations
12/17/2013	10983'	0'	00:00-11:00	Skid Rig, BOP test, Cut Drilling Line, Directional Work-BHA
			11:00-17:30	TIH
			17:30-18:30	Drill 10983'-10993', FIT Test
			18:30-24:00	Drill/Slide 10993'-11364'
12/18/2013	11364'	381'	00:00-24:00	Drill/Slide 11364'-13454'
12/19/2013	13454'	2090'	00:00-24:00	Drill/Slide 13454'-15180'
12/20/2013	15180'	1726'	00:00-24:00	Drill/Slide 15180'-16588'
12/21/2013	16588'	1408'	00:00-08:30	Drill/Slide 16588'-17000'
			08:30-15:30	Circulate Bottoms Up, TOOH for new BHA
			15:30-16:30	Directional Work - BHA
			16:30-23:00	TIH
			23:00-24:00	Drill/Slide 17000'-17051'
12/22/2013	17051'	463'	00:00-24:00	Drill/Slide 17051'-18577'
12/23/2013	18577'	1523'	00:00-03:30	Drill/Slide 18577'-18781'
			03:30-04:00	Trouble Shoot MWD Tool
			04:00-24:00	Drill/Slide 18781'-20047'
12/24/2013	20047'	1470'	00:00-13:00	Drill/Slide 20047'-20627'
			13:00-14:00	Change out MWD Tool Communication Cable
			14:00-18:00	Drill/Slide 20627'-20743'
			18:00-20:30	Trouble Shoot MWD, Circulate
			20:30-21:00	Re-Log Gamma from 20722'-20743'
			21:00-24:00	Drill/Slide 20743'-20951'
12/25/2013	20951'	904'	00:00-23:30	Drill/Slide 20951'-21,862'
			23:30-24:00	Circulate, TOOH for new Motor
12/26/2013	21862'	911'	00:00-09:00	TOOH
			09:00-10:30	Directional Work-BHA
			10:30-20:30	TIH
			20:30-24:00	Reaming 18475'-19046'; Circulate Gas through Choke
12/27/2013	21862'	0'	00:00-03:00	Reaming 19046'-21800'
			03:00-03:30	Re-Log Gamma 21800'-21862'

DATE (m/d/y)	DEPTH @ 24.00	PROGRESS (ft/24 hours)	BREAKDOWN 00:00 – 24:00	RIG ACTIVITY
			03:30-23:00	Drill/Slide 21862'-23122'
			23:00-24:00	Circulate
12/28/2013	23122'	1260'	00:00-06:00	Circulate, Wiper Trip

LITHOLOGY

30' samples were caught in the vertical and curve by NorAm Wellsite Services, began at 8250'MD on October 19, 2013 at 22:50 hours. 50' samples were caught in the lateral by the Cyclone 4 Rig Crew on December 17th at 19:00 hours.

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
8250-8280	SALT: clear, translucent trace LIMESTONE: light to medium gray, firm to bright, microcrystalline, moderately silica, argillaceous, trace sandy material

CHARLES: 8299' MD, 8298' TVD (-6358)

8280-8310	SALT: clear, translucent trace LIMESTONE: light to medium gray, firm to bright, microcrystalline, moderately silica, argillaceous, trace sandy material
8310-8400	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	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, off white
8580-8640	LIMESTONE: light gray brown, light to medium gray, firm to bright, microcrystalline, moderately silica, argillaceous, ANHYDRITE: white, soft, amorphous; trace siltstone material; SALT: clear, translucent
8640-8670	LIMESTONE: light gray brown, light to medium gray, firm to bright, microcrystalline, moderately silica, argillaceous, ANHYDRITE: white, soft, amorphous; trace siltstone material; SALT: clear, translucent, hard,

Formation tops Sample Interval (in feet)	SAMPLE DESCRIPTION
8670-8760	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
8760-8820	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, light to medium gray, firm to bright, microcrystalline, moderately silty, argillaceous, ANHYDRITE: white to gray, soft, amorphous, trace SALT: clear, translucent, hard
8940-9000	SALT: clear, translucent, hard; trace LIMESTONE: light to medium gray, firm to hard, microcrystalline, moderately silty, trace argillaceous, mottled in part
	BASE LAST SALT: 8998' 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, 9221' TVD (-7279)

Formation tops Sample Interval (in feet)	SAMPLE DESCRIPTION
9210-9300	LIMESTONE: light to medium gray, light brown, tan, off white in part, firm to hard, microcrystalline, silty, trace argillaceous, mottled in part
9300-9360	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
9360-9410	LIMESTONE: light to medium gray, light brown, tan, off white in part, firm to hard, microcrystalline, silty, trace argillaceous, mottled in part
9410-9500	LIMESTONE: medium to dark brown, light brown to tan in part, trace medium gray, mottled in part, firm, cryptocrystalline, earthy, slightly silty, argillaceous
9500-9560	LIMESTONE: medium gray brown, light to medium gray, firm to bright, microcrystalline, argillaceous, trace sandy material; ANHYDRITE: white, soft,
9560-9650	LIMESTONE: medium gray brown, light to medium gray, firm to bright, microcrystalline, argillaceous, trace sandy material; ANHYDRITE: white, soft, NFSOC
9650-9680	LIMESTONE: medium gray brown, light to medium gray, firm to bright, microcrystalline, argillaceous, trace sandy material;
9680-9740	LIMESTONE: medium to dark brown, light brown to tan in part, trace medium gray, mottled in part, firm, cryptocrystalline, earthy, slightly silty, argillaceous
9740-9770	LIMESTONE: medium to dark brown, light brown to tan in part, trace medium gray, mottled in part, firm, microcrystalline to cryptocrystalline, earthy, slightly silty, argillaceous
9770-9800	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

LODGEPOLE: 9788' MD, 9787' TVD (-7847)

9800-9830	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
9830-9950	LIMESTONE: dark to medium gray to brown, light brown to tan in part, mottled in part, firm, microcrystalline to cryptocrystalline, earthy, slightly silty, argillaceous

Formation tops
Sample Interval
(in feet) SAMPLE DESCRIPTION

9950-10130 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

10130-10460 LIMESTONE: medium to dark gray, medium brown gray, trace light gray, mottled in part, firm to hard, microcrystalline to cryptocrystalline, moderately silty, argillaceous, earthy texture

10460-10610 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: 10599' MD, 10483' TVD (-8543)

10610-10640 SHALE: black, firm, sub blocky to sub platy, carbonaceous; trace LIMESTONE: dark gray, medium to dark gray brown, firm to hard, microcrystalline to cryptocrystalline, silty, very argillaceous, sub to blocky

UPPER BAKKEN SHALE: 10621'MD, 10494' TVD (-8554)

10640-10670 SHALE: black, brown, moderately hard, earthy texture carbonaceous, sub blocky,

MIDDLE BAKKEN MEMBER: 10672'MD, 10506' TVD (-8566)

10670-10760 DOLOMITE: light brown, light gray cream tan, gray in part, firm to hard, microcrystalline; SHALE: blue to gray, black in part, soft to firm, sub blocky, green fluorescence, trace stain, diffuse blue white cut

10760-10950 DOLOMITE: brown to dark brown, light gray, tan, gray in part, firm to hard, microcrystalline; SHALE: blue to gray, black in part, soft to firm, sub blocky, green fluorescence, trace stain, diffuse blue white cut

10950-11000 DOLOMITE: light brown to dark, light gray, tan, gray in part, firm to hard, microcrystalline; SHALE: blue to gray, black in part, soft to firm, sub blocky, trace light brown oil stain, green fluorescence, diffuse blue white cut

11000-11150 DOLOMITE: light brown to dark, light gray, tan, gray in part, firm to hard, microcrystalline; SHALE: blue to gray, black in part, soft to firm, sub blocky, trace light brown oil stain, green fluorescence, diffuse blue white cut

Formation tops Sample Interval (in feet)	SAMPLE DESCRIPTION
11150-11550	DOLOMITE: light to medium gray, medium gray to brown, medium brown, firm, microcrystalline, calcareous, silty, slightly argillaceous, trace sand, intercrystalline porosity, trace carbonaceous material, light yellow mineral fluorescence, yellow to cream slow streaming cut
11550-11950	DOLOMITE: light to medium brown, light to medium gray, silty in part, slightly argillaceous, calcareous, laminated in part, microcrystalline, intercrystalline porosity, spotted to even oil show, yellow to green mineral fluorescence, yellow to green flash cut
11950-12150	DOLOMITE: light to medium brown, medium gray, cream in part, silty in part, slightly argillaceous, calcareous, laminated in part, microcrystalline, trace intercrystalline porosity, spotty to even oil stain, yellow fluorescence, yellow streaming cut
12150-12250	DOLOMITE: light to medium gray, light to medium gray, cream in part, silty in part, slightly argillaceous, calcareous, laminated in part, microcrystalline, trace intercrystalline porosity, spotty to even oil stain, yellow fluorescence, green streaming cut
12250-13050	DOLOMITE: light to medium gray, light to medium gray, cream in part, silty in part, slightly argillaceous, calcareous, laminated in part, microcrystalline, trace intercrystalline porosity, spotty to even oil stain, yellow fluorescence, green diffuse cut
13050-13500	DOLOMITE: light to medium brown, medium gray, cream in part, silty in part, slightly argillaceous, calcareous, laminated in part, microcrystalline, trace intercrystalline porosity, spotty to even oil stain, yellow fluorescence, yellow streaming cut
13500-13700	DOLOMITE: light to medium brown, light to medium gray, silty in part, slightly argillaceous, calcareous, laminated in part, microcrystalline, intercrystalline porosity, spotted to even oil show, yellow to green mineral fluorescence, yellow to green flash cut
13700-13800	DOLOMITE: light to medium gray, light to medium gray, cream in part, silty in part, slightly argillaceous, calcareous, laminated in part, microcrystalline, trace intercrystalline porosity, spotty to even oil stain, yellow fluorescence, green streaming cut

Formation tops Sample Interval (in feet)	SAMPLE DESCRIPTION
13800-14550	DOLOMITE: light to medium gray, light to medium brown, cream to off white in part, silty in part, slightly argillaceous, calcareous, laminated in part, microcrystalline, trace intercrystalline porosity, spotty to even oil stain, yellow to white fluorescence, green to white streaming cut
14550-14900	DOLOMITE: light to medium brown, light to medium gray, cream to off white in part, silty in part, slightly argillaceous, calcareous, laminated in part, microcrystalline, trace intercrystalline porosity, spotty to even oil stain, green to white fluorescence, blue to white diffuse cut
14900-15100	DOLOMITE: light to medium gray, medium brown to light brown, cream, off white firm, microcrystalline, calcareous, silty, slightly argillaceous, trace sand, intercrystalline porosity, light yellow mineral fluorescence, yellow to cream slow streaming cut
15100-15200	DOLOMITE: light to medium gray, light brown to tan cream in part, silty in part, slightly argillaceous, calcareous, laminated in part, microcrystalline, trace intercrystalline porosity, spotty to even oil stain, yellow fluorescence, green diffuse cut
15200-15550	DOLOMITE: light to medium gray, light to medium brown, cream to off white in part, silty in part, slightly argillaceous, calcareous, laminated in part, microcrystalline, trace intercrystalline porosity, spotty to even oil stain, yellow to white fluorescence, green to white streaming cut
15550-16000	DOLOMITE: light to medium brown, light to medium gray, cream to off white in part, silty in part, slightly argillaceous, calcareous, laminated in part, microcrystalline, trace intercrystalline porosity, spotty to even oil stain, blue white fluorescence, yellow white diffuse cut
16000-16450	DOLOMITE: light to medium brown, light to medium gray, cream to off white in part, silty in part, slightly argillaceous, calcareous, laminated in part, microcrystalline, trace intercrystalline porosity, spotty to even oil stain, green white fluorescence, yellow green streaming cut
16450-16750	DOLOMITE: light to medium brown, light to medium gray, silty in part, slightly argillaceous, calcareous, laminated in part, microcrystalline, intercrystalline porosity, spotted to even oil show, yellow to green mineral fluorescence, yellow to green flash cut

Formation tops Sample Interval (in feet)	SAMPLE DESCRIPTION
16750-17550	DOLOMITE: medium to dark gray, light gray in part, light to medium brown, silty in part, moderately argillaceous, calcareous, laminated in part, microcrystalline, intercrystalline porosity, spotty oil stain, yellow fluorescence, green to yellow streaming cut
17550-17650	DOLOMITE: light to medium brown, light to medium gray, cream to off white in part, silty in part, moderately argillaceous, calcareous, laminated in part, microcrystalline, intercrystalline porosity, spotty oil stain, green to white fluorescence, white streaming cut
17650-17800	DOLOMITE: light to medium brown, light to medium gray, cream to off white in part, silty in part, moderately argillaceous, calcareous, laminated in part, microcrystalline, intercrystalline porosity, spotty oil stain, green to white fluorescence, white streaming cut; sample contaminated with lube
17800-17950	DOLOMITE: light to medium brown, light to medium gray, cream to off white in part, silty in part, moderately argillaceous, calcareous, laminated in part, microcrystalline, intercrystalline porosity, spotty oil stain, blue to white fluorescence, white to green diffuse cut
17950-18450	DOLOMITE: light to medium brown, light to medium gray, cream to off white in part, silty in part, moderately argillaceous, calcareous, laminated in part, microcrystalline, intercrystalline porosity, spotty oil stain, blue to white fluorescence, white to green diffuse cut; sample contaminated with lube
18450-18950	DOLOMITE: light to medium brown, light to medium gray, cream to off white in part, silty in part, slightly argillaceous, calcareous, laminated in part, microcrystalline, trace intercrystalline porosity, spotty to even oil stain, green white fluorescence, yellow green streaming cut
18950-19050	DOLOMITE: light to medium brown, light to medium gray, cream to off white in part, silty in part, slightly argillaceous, calcareous, laminated in part, microcrystalline, trace intercrystalline porosity, spotty to even oil stain, yellow fluorescence, green diffuse cut; sample contaminated with lube
19050-19350	DOLOMITE: light to medium brown, light to medium gray, cream to off white in part, silty in part, slightly argillaceous, calcareous, laminated in part, microcrystalline, trace intercrystalline porosity, spotty to even oil stain, yellow fluorescence, green diffuse cut

Formation tops Sample Interval (in feet)	SAMPLE DESCRIPTION
19350-20000	DOLOMITE: light to medium brown, light to medium gray, cream to off white in part, silty in part, slightly argillaceous, calcareous, laminated in part, microcrystalline, trace intercrystalline porosity, spotty to even oil stain, yellow fluorescence, green diffuse cut; sample contaminated with lube
20000-20200	DOLOMITE: light to medium brown, light to medium gray, cream to off white in part, silty in part, slightly argillaceous, calcareous, laminated in part, microcrystalline, trace intercrystalline porosity, spotty to even oil stain, green white fluorescence, yellow green streaming cut contaminated with lube
20200-21000	DOLOMITE: medium gray, light to medium brown, light gray to cream in part, silty in part, slightly argillaceous, calcareous, laminated in part, microcrystalline, trace intercrystalline porosity, spotty to even oil stain, cream to yellow fluorescence, yellow diffuse cut; sample contaminated with lube
21000-21950	DOLOMITE: light to medium brown, light to medium gray, cream to off white in part, silty in part, slightly argillaceous, calcareous, laminated in part, microcrystalline, trace intercrystalline porosity, spotty to even oil stain, green white fluorescence, yellow green streaming cut sample contaminated with lube
21950-22900	DOLOMITE: medium gray, light to medium brown, light gray to cream in part, silty in part, slightly argillaceous, calcareous, laminated in part, microcrystalline, trace intercrystalline porosity, spotty to even oil stain, cream to yellow fluorescence, yellow diffuse cut; sample contaminated with lube
22900-23122	DOLOMITE: light gray, light to medium brown, light gray to cream in part, silty in part, slightly argillaceous, calcareous, laminated in part, microcrystalline, trace intercrystalline porosity, spotty to even oil stain, cream to yellow fluorescence, yellow diffuse cut; sample contaminated with lube

GEOLOGICAL SUMMARY & CONCLUSIONS

Continental Resources, Inc drilled the northbound Columbus Federal 3-16H in Sections 16, 9, and 4 of Township 153N, Range 101W into the Mississippian/Devonian age Middle Bakken Member. The Well was spud using Cyclone 4 on October 16, 2013 at a surface location of 2469' FNL, and 199' FEL.

The surface was pre-drilled with surface casing set at 1975'MD. From there the 8 3/4" vertical portion was drilled to Kick Off Point (KOP) at 10070'MD. Leam provided Directional Drilling, and Measurement While Drilling (MWD) services. NorAm Wellsite Services provided both Mud Logging and Geosteering Services. One trip was necessary in the vertical section at 2411'MD for MWD tool.

The curve was drilled in 22.5 hours on October 22-23, 2013. The wellbore entered into the Middle Bakken top at 10672'MD, 10506'TVD, and landed at 10983'MD, 10524'TVD, 18' in the Middle Bakken.

The Lateral resumed drilling on December 17, 2013 at 19:00 hours. The first trip for new BHA occurred at 17000'MD on December 21, 2013 at 09:30 hours. Drilling Resumed December 21, 2013 at 21:10 hours. 87.5 hours later, a second trip occurred for a new bit and motor on December 25, 2013 at 23:30 hours. Drilling resumed on December 26, 2013 at 03:30 hours. Gas increased throughout the well, the further the wellbore went. At 19500'MD, background gas stayed above 2000 units, as the wellbore traversed through the middle of the target zone. At 20:55 hours on December 27, 2013, the Columbus Federal reached TD of 23122'MD. Projection to bit is 23122'MD, 10518'TVD, 89.4 INC, and 0.70 AZM. Overall dip was an 89.83 with the wellbore in zone roughly 90% of the time. Bottom hole Location is 244'FNL & 680.4'FEL Section 4, T153N, R101W.

NEWSCO
International Energy Services Inc.

Continental Resources	33326	8/11/2013
Company	Job Number	Date
Cyclone 4	Columbus Federal 3-16H	McKenzie Co., ND
Rig	Well Name	County & State

Surveyed from depth of: Surface to 1927'

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:	8/11/2013	**WELL NAME:**	Columbus Federal 3-16H
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	143.00	0.10	60.30	143.00	143.00	0.06	0.06	0.11	0.07	0.07	42.17	MAG
2	225.00	0.40	63.80	82.00	225.00	0.22	0.22	0.43	0.37	0.37	4.27	MAG
3	306.00	0.30	64.60	81.00	306.00	0.44	0.44	0.87	0.12	-0.12	0.99	MAG
4	384.00	0.40	39.60	78.00	384.00	0.74	0.74	1.23	0.23	0.13	-32.05	MAG
5	477.00	0.20	61.70	93.00	476.99	1.06	1.06	1.58	0.24	-0.22	23.76	MAG
6	570.00	0.20	38.90	93.00	569.99	1.27	1.27	1.83	0.09	0.00	-24.52	MAG
7	664.00	0.20	258.60	94.00	663.99	1.36	1.36	1.77	0.40	0.00	-149.26	MAG
8	758.00	0.30	292.00	94.00	757.99	1.42	1.42	1.38	0.18	0.11	35.53	MAG
9	851.00	0.20	291.30	93.00	850.99	1.57	1.57	1.00	0.11	-0.11	-0.75	MAG
10	944.00	0.10	295.50	93.00	943.99	1.67	1.67	0.78	0.11	-0.11	4.52	MAG
11	1036.00	0.40	22.70	92.00	1035.99	2.00	2.00	0.83	0.44	0.33	94.78	MAG
12	1130.00	0.40	6.90	94.00	1129.99	2.63	2.63	0.99	0.12	0.00	-16.81	MAG
13	1222.00	0.20	315.60	92.00	1221.99	3.06	3.06	0.92	0.34	-0.22	-55.76	MAG
14	1315.00	0.30	314.90	93.00	1314.99	3.35	3.35	0.63	0.11	0.11	-0.75	MAG
15	1410.00	0.20	356.70	95.00	1409.99	3.69	3.69	0.45	0.21	-0.11	44.00	MAG
16	1502.00	0.50	35.40	92.00	1501.98	4.18	4.18	0.67	0.40	0.33	42.07	MAG
17	1596.00	0.40	34.30	94.00	1595.98	4.78	4.78	1.09	0.11	-0.11	-1.17	MAG
18	1686.00	0.50	69.50	90.00	1685.98	5.18	5.18	1.64	0.32	0.11	39.11	MAG
19	1780.00	0.20	53.60	94.00	1779.98	5.42	5.42	2.16	0.33	-0.32	-16.91	MAG
20	1873.00	0.10	96.50	93.00	1872.98	5.51	5.51	2.37	0.15	-0.11	46.13	MAG
21	1927.00	0.10	221.00	54.00	1926.98	5.47	5.47	2.38	0.33	0.00	230.56	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												
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LEAM Drilling Systems LLC

Survey Certification Sheet

Continental Resources	20131226D-ND	01/13/2014
Company	Job Number	Date
Section 16, T153N, R101W	Columbus Federal 3-16H	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	1,990'- 23,122'	10/17/2013-12/27/2013	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 10/17/2013 and ending on 12/27/2013, I conducted or supervised the taking of an MWD Survey from a beginning depth of 1,990' ft. MD to an ending depth of 23,122' 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 3-16H located in McKenzie County, North Dakota as requested by Continental Resources.

Randy W. Rakowitz
Sr. MWD Operations Coordinator

LEAM Drilling Systems LLC

Survey Report

Company:	Continental Resources	**Local Co-ordinate Reference:**	Well 3-16H
Project:	McKenzie County, ND	**TVD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Site:	Columbus Federal 3	**MD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Well:	3-16H	**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 3, Sec. 16 - T153N - R101W				
Site Position:		**Northing:**	408,236.61 usft	**Latitude:**	48° 4' 31.639 N
From:	Lat/Long	**Easting:**	1,193,846.91 usft	**Longitude:**	103° 40' 11.004 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	0 "	**Grid Convergence:**	-2.36 °

Well	3-16H					
Well Position	**+N/-S**	0.00 usft	**Northing:**	408,236.61 usft	**Latitude:**	48° 4' 31.639 N
	+E/-W	0.00 usft	**Easting:**	1,193,846.91 usft	**Longitude:**	103° 40' 11.004 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	357.92

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

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
143.00	1,927.00	Survey #1 (OH)	MWD-ISCWSA	MWD - Standard
1,990.00	23,072.00	Survey #2 (OH)	LEAM MWD-ADJ	MWD - Standard
23,122.00	23,122.00	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)
1,927.00	0.10	221.00	1,926.98	5.47	2.38	5.38	0.33	0.00	230.56
1,990.00	0.10	213.40	1,989.98	5.38	2.32	5.29	0.02	0.00	-12.06
2,084.00	0.80	242.80	2,083.97	5.01	1.69	4.94	0.76	0.74	31.28
2,177.00	1.10	251.10	2,176.96	4.42	0.27	4.41	0.35	0.32	8.92
2,271.00	1.10	253.20	2,270.94	3.87	-1.45	3.92	0.04	0.00	2.23
2,364.00	1.90	247.50	2,363.91	3.02	-3.73	3.16	0.87	0.86	-6.13
2,457.00	2.10	248.20	2,456.85	1.80	-6.74	2.04	0.22	0.22	0.75
2,550.00	2.30	248.90	2,549.79	0.49	-10.06	0.86	0.22	0.22	0.75
2,645.00	1.80	236.60	2,644.72	-1.01	-13.08	-0.54	0.70	-0.53	-12.95

Company:	Continental Resources	**Local Co-ordinate Reference:**	Well 3-16H
Project:	McKenzie County, ND	**TVD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Site:	Columbus Federal 3	**MD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Well:	3-16H	**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)
2,739.00	1.20	222.60	2,738.69	-2.55	-14.98	-2.00	0.74	-0.64	-14.89
2,832.00	1.30	224.50	2,831.67	-4.02	-16.38	-3.42	0.12	0.11	2.04
2,925.00	0.70	277.80	2,924.66	-4.69	-17.68	-4.05	1.12	-0.65	57.31
3,019.00	0.90	343.00	3,018.65	-3.91	-18.47	-3.24	0.93	0.21	69.36
3,112.00	0.90	341.60	3,111.64	-2.52	-18.91	-1.83	0.02	0.00	-1.51
3,205.00	0.80	346.10	3,204.63	-1.20	-19.30	-0.49	0.13	-0.11	4.84
3,298.00	0.50	357.00	3,297.62	-0.16	-19.48	0.55	0.35	-0.32	11.72
3,391.00	0.30	355.80	3,390.62	0.49	-19.52	1.20	0.22	-0.22	-1.29
3,484.00	0.20	22.00	3,483.62	0.88	-19.47	1.59	0.16	-0.11	28.17
3,578.00	0.80	49.30	3,577.61	1.46	-18.91	2.15	0.67	0.64	29.04
3,671.00	0.50	67.40	3,670.61	2.04	-18.05	2.69	0.39	-0.32	19.46
3,765.00	0.60	87.40	3,764.60	2.22	-17.18	2.84	0.23	0.11	21.28
3,858.00	0.30	72.80	3,857.60	2.31	-16.46	2.91	0.34	-0.32	-15.70
3,952.00	0.40	64.90	3,951.60	2.53	-15.92	3.10	0.12	0.11	-8.40
4,045.00	0.20	51.20	4,044.60	2.77	-15.50	3.33	0.23	-0.22	-14.73
4,139.00	0.20	86.90	4,138.60	2.88	-15.21	3.43	0.13	0.00	37.98
4,232.00	0.30	148.80	4,231.60	2.68	-14.92	3.22	0.29	0.11	66.56
4,326.00	0.30	161.80	4,325.60	2.23	-14.72	2.77	0.07	0.00	13.83
4,419.00	0.30	142.20	4,418.59	1.81	-14.49	2.33	0.11	0.00	-21.08
4,512.00	0.40	181.80	4,511.59	1.29	-14.36	1.81	0.27	0.11	42.58
4,606.00	0.60	201.70	4,605.59	0.51	-14.55	1.04	0.28	0.21	21.17
4,699.00	1.10	199.40	4,698.58	-0.79	-15.02	-0.24	0.54	0.54	-2.47
4,792.00	0.90	190.10	4,791.56	-2.35	-15.45	-1.79	0.28	-0.22	-10.00
4,886.00	0.40	148.60	4,885.56	-3.35	-15.41	-2.79	0.70	-0.53	-44.15
4,979.00	0.30	38.50	4,978.56	-3.44	-15.09	-2.89	0.62	-0.11	-118.39
5,073.00	1.20	29.00	5,072.55	-2.39	-14.46	-1.86	0.96	0.96	-10.11
5,166.00	1.00	120.30	5,165.54	-1.95	-13.28	-1.46	1.70	-0.22	98.17
5,260.00	0.80	55.80	5,259.53	-1.99	-12.03	-1.55	1.04	-0.21	-68.62
5,354.00	0.90	65.90	5,353.52	-1.32	-10.82	-0.93	0.19	0.11	10.74
5,447.00	1.10	63.50	5,446.50	-0.62	-9.35	-0.28	0.22	0.22	-2.58
5,540.00	1.30	59.80	5,539.48	0.31	-7.64	0.58	0.23	0.22	-3.98
5,634.00	1.10	56.60	5,633.46	1.34	-5.97	1.55	0.22	-0.21	-3.40
5,727.00	1.90	58.80	5,726.43	2.63	-3.90	2.77	0.86	0.86	2.37
5,821.00	1.90	55.60	5,820.38	4.32	-1.28	4.36	0.11	0.00	-3.40
5,914.00	2.00	55.40	5,913.32	6.11	1.33	6.06	0.11	0.11	-0.22
6,007.00	1.80	55.10	6,006.27	7.87	3.86	7.72	0.22	-0.22	-0.32
6,101.00	1.80	49.80	6,100.23	9.66	6.20	9.43	0.18	0.00	-5.64
6,194.00	1.00	53.10	6,193.20	11.09	7.96	10.80	0.86	-0.86	3.55
6,288.00	0.60	83.70	6,287.19	11.64	9.11	11.30	0.61	-0.43	32.55
6,382.00	0.80	98.50	6,381.18	11.60	10.25	11.22	0.29	0.21	15.74
6,476.00	1.10	98.30	6,475.17	11.37	11.79	10.93	0.32	0.32	-0.21
6,569.00	0.40	83.40	6,568.16	11.28	12.99	10.80	0.78	-0.75	-16.02
6,662.00	0.60	3.90	6,661.16	11.80	13.35	11.31	0.71	0.22	-85.48

Company:	Continental Resources	**Local Co-ordinate Reference:**	Well 3-16H
Project:	McKenzie County, ND	**TVD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Site:	Columbus Federal 3	**MD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Well:	3-16H	**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)
6,756.00	1.10	355.50	6,755.15	13.19	13.31	12.70	0.55	0.53	-8.94
6,850.00	1.10	333.00	6,849.13	14.90	12.83	14.42	0.46	0.00	-23.94
6,943.00	1.50	341.00	6,942.11	16.84	12.03	16.39	0.47	0.43	8.60
7,037.00	1.70	327.90	7,036.07	19.19	10.89	18.78	0.44	0.21	-13.94
7,130.00	2.10	323.50	7,129.02	21.72	9.14	21.38	0.46	0.43	-4.73
7,223.00	1.60	295.90	7,221.97	23.66	6.96	23.39	1.08	-0.54	-29.68
7,316.00	1.30	264.90	7,314.94	24.13	4.74	23.95	0.89	-0.32	-33.33
7,411.00	1.50	258.80	7,409.92	23.80	2.45	23.69	0.26	0.21	-6.42
7,504.00	1.90	264.80	7,502.87	23.42	-0.28	23.42	0.47	0.43	6.45
7,597.00	1.90	262.80	7,595.82	23.09	-3.35	23.19	0.07	0.00	-2.15
7,690.00	1.80	245.60	7,688.78	22.29	-6.21	22.50	0.60	-0.11	-18.49
7,784.00	1.10	237.30	7,782.74	21.19	-8.31	21.48	0.78	-0.74	-8.83
7,877.00	0.80	208.50	7,875.73	20.14	-9.37	20.47	0.60	-0.32	-30.97
7,970.00	1.10	199.00	7,968.72	18.73	-9.97	19.08	0.36	0.32	-10.22
8,063.00	1.10	200.30	8,061.70	17.05	-10.57	17.42	0.03	0.00	1.40
8,156.00	1.10	209.70	8,154.69	15.43	-11.32	15.83	0.19	0.00	10.11
8,250.00	1.00	212.00	8,248.67	13.95	-12.21	14.39	0.12	-0.11	2.45
8,343.00	1.10	227.00	8,341.65	12.66	-13.29	13.13	0.31	0.11	16.13
8,436.00	1.10	230.70	8,434.64	11.48	-14.63	12.01	0.08	0.00	3.98
8,529.00	1.00	213.60	8,527.62	10.24	-15.77	10.81	0.35	-0.11	-18.39
8,623.00	1.10	219.90	8,621.61	8.87	-16.80	9.47	0.16	0.11	6.70
8,716.00	1.00	226.80	8,714.59	7.63	-17.97	8.27	0.17	-0.11	7.42
8,810.00	1.10	238.00	8,808.57	6.59	-19.33	7.28	0.24	0.11	11.91
8,903.00	1.30	248.20	8,901.55	5.72	-21.07	6.48	0.31	0.22	10.97
8,997.00	1.10	236.10	8,995.53	4.82	-22.81	5.65	0.34	-0.21	-12.87
9,090.00	1.20	233.60	9,088.52	3.75	-24.33	4.63	0.12	0.11	-2.69
9,183.00	1.10	236.80	9,181.50	2.68	-25.86	3.62	0.13	-0.11	3.44
9,277.00	0.90	213.40	9,275.48	1.57	-27.02	2.55	0.48	-0.21	-24.89
9,370.00	0.30	111.70	9,368.48	0.87	-27.20	1.86	1.08	-0.65	-109.35
9,464.00	0.70	59.10	9,462.47	1.07	-26.48	2.03	0.61	0.43	-55.96
9,557.00	0.60	58.40	9,555.47	1.62	-25.58	2.55	0.11	-0.11	-0.75
9,650.00	0.70	60.30	9,648.46	2.16	-24.67	3.05	0.11	0.11	2.04
9,744.00	0.60	67.40	9,742.46	2.63	-23.72	3.49	0.14	-0.11	7.55
9,837.00	0.60	67.00	9,835.45	3.01	-22.82	3.83	0.00	0.00	-0.43
9,930.00	0.30	71.80	9,928.45	3.27	-22.14	4.08	0.32	-0.32	5.16
10,024.00	0.30	82.50	10,022.45	3.38	-21.66	4.17	0.06	0.00	11.38
10,049.00	0.20	35.90	10,047.45	3.43	-21.57	4.21	0.87	-0.40	-186.40
10,081.00	2.70	330.70	10,079.44	4.13	-21.91	4.92	8.19	7.81	-203.75
10,112.00	7.80	330.00	10,110.29	6.59	-23.32	7.43	16.45	16.45	-2.26
10,143.00	12.50	333.50	10,140.80	11.42	-25.87	12.35	15.28	15.16	11.29
10,174.00	15.80	335.60	10,170.86	18.26	-29.11	19.31	10.77	10.65	6.77
10,205.00	18.50	333.10	10,200.48	26.50	-33.08	27.68	9.03	8.71	-8.06
10,236.00	22.00	331.70	10,229.56	36.00	-38.06	37.35	11.40	11.29	-4.52

Company:	Continental Resources	**Local Co-ordinate Reference:**	Well 3-16H
Project:	McKenzie County, ND	**TVD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Site:	Columbus Federal 3	**MD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Well:	3-16H	**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)
10,267.00	25.10	330.50	10,257.97	46.83	-44.05	48.40	10.12	10.00	-3.87
10,298.00	28.80	329.30	10,285.60	58.98	-51.10	60.80	12.06	11.94	-3.87
10,330.00	32.40	329.10	10,313.14	72.97	-59.44	75.08	11.25	11.25	-0.63
10,361.00	36.80	329.80	10,338.65	88.13	-68.38	90.55	14.25	14.19	2.26
10,392.00	41.80	329.80	10,362.63	105.09	-78.26	107.86	16.13	16.13	0.00
10,423.00	45.80	329.60	10,385.00	123.61	-89.08	126.77	12.91	12.90	-0.65
10,454.00	50.00	331.20	10,405.78	143.61	-100.43	147.16	14.08	13.55	5.16
10,485.00	53.50	330.20	10,424.97	164.84	-112.34	168.81	11.57	11.29	-3.23
10,516.00	58.10	329.50	10,442.39	187.00	-125.22	191.42	14.96	14.84	-2.26
10,547.00	60.90	329.80	10,458.12	210.05	-138.72	214.94	9.07	9.03	0.97
10,578.00	63.40	330.90	10,472.60	233.87	-152.27	239.24	8.65	8.06	3.55
10,610.00	66.40	332.30	10,486.18	259.36	-166.05	265.21	10.18	9.38	4.38
10,641.00	71.10	333.00	10,497.41	285.01	-179.32	291.33	15.31	15.16	2.26
10,672.00	76.20	333.30	10,506.13	311.54	-192.75	318.34	16.48	16.45	0.97
10,703.00	79.30	333.70	10,512.71	338.65	-206.26	345.92	10.08	10.00	1.29
10,734.00	80.90	333.50	10,518.04	366.01	-219.84	373.74	5.20	5.16	-0.65
10,765.00	84.40	333.50	10,522.00	393.52	-233.56	401.73	11.29	11.29	0.00
10,797.00	89.80	333.10	10,523.62	422.06	-247.91	430.78	16.92	16.88	-1.25
10,828.00	91.00	333.00	10,523.41	449.69	-261.96	458.90	3.88	3.87	-0.32
10,859.00	91.40	333.10	10,522.76	477.32	-276.01	487.02	1.33	1.29	0.32
10,890.00	89.40	333.70	10,522.54	505.03	-289.89	515.22	6.74	-6.45	1.94
10,935.00	88.70	333.70	10,523.29	545.37	-309.82	556.25	1.56	-1.56	0.00
10,969.00	88.60	333.30	10,524.09	575.79	-324.99	587.20	1.21	-0.29	-1.18
11,064.00	89.30	332.80	10,525.83	660.46	-368.03	673.38	0.91	0.74	-0.53
11,159.00	90.00	335.60	10,526.41	745.98	-409.38	760.34	3.04	0.74	2.95
11,253.00	90.20	338.60	10,526.24	832.56	-445.95	848.19	3.20	0.21	3.19
11,348.00	90.70	342.80	10,525.50	922.20	-477.34	938.91	4.45	0.53	4.42
11,443.00	90.70	345.60	10,524.34	1,013.59	-503.20	1,031.19	2.95	0.00	2.95
11,538.00	90.70	348.60	10,523.18	1,106.18	-524.41	1,124.48	3.16	0.00	3.16
11,633.00	90.00	350.90	10,522.60	1,199.65	-541.31	1,218.51	2.53	-0.74	2.42
11,728.00	90.00	353.40	10,522.60	1,293.75	-554.28	1,313.02	2.63	0.00	2.63
11,823.00	90.10	356.20	10,522.51	1,388.35	-562.89	1,407.87	2.95	0.11	2.95
11,918.00	89.50	357.90	10,522.85	1,483.22	-567.78	1,502.85	1.90	-0.63	1.79
12,013.00	87.70	0.00	10,525.17	1,578.17	-569.52	1,597.80	2.91	-1.89	2.21
12,108.00	88.40	359.30	10,528.40	1,673.11	-570.10	1,692.70	1.04	0.74	-0.74
12,203.00	89.20	359.30	10,530.39	1,768.08	-571.26	1,787.65	0.84	0.84	0.00
12,298.00	91.10	359.90	10,530.14	1,863.07	-571.93	1,882.60	2.10	2.00	0.63
12,393.00	90.00	1.60	10,529.23	1,958.06	-570.68	1,977.48	2.13	-1.16	1.79
12,488.00	87.70	1.80	10,531.13	2,052.99	-567.87	2,072.25	2.43	-2.42	0.21
12,583.00	87.80	0.00	10,534.86	2,147.90	-566.38	2,167.04	1.90	0.11	-1.89
12,678.00	88.80	359.50	10,537.68	2,242.86	-566.79	2,261.95	1.18	1.05	-0.53
12,773.00	89.90	359.20	10,538.76	2,337.84	-567.87	2,356.91	1.20	1.16	-0.32
12,867.00	88.20	0.70	10,540.32	2,431.82	-567.95	2,450.83	2.41	-1.81	1.60
12,960.00	89.30	1.10	10,542.35	2,524.79	-566.49	2,543.69	1.26	1.18	0.43

Company:	Continental Resources	**Local Co-ordinate Reference:**	Well 3-16H
Project:	McKenzie County, ND	**TVD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Site:	Columbus Federal 3	**MD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Well:	3-16H	**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)
13,051.00	90.00	0.70	10,542.90	2,615.77	-565.06	2,634.56	0.89	0.77	-0.44
13,143.00	88.00	2.00	10,544.51	2,707.73	-562.89	2,726.37	2.59	-2.17	1.41
13,235.00	88.00	1.80	10,547.72	2,799.62	-559.84	2,818.10	0.22	0.00	-0.22
13,327.00	88.60	1.60	10,550.45	2,891.54	-557.12	2,909.86	0.69	0.65	-0.22
13,420.00	88.70	1.60	10,552.64	2,984.48	-554.52	3,002.64	0.11	0.11	0.00
13,511.00	90.00	1.60	10,553.67	3,075.43	-551.98	3,093.44	1.43	1.43	0.00
13,603.00	90.70	1.30	10,553.11	3,167.40	-549.65	3,185.27	0.83	0.76	-0.33
13,695.00	90.30	0.60	10,552.31	3,259.39	-548.13	3,277.13	0.88	-0.43	-0.76
13,787.00	91.50	1.60	10,550.86	3,351.36	-546.36	3,368.98	1.70	1.30	1.09
13,880.00	90.00	0.60	10,549.65	3,444.33	-544.58	3,461.82	1.94	-1.61	-1.08
13,972.00	89.70	359.50	10,549.89	3,536.32	-544.50	3,553.76	1.24	-0.33	-1.20
14,064.00	89.60	358.80	10,550.45	3,628.31	-545.86	3,645.73	0.77	-0.11	-0.76
14,156.00	90.70	359.90	10,550.21	3,720.30	-546.90	3,737.70	1.69	1.20	1.20
14,249.00	91.00	358.50	10,548.83	3,813.28	-548.20	3,830.67	1.54	0.32	-1.51
14,341.00	90.20	358.10	10,547.86	3,905.23	-550.93	3,922.66	0.97	-0.87	-0.43
14,433.00	91.10	358.80	10,546.82	3,997.19	-553.42	4,014.65	1.24	0.98	0.76
14,526.00	91.50	358.30	10,544.71	4,090.14	-555.77	4,107.62	0.69	0.43	-0.54
14,619.00	89.90	357.00	10,543.57	4,183.05	-559.59	4,200.60	2.22	-1.72	-1.40
14,712.00	91.50	359.20	10,542.44	4,275.98	-562.67	4,293.59	2.92	1.72	2.37
14,805.00	90.80	359.00	10,540.57	4,368.95	-564.13	4,386.55	0.78	-0.75	-0.22
14,897.00	92.20	359.20	10,538.16	4,460.91	-565.57	4,478.49	1.54	1.52	0.22
14,990.00	90.50	0.90	10,535.97	4,553.87	-565.49	4,571.40	2.58	-1.83	1.83
15,082.00	91.20	0.60	10,534.61	4,645.85	-564.29	4,663.27	0.83	0.76	-0.33
15,174.00	89.60	1.60	10,533.97	4,737.83	-562.52	4,755.13	2.05	-1.74	1.09
15,267.00	90.00	0.70	10,534.29	4,830.81	-560.66	4,847.98	1.06	0.43	-0.97
15,360.00	90.50	0.90	10,533.88	4,923.80	-559.36	4,940.86	0.58	0.54	0.22
15,453.00	91.50	0.20	10,532.26	5,016.78	-558.46	5,033.74	1.31	1.08	-0.75
15,545.00	89.80	2.80	10,531.22	5,108.73	-556.06	5,125.55	3.38	-1.85	2.83
15,640.00	89.90	2.50	10,531.47	5,203.63	-551.66	5,220.22	0.33	0.11	-0.32
15,735.00	90.70	1.40	10,530.97	5,298.57	-548.43	5,314.99	1.43	0.84	-1.16
15,830.00	90.10	1.60	10,530.31	5,393.54	-545.94	5,409.80	0.67	-0.63	0.21
15,925.00	91.70	3.20	10,528.81	5,488.43	-541.97	5,504.49	2.38	1.68	1.68
16,020.00	88.90	2.30	10,528.32	5,583.31	-537.41	5,599.14	3.10	-2.95	-0.95
16,115.00	90.70	2.80	10,528.65	5,678.21	-533.18	5,693.83	1.97	1.89	0.53
16,210.00	89.30	3.40	10,528.65	5,773.07	-528.05	5,788.43	1.60	-1.47	0.63
16,305.00	90.30	4.40	10,528.98	5,867.85	-521.59	5,882.91	1.49	1.05	1.05
16,400.00	87.50	1.10	10,530.80	5,962.70	-517.03	5,977.54	4.55	-2.95	-3.47
16,495.00	88.40	1.10	10,534.20	6,057.62	-515.21	6,072.33	0.95	0.95	0.00
16,590.00	90.00	0.90	10,535.53	6,152.59	-513.55	6,167.18	1.70	1.68	-0.21
16,685.00	91.10	0.20	10,534.62	6,247.58	-512.64	6,262.07	1.37	1.16	-0.74
16,780.00	90.30	0.40	10,533.45	6,342.57	-512.14	6,356.98	0.87	-0.84	0.21
16,874.00	91.10	1.10	10,532.31	6,436.56	-510.91	6,450.86	1.13	0.85	0.74
16,971.00	92.30	0.40	10,529.43	6,533.50	-509.64	6,547.70	1.43	1.24	-0.72

Company:	Continental Resources	**Local Co-ordinate Reference:**	Well 3-16H
Project:	McKenzie County, ND	**TVD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Site:	Columbus Federal 3	**MD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Well:	3-16H	**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)
17,066.00	91.70	0.70	10,526.11	6,628.44	-508.73	6,642.54	0.71	-0.63	0.32
17,161.00	91.40	0.70	10,523.54	6,723.40	-507.57	6,737.39	0.32	-0.32	0.00
17,256.00	91.40	0.40	10,521.22	6,818.37	-506.66	6,832.26	0.32	0.00	-0.32
17,351.00	91.50	359.50	10,518.82	6,913.34	-506.74	6,927.17	0.95	0.11	-0.95
17,446.00	91.70	359.70	10,516.17	7,008.30	-507.40	7,022.09	0.30	0.21	0.21
17,541.00	92.00	359.50	10,513.10	7,103.24	-508.06	7,117.00	0.38	0.32	-0.21
17,636.00	91.70	358.80	10,510.03	7,198.18	-509.47	7,211.93	0.80	-0.32	-0.74
17,731.00	91.50	359.30	10,507.38	7,293.13	-511.05	7,306.88	0.57	-0.21	0.53
17,826.00	90.00	358.60	10,506.14	7,388.11	-512.79	7,401.85	1.74	-1.58	-0.74
17,921.00	90.30	358.30	10,505.89	7,483.07	-515.36	7,496.84	0.45	0.32	-0.32
18,016.00	89.50	359.30	10,506.05	7,578.05	-517.35	7,591.83	1.35	-0.84	1.05
18,111.00	89.80	358.80	10,506.63	7,673.03	-518.92	7,686.81	0.61	0.32	-0.53
18,206.00	89.90	358.10	10,506.88	7,768.00	-521.49	7,781.81	0.74	0.11	-0.74
18,301.00	91.40	357.60	10,505.80	7,862.92	-525.06	7,876.80	1.66	1.58	-0.53
18,396.00	90.20	357.60	10,504.48	7,957.83	-529.03	7,971.78	1.26	-1.26	0.00
18,491.00	90.20	356.90	10,504.15	8,052.72	-533.59	8,066.78	0.74	0.00	-0.74
18,586.00	89.20	358.30	10,504.64	8,147.63	-537.57	8,161.77	1.81	-1.05	1.47
18,681.00	89.40	357.60	10,505.80	8,242.56	-540.97	8,256.76	0.77	0.21	-0.74
18,776.00	89.60	359.30	10,506.63	8,337.52	-543.54	8,351.75	1.80	0.21	1.79
18,871.00	89.30	358.50	10,507.55	8,432.49	-545.36	8,446.73	0.90	-0.32	-0.84
18,966.00	89.90	358.30	10,508.21	8,527.45	-548.01	8,541.73	0.67	0.63	-0.21
19,061.00	90.00	357.40	10,508.29	8,622.39	-551.58	8,636.72	0.95	0.11	-0.95
19,156.00	90.30	357.40	10,508.04	8,717.29	-555.89	8,731.72	0.32	0.32	0.00
19,251.00	90.70	357.00	10,507.21	8,812.17	-560.53	8,826.71	0.60	0.42	-0.42
19,346.00	90.70	358.30	10,506.05	8,907.08	-564.42	8,921.70	1.37	0.00	1.37
19,440.00	90.60	359.50	10,504.99	9,001.06	-566.23	9,015.68	1.28	-0.11	1.28
19,535.00	89.30	359.50	10,505.07	9,096.05	-567.06	9,110.64	1.37	-1.37	0.00
19,630.00	89.90	359.20	10,505.73	9,191.04	-568.13	9,205.61	0.71	0.63	-0.32
19,725.00	90.00	359.20	10,505.82	9,286.03	-569.46	9,300.58	0.11	0.11	0.00
19,820.00	90.20	359.50	10,505.65	9,381.03	-570.54	9,395.55	0.38	0.21	0.32
19,915.00	90.70	359.30	10,504.90	9,476.02	-571.53	9,490.52	0.57	0.53	-0.21
20,009.00	89.20	358.60	10,504.99	9,570.00	-573.25	9,584.50	1.76	-1.60	-0.74
20,104.00	88.80	359.30	10,506.64	9,664.97	-574.99	9,679.47	0.85	-0.42	0.74
20,199.00	90.20	0.70	10,507.47	9,759.96	-574.99	9,774.40	2.08	1.47	1.47
20,294.00	90.90	0.60	10,506.56	9,854.95	-573.92	9,869.29	0.74	0.74	-0.11
20,389.00	88.50	0.70	10,507.06	9,949.93	-572.84	9,964.17	2.53	-2.53	0.11
20,484.00	90.00	1.60	10,508.30	10,044.90	-570.93	10,059.01	1.84	1.58	0.95
20,579.00	91.00	1.40	10,507.47	10,139.87	-568.45	10,153.82	1.07	1.05	-0.21
20,674.00	90.20	2.10	10,506.48	10,234.81	-565.55	10,248.60	1.12	-0.84	0.74
20,769.00	90.70	1.60	10,505.73	10,329.76	-562.48	10,343.37	0.74	0.53	-0.53
20,864.00	88.90	1.60	10,506.06	10,424.72	-559.83	10,438.17	1.89	-1.89	0.00
20,959.00	89.30	1.30	10,507.56	10,519.68	-557.42	10,532.98	0.53	0.42	-0.32
21,054.00	91.20	2.80	10,507.14	10,614.61	-554.02	10,627.72	2.55	2.00	1.58

Company:	Continental Resources	**Local Co-ordinate Reference:**	Well 3-16H
Project:	McKenzie County, ND	**TVD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Site:	Columbus Federal 3	**MD Reference:**	GL 1920+KB 20 @ 1940.00usft (Cyclone 4)
Well:	3-16H	**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)
21,150.00	89.40	3.00	10,506.64	10,710.48	-549.17	10,723.36	1.89	-1.88	0.21
21,244.00	89.00	2.70	10,507.95	10,804.35	-544.49	10,817.00	0.53	-0.43	-0.32
21,339.00	89.40	2.50	10,509.28	10,899.25	-540.19	10,911.67	0.47	0.42	-0.21
21,434.00	90.00	2.30	10,509.78	10,994.16	-536.21	11,006.38	0.67	0.63	-0.21
21,529.00	90.70	2.10	10,509.19	11,089.09	-532.56	11,101.11	0.77	0.74	-0.21
21,624.00	88.20	2.70	10,510.11	11,183.99	-528.58	11,195.81	2.71	-2.63	0.63
21,719.00	88.30	2.00	10,513.01	11,278.87	-524.69	11,290.48	0.74	0.11	-0.74
21,813.00	88.40	1.80	10,515.71	11,372.78	-521.57	11,384.22	0.24	0.11	-0.21
21,905.00	89.50	2.80	10,517.40	11,464.69	-517.88	11,475.93	1.62	1.20	1.09
22,000.00	89.70	2.80	10,518.06	11,559.57	-513.24	11,570.58	0.21	0.21	0.00
22,095.00	90.00	2.50	10,518.31	11,654.47	-508.85	11,665.26	0.45	0.32	-0.32
22,190.00	89.70	1.80	10,518.56	11,749.40	-505.29	11,760.00	0.80	-0.32	-0.74
22,285.00	90.40	1.60	10,518.48	11,844.36	-502.47	11,854.79	0.77	0.74	-0.21
22,380.00	90.10	0.90	10,518.06	11,939.33	-500.40	11,949.63	0.80	-0.32	-0.74
22,475.00	90.50	0.90	10,517.57	12,034.32	-498.90	12,044.50	0.42	0.42	0.00
22,570.00	90.30	2.80	10,516.90	12,129.26	-495.84	12,139.27	2.01	-0.21	2.00
22,665.00	89.50	2.50	10,517.07	12,224.16	-491.44	12,233.94	0.90	-0.84	-0.32
22,760.00	89.90	2.70	10,517.57	12,319.06	-487.13	12,328.63	0.47	0.42	0.21
22,855.00	90.50	2.30	10,517.23	12,413.97	-482.99	12,423.32	0.76	0.63	-0.42
22,949.00	90.00	1.40	10,516.82	12,507.92	-479.96	12,517.10	1.10	-0.53	-0.96
23,044.00	89.30	0.60	10,517.40	12,602.90	-478.30	12,611.96	1.12	-0.74	-0.84
23,072.00	89.40	0.70	10,517.72	12,630.90	-477.98	12,639.92	0.51	0.36	0.36
23,122.00	89.40	0.70	10,518.25	12,680.89	-477.37	12,689.86	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 (03-2004)

SEP 2013
RECEIVED
ND OIL & GAS DIVISION

Well File No.
25160

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

☑ Notice of Intent	Approximate Start Date: **October 14, 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	**Flow back exemption**

Well Name and Number: **Columbus Federal 3-16H**

Footages	Qtr-Qtr	Section	Township	Range
2469 F **N** L **199** 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.

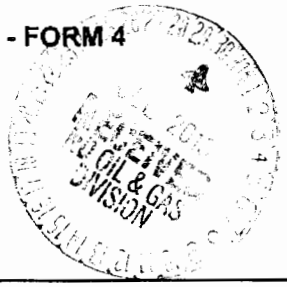
Company	Telephone Number
Continental Resources, Inc.	**405-234-9000**
Address: **P.O. Box 269000**	
City: **Oklahoma City** / State: **OK** / Zip Code: **73126**	
Signature	Printed Name: **Jim Landrigan**
Title: **Completion Engineer**	Date: **August 29, 2013**

FOR STATE USE ONLY

☐ Received	☑ 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)



Well File No.
25160

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

☑ Notice of Intent	Approximate Start Date: **August 14, 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 **Spud with Small Rig**	

Well Name and Number					
Columbus Federal 3-16H					
Footages	Qtr-Qtr	Section	Township	Range	
2469 F N L 199 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.

CRI must notify NDIC Inspector Richard Dunn 701-770-3554 within spudd TD

Company		Telephone Number
Continental Resources, Inc.		**(405) 234-9000**
Address		
P.O. Box 268870		
City	State	Zip Code
Oklahoma City	**OK**	**73126**
Signature	Printed Name	
Becky Barnes	**Becky Barnes**	
Title	Date	
Regulatory Compliance Specialist	**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.

25160 TA

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 3-16H** Well File No.: **25160**
Location: **SENE 16-153-101** County: MCKENZIE
Permit Type: **Development - HORIZONTAL**
Field: **BAKER** Target Horizon: MIDDLE BAKKEN

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. 25160

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 3-16H**

Footages	Qtr-Qtr	Section	Township	Range
2469 F N L 199 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.

Approval 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 3-16H
SENE Section 16-153N-101W
McKenzie County
Well File # 25160

Dear Terry:

Pursuant to Commission Order No. 1983221551, 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: 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. Be advised the Mildred 1, NDIC file #12306 well is within 100 feet of the proposed wellbore for the Columbus Federal 3-16H well. Precautions must be taken while designing the frac job for the Columbus Federal 3-16H well as to not adversely affect the Mildred 1, NDIC file #12306 well. No Drilling Pit will be allowed. Due to surficial water adjacent to the well site, a dike is required surrounding the entire location. 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 must drill the Columbus Federal 2-16H, 3-16H and Tallahassee 2-16H, 3-16H back to back. 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: 301' W. Also, based on the azimuth of the proposed lateral the maximum legal coordinate from the well head is: 12716' N 7 a minimum legal coordinate from the well head of 301' 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 / 16 / 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	**3-16H**

Surface Footages	Qtr-Qtr	Section	Township	Range	County
2469 F **N** L **199** F **E** L	**SENE**	**16**	**153 N**	**101 W**	**McKenzie**

Longstring Casing Point Footages	Qtr-Qtr	Section	Township	Range	County
1952 F **N** L **500** F **E** L	**SESE**	**16**	**153 N**	**101 W**	**McKenzie**

Longstring Casing Point Coordinates From Well Head	Azimuth	Longstring Total Depth	
517 N From WH **301 W** From WH	**352 °**	**10952** Feet MD	**10543** Feet TVD

Bottom Hole Footages From Nearest Section Line	Qtr-Qtr	Section	Township	Range	County
200 F **N** L **660** F **E** L	**NENE**	**4**	**153 N**	**101 W**	**McKenzie**

Bottom Hole Coordinates From Well Head	KOP Lateral 1	Azimuth Lateral 1	Estimated Total Depth Lateral 1	
12716 N From WH **461 W** From WH	**10102** Feet MD	**2.27 °**	**23199** Feet MD	**10543** Feet TVD

Latitude of Well Head	Longitude of Well Head	NAD Reference	Description of (Subject to NDIC Approval)
48 ° 04 ' 31.64 "	**-103 ° 40 ' 11.00 "**	**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
1920 Feet Above S.L.	**2560**	**200** Feet N/S **500** Feet E/W	**1983221551**

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
Middle Bakken	**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.	**10952** Feet MD	**10543** Feet TVD	**1139** 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**

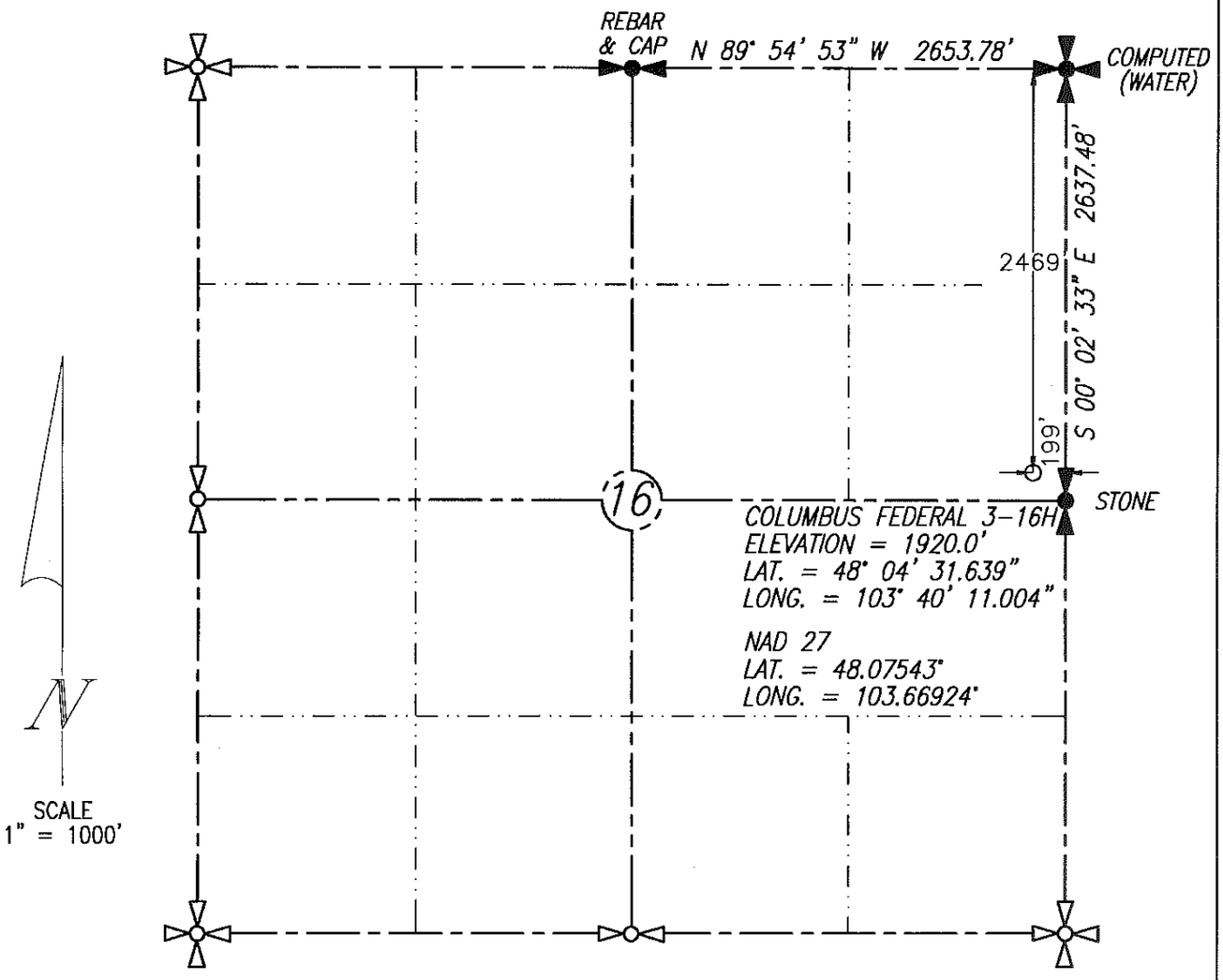
FOR STATE USE ONLY

Permit and File Number **25160**	API Number **33 - 053 - 04856**
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 3-16H
SECTION 16, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA
2469' FNL & 199' 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 PAULSON 4-11-12

JOHN PAULSON, P.L.S. 3366

JOHN PAULSON 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

06/08/12

GEOLOGIC PROGNOSIS

Well Name: Columbus Fed. 3-16H
Rig: Cyclone 20
Prospect: Williston
Target: Middle Bakken
Spacing: 1280

☐ Pre-Staked
☑ Staked

SHL: 2469' FNL & 199' FEL
Sec. 16 - 153N - 101W
McKenzie , ND

BHL: 200' FNL & 660' 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**	
==>	Middle Bakken Target	-8,602	**10,543**	20' into MB
	End of Lateral	-8,602	**10,543**	up 30' and down 30'
				Not Flat

06/08/12

DRILLING PROGRAM

Lease and Well No. Columbus Fed. 3-16H

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 ' - 13052 '	Invert	9.6-10.0	40-55 sec, 10-15 cc's O/W 70/30 to 80/20
13052 ' - 23107 '	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
		13052 '	3822 '	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 "	23107 '	13005 '	4 1/2 "	4-1/2", 11.6 #, P-110, BTC		
Tubing		10100 '	10100 '	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	13052	Lead	7830 '	0 '	473	35/65 Poz/Class "C", 3% KCl, 5 #/sk Silica	3.21	11.3
		Tail	13052 '	7830 '	666	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 (10102 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.

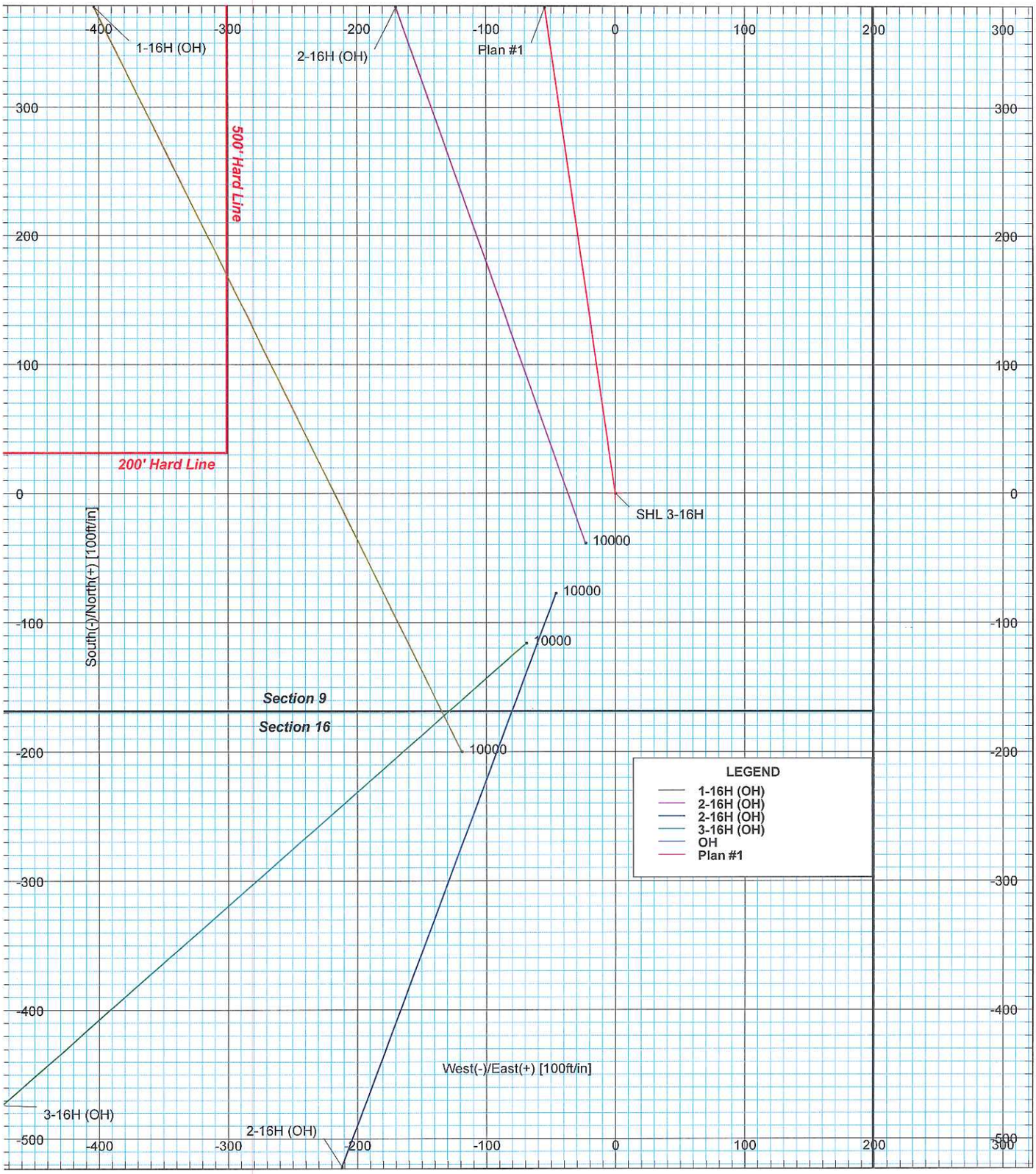
Prepared By: Pat McCollom Date: 05/02/12

Continental Resources

Field: McKenzie County, ND
Site: Columbus Federal 3
Well: 3-16H
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 (3-16H/OH)
Created By: Justin Andoe Date: 04/23/2012
Checked: _____ Date: _____
Reviewed: _____ Date: _____

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

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

---

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 3
Well: 3-16H
Wellpath: OH
Plan: Plan #3

Azimuths to True North
Magnetic North: 8.65°

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

SITE DETAILS

Columbus 3
Sec. 16 - T153N - R101W
SHL 2469' FNL & 199' FEL
PBHL 200' FNL & 1980' FEL

Latitude: 48°04'31.639N
Longitude: 103°40'11.004W

Ground Level: 1920.00
KB: 21.00

CASING DETAILS

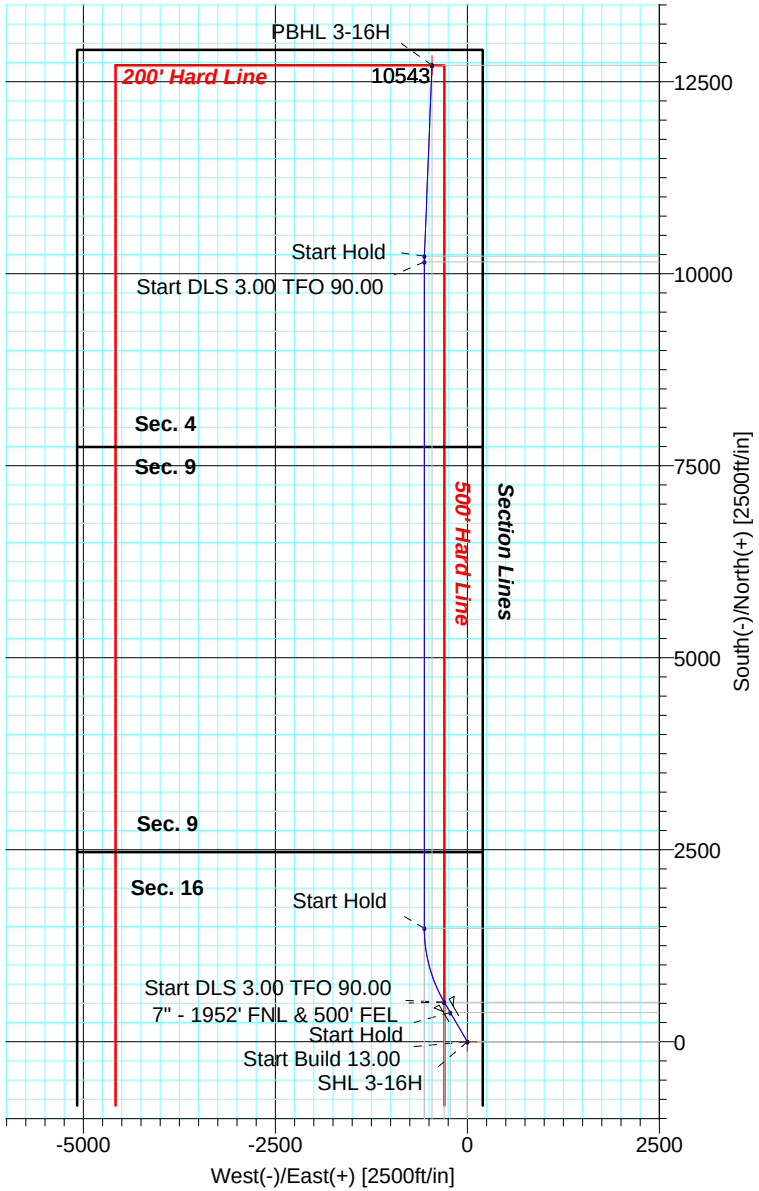
No.	TVD	MD	Name	Size
1	10543.00	10951.72	7"	7.00

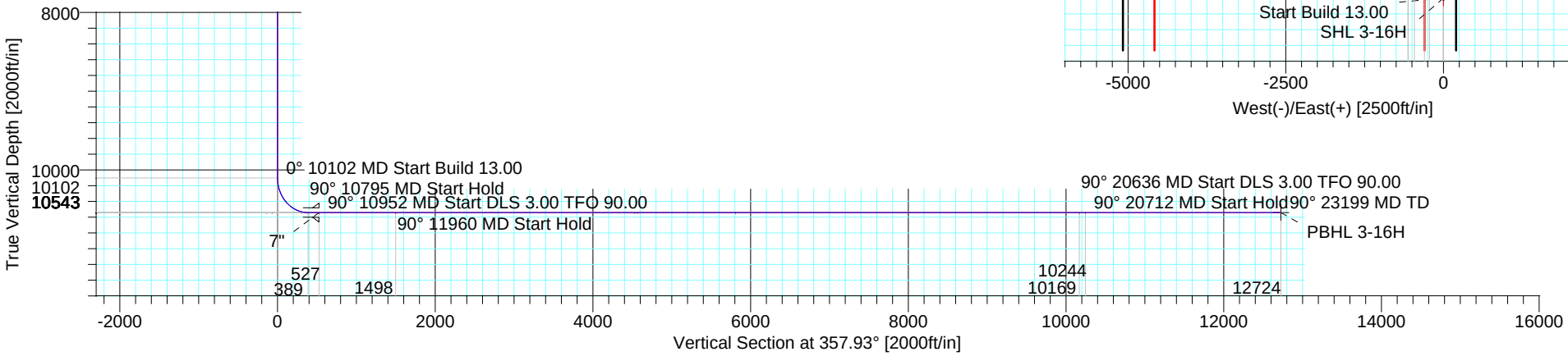
TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
SHL 3-16H	0.00	0.00	0.00	408237.43	1193849.30	48°04'31.639N	103°40'11.004W	Point
PBHL 3-16H	10543.00	12716.00	-461.00	420961.63	1193912.02	48°06'37.133N	103°40'17.797W	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	10102.26	0.00	0.00	10102.26	0.00	0.00	0.00	0.00	0.00	
3	10794.57	90.00	329.76	10543.00	380.76	-221.97	13.00	329.76	388.53	
4	10951.72	90.00	329.76	10543.00	516.53	-301.11	0.00	0.00	527.07	
5	11959.72	90.00	360.00	10543.00	1478.38	-561.00	3.00	90.00	1497.68	
6	20636.34	90.00	360.00	10543.00	10155.00	-561.00	0.00	0.00	10168.64	
7	20711.99	90.00	2.27	10543.00	10230.63	-559.50	3.00	90.00	10244.17	
8	23199.31	90.00	2.27	10543.00	12716.00	-461.00	0.00	0.00	12724.35	PBHL 3-16H





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

Plan: Plan #3 (3-16H/OH)
Created By: David Vogler Date: 03/05/2013
Checked: _____ Date: _____
Reviewed: _____ Date: _____
Approved: _____ Date: _____

LEAM Drilling Systems LLC
Planning Report

Company:	Continental Resources	**Date:** 03/05/2013	**Time:** 16:13:18	**Page:**	1
Field:	McKenzie County, ND	**Co-ordinate(NE) Reference:**	Well: 3-16H, True North		
Site:	Columbus Federal 3	**Vertical (TVD) Reference:**	GL 1920+KB 21 1941.0		
Well:	3-16H	**Section (VS) Reference:**	Well (0.00N,0.00E,357.93Azi)		
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 3
Sec. 16 - T153N - R101W
2469' FNL & 199' FEL

Site Position:			**Northing:**	408237.43	ft	**Latitude:**	48	4	31.639 N
From:	Geographic		**Easting:**	1193849.30	ft	**Longitude:**	103	40	11.004 W
Position Uncertainty:	0.00	ft				**North Reference:**			True
Ground Level:	1920.00	ft				**Grid Convergence:**			-2.36 deg

Well: 3-16H **Slot Name:**

Well Position:	**+N/-S**	0.00	ft	**Northing:**	408237.43	ft	**Latitude:**	48	4	31.639 N
	+E/-W	0.00	ft	**Easting :**	1193849.30	ft	**Longitude:**	103	40	11.004 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	357.93

Plan: Plan #3 **Date Composed:** 03/05/2013
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	
10102.26	0.00	0.00	10102.26	0.00	0.00	0.00	0.00	0.00	0.00	
10794.57	90.00	329.76	10543.00	380.76	-221.97	13.00	13.00	0.00	329.76	
10951.72	90.00	329.76	10543.00	516.53	-301.11	0.00	0.00	0.00	0.00	
11959.72	90.00	360.00	10543.00	1478.38	-561.00	3.00	0.00	3.00	90.00	
20636.34	90.00	360.00	10543.00	10155.00	-561.00	0.00	0.00	0.00	0.00	
20711.99	90.00	2.27	10543.00	10230.63	-559.50	3.00	0.00	3.00	90.00	
23199.31	90.00	2.27	10543.00	12716.00	-461.00	0.00	0.00	0.00	0.00	PBHL 3-16H

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
10102.26	0.00	0.00	10102.26	0.00	0.00	0.00	0.00	0.00	0.00	
10125.00	2.96	329.76	10124.99	0.51	-0.30	0.52	13.00	13.00	0.00	
10150.00	6.21	329.76	10149.91	2.23	-1.30	2.28	13.00	13.00	0.00	
10175.00	9.46	329.76	10174.67	5.17	-3.02	5.28	13.00	13.00	0.00	
10200.00	12.71	329.76	10199.20	9.32	-5.44	9.51	13.00	13.00	0.00	
10225.00	15.96	329.76	10223.42	14.67	-8.55	14.97	13.00	13.00	0.00	
10250.00	19.21	329.76	10247.25	21.19	-12.35	21.63	13.00	13.00	0.00	
10275.00	22.46	329.76	10270.61	28.87	-16.83	29.46	13.00	13.00	0.00	
10300.00	25.71	329.76	10293.43	37.68	-21.97	38.45	13.00	13.00	0.00	
10325.00	28.96	329.76	10315.64	47.60	-27.75	48.57	13.00	13.00	0.00	
10350.00	32.21	329.76	10337.16	58.59	-34.15	59.78	13.00	13.00	0.00	
10375.00	35.46	329.76	10357.92	70.61	-41.16	72.05	13.00	13.00	0.00	
10400.00	38.71	329.76	10377.86	83.63	-48.75	85.34	13.00	13.00	0.00	
10425.00	41.96	329.76	10396.92	97.61	-56.90	99.60	13.00	13.00	0.00	

LEAM Drilling Systems LLC
Planning Report

Company:	Continental Resources	**Date:** 03/05/2013	**Time:** 16:13:18	**Page:**	2
Field:	McKenzie County, ND	**Co-ordinate(NE) Reference:**	Well: 3-16H, True North		
Site:	Columbus Federal 3	**Vertical (TVD) Reference:**	GL 1920+KB 21 1941.0		
Well:	3-16H	**Section (VS) Reference:**	Well (0.00N,0.00E,357.93Azi)		
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
10450.00	45.21	329.76	10415.03	112.49	-65.58	114.79	13.00	13.00	0.00	
10475.00	48.46	329.76	10432.13	128.24	-74.76	130.86	13.00	13.00	0.00	
10500.00	51.71	329.76	10448.17	144.81	-84.41	147.76	13.00	13.00	0.00	
10525.00	54.96	329.76	10463.10	162.13	-94.51	165.44	13.00	13.00	0.00	
10550.00	58.21	329.76	10476.86	180.15	-105.02	183.83	13.00	13.00	0.00	
10575.00	61.46	329.76	10489.43	198.82	-115.90	202.88	13.00	13.00	0.00	
10600.00	64.71	329.76	10500.74	218.08	-127.13	222.53	13.00	13.00	0.00	
10625.00	67.96	329.76	10510.78	237.86	-138.66	242.71	13.00	13.00	0.00	
10625.59	68.03	329.76	10511.00	238.33	-138.94	243.19	13.00	13.00	0.00	Upper Bakken Shale
10650.00	71.21	329.76	10519.50	258.10	-150.46	263.36	13.00	13.00	0.00	
10675.00	74.46	329.76	10526.88	278.73	-162.48	284.42	13.00	13.00	0.00	
10679.26	75.01	329.76	10528.00	282.28	-164.56	288.04	13.00	13.00	0.00	Middle Bakken Member
10700.00	77.71	329.76	10532.89	299.69	-174.70	305.80	13.00	13.00	0.00	
10725.00	80.96	329.76	10537.52	320.91	-187.07	327.46	13.00	13.00	0.00	
10750.00	84.21	329.76	10540.75	342.33	-199.56	349.31	13.00	13.00	0.00	
10775.00	87.46	329.76	10542.56	363.86	-212.11	371.29	13.00	13.00	0.00	
10794.57	90.00	329.76	10543.00	380.76	-221.97	388.53	13.00	13.00	0.00	Middle Bakken Target
10800.00	90.00	329.76	10543.00	385.46	-224.70	393.32	0.00	0.00	0.00	
10900.00	90.00	329.76	10543.00	471.85	-275.06	481.48	0.00	0.00	0.00	
10951.72	90.00	329.76	10543.00	516.53	-301.11	527.07	0.00	0.00	0.00	7"
11000.00	90.00	331.21	10543.00	558.54	-324.90	569.91	3.00	0.00	3.00	
11100.00	90.00	334.21	10543.00	647.40	-370.74	660.37	3.00	0.00	3.00	
11200.00	90.00	337.21	10543.00	738.54	-411.88	752.93	3.00	0.00	3.00	
11300.00	90.00	340.21	10543.00	831.70	-448.18	847.35	3.00	0.00	3.00	
11400.00	90.00	343.21	10543.00	926.64	-479.56	943.36	3.00	0.00	3.00	
11500.00	90.00	346.21	10543.00	1023.09	-505.93	1040.69	3.00	0.00	3.00	
11600.00	90.00	349.21	10543.00	1120.78	-527.22	1139.10	3.00	0.00	3.00	
11700.00	90.00	352.21	10543.00	1219.46	-543.36	1238.29	3.00	0.00	3.00	
11800.00	90.00	355.21	10543.00	1318.85	-554.32	1338.01	3.00	0.00	3.00	
11900.00	90.00	358.21	10543.00	1418.67	-560.06	1437.97	3.00	0.00	3.00	
11959.72	90.00	360.00	10543.00	1478.38	-561.00	1497.68	3.00	0.00	3.00	
12000.00	90.00	360.00	10543.00	1518.66	-561.00	1537.93	0.00	0.00	0.00	
12100.00	90.00	360.00	10543.00	1618.66	-561.00	1637.87	0.00	0.00	0.00	
12200.00	90.00	360.00	10543.00	1718.66	-561.00	1737.80	0.00	0.00	0.00	
12300.00	90.00	360.00	10543.00	1818.66	-561.00	1837.74	0.00	0.00	0.00	
12400.00	90.00	360.00	10543.00	1918.66	-561.00	1937.67	0.00	0.00	0.00	
12500.00	90.00	360.00	10543.00	2018.66	-561.00	2037.61	0.00	0.00	0.00	
12600.00	90.00	360.00	10543.00	2118.66	-561.00	2137.54	0.00	0.00	0.00	
12700.00	90.00	360.00	10543.00	2218.66	-561.00	2237.48	0.00	0.00	0.00	
12800.00	90.00	360.00	10543.00	2318.66	-561.00	2337.41	0.00	0.00	0.00	
12900.00	90.00	360.00	10543.00	2418.66	-561.00	2437.35	0.00	0.00	0.00	
13000.00	90.00	360.00	10543.00	2518.66	-561.00	2537.28	0.00	0.00	0.00	
13100.00	90.00	360.00	10543.00	2618.66	-561.00	2637.21	0.00	0.00	0.00	
13200.00	90.00	360.00	10543.00	2718.66	-561.00	2737.15	0.00	0.00	0.00	
13300.00	90.00	360.00	10543.00	2818.66	-561.00	2837.08	0.00	0.00	0.00	
13400.00	90.00	360.00	10543.00	2918.66	-561.00	2937.02	0.00	0.00	0.00	
13500.00	90.00	360.00	10543.00	3018.66	-561.00	3036.95	0.00	0.00	0.00	
13600.00	90.00	360.00	10543.00	3118.66	-561.00	3136.89	0.00	0.00	0.00	
13700.00	90.00	360.00	10543.00	3218.66	-561.00	3236.82	0.00	0.00	0.00	
13800.00	90.00	360.00	10543.00	3318.66	-561.00	3336.76	0.00	0.00	0.00	
13900.00	90.00	360.00	10543.00	3418.66	-561.00	3436.69	0.00	0.00	0.00	
14000.00	90.00	360.00	10543.00	3518.66	-561.00	3536.63	0.00	0.00	0.00	

LEAM Drilling Systems LLC
Planning Report

Company:	Continental Resources	**Date:** 03/05/2013	**Time:** 16:13:18	**Page:**	3
Field:	McKenzie County, ND	**Co-ordinate(NE) Reference:**	Well: 3-16H, True North		
Site:	Columbus Federal 3	**Vertical (TVD) Reference:**	GL 1920+KB 21 1941.0		
Well:	3-16H	**Section (VS) Reference:**	Well (0.00N,0.00E,357.93Azi)		
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
14100.00	90.00	360.00	10543.00	3618.66	-561.00	3636.56	0.00	0.00	0.00	
14200.00	90.00	360.00	10543.00	3718.66	-561.00	3736.50	0.00	0.00	0.00	
14300.00	90.00	360.00	10543.00	3818.66	-561.00	3836.43	0.00	0.00	0.00	
14400.00	90.00	360.00	10543.00	3918.66	-561.00	3936.37	0.00	0.00	0.00	
14500.00	90.00	360.00	10543.00	4018.66	-561.00	4036.30	0.00	0.00	0.00	
14600.00	90.00	360.00	10543.00	4118.66	-561.00	4136.24	0.00	0.00	0.00	
14700.00	90.00	360.00	10543.00	4218.66	-561.00	4236.17	0.00	0.00	0.00	
14800.00	90.00	360.00	10543.00	4318.66	-561.00	4336.11	0.00	0.00	0.00	
14900.00	90.00	360.00	10543.00	4418.66	-561.00	4436.04	0.00	0.00	0.00	
15000.00	90.00	360.00	10543.00	4518.66	-561.00	4535.97	0.00	0.00	0.00	
15100.00	90.00	360.00	10543.00	4618.66	-561.00	4635.91	0.00	0.00	0.00	
15200.00	90.00	360.00	10543.00	4718.66	-561.00	4735.84	0.00	0.00	0.00	
15300.00	90.00	360.00	10543.00	4818.66	-561.00	4835.78	0.00	0.00	0.00	
15400.00	90.00	360.00	10543.00	4918.66	-561.00	4935.71	0.00	0.00	0.00	
15500.00	90.00	360.00	10543.00	5018.66	-561.00	5035.65	0.00	0.00	0.00	
15600.00	90.00	360.00	10543.00	5118.66	-561.00	5135.58	0.00	0.00	0.00	
15700.00	90.00	360.00	10543.00	5218.66	-561.00	5235.52	0.00	0.00	0.00	
15800.00	90.00	360.00	10543.00	5318.66	-561.00	5335.45	0.00	0.00	0.00	
15900.00	90.00	360.00	10543.00	5418.66	-561.00	5435.39	0.00	0.00	0.00	
16000.00	90.00	360.00	10543.00	5518.66	-561.00	5535.32	0.00	0.00	0.00	
16100.00	90.00	360.00	10543.00	5618.66	-561.00	5635.26	0.00	0.00	0.00	
16200.00	90.00	360.00	10543.00	5718.66	-561.00	5735.19	0.00	0.00	0.00	
16300.00	90.00	360.00	10543.00	5818.66	-561.00	5835.13	0.00	0.00	0.00	
16400.00	90.00	360.00	10543.00	5918.66	-561.00	5935.06	0.00	0.00	0.00	
16500.00	90.00	360.00	10543.00	6018.66	-561.00	6035.00	0.00	0.00	0.00	
16600.00	90.00	360.00	10543.00	6118.66	-561.00	6134.93	0.00	0.00	0.00	
16700.00	90.00	360.00	10543.00	6218.66	-561.00	6234.87	0.00	0.00	0.00	
16800.00	90.00	360.00	10543.00	6318.66	-561.00	6334.80	0.00	0.00	0.00	
16900.00	90.00	360.00	10543.00	6418.66	-561.00	6434.74	0.00	0.00	0.00	
17000.00	90.00	360.00	10543.00	6518.66	-561.00	6534.67	0.00	0.00	0.00	
17100.00	90.00	360.00	10543.00	6618.66	-561.00	6634.60	0.00	0.00	0.00	
17200.00	90.00	360.00	10543.00	6718.66	-561.00	6734.54	0.00	0.00	0.00	
17300.00	90.00	360.00	10543.00	6818.66	-561.00	6834.47	0.00	0.00	0.00	
17400.00	90.00	360.00	10543.00	6918.66	-561.00	6934.41	0.00	0.00	0.00	
17500.00	90.00	360.00	10543.00	7018.66	-561.00	7034.34	0.00	0.00	0.00	
17600.00	90.00	360.00	10543.00	7118.66	-561.00	7134.28	0.00	0.00	0.00	
17700.00	90.00	360.00	10543.00	7218.66	-561.00	7234.21	0.00	0.00	0.00	
17800.00	90.00	360.00	10543.00	7318.66	-561.00	7334.15	0.00	0.00	0.00	
17900.00	90.00	360.00	10543.00	7418.66	-561.00	7434.08	0.00	0.00	0.00	
18000.00	90.00	360.00	10543.00	7518.66	-561.00	7534.02	0.00	0.00	0.00	
18100.00	90.00	360.00	10543.00	7618.66	-561.00	7633.95	0.00	0.00	0.00	
18200.00	90.00	360.00	10543.00	7718.66	-561.00	7733.89	0.00	0.00	0.00	
18300.00	90.00	360.00	10543.00	7818.66	-561.00	7833.82	0.00	0.00	0.00	
18400.00	90.00	360.00	10543.00	7918.66	-561.00	7933.76	0.00	0.00	0.00	
18500.00	90.00	360.00	10543.00	8018.66	-561.00	8033.69	0.00	0.00	0.00	
18600.00	90.00	360.00	10543.00	8118.66	-561.00	8133.63	0.00	0.00	0.00	
18700.00	90.00	360.00	10543.00	8218.66	-561.00	8233.56	0.00	0.00	0.00	
18800.00	90.00	360.00	10543.00	8318.66	-561.00	8333.50	0.00	0.00	0.00	
18900.00	90.00	360.00	10543.00	8418.66	-561.00	8433.43	0.00	0.00	0.00	
19000.00	90.00	360.00	10543.00	8518.66	-561.00	8533.36	0.00	0.00	0.00	
19100.00	90.00	360.00	10543.00	8618.66	-561.00	8633.30	0.00	0.00	0.00	
19200.00	90.00	360.00	10543.00	8718.66	-561.00	8733.23	0.00	0.00	0.00	
19300.00	90.00	360.00	10543.00	8818.66	-561.00	8833.17	0.00	0.00	0.00	

LEAM Drilling Systems LLC
Planning Report

Company:	Continental Resources	**Date:** 03/05/2013	**Time:** 16:13:18	**Page:**	4
Field:	McKenzie County, ND	**Co-ordinate(NE) Reference:**	Well: 3-16H, True North		
Site:	Columbus Federal 3	**Vertical (TVD) Reference:**	GL 1920+KB 21 1941.0		
Well:	3-16H	**Section (VS) Reference:**	Well (0.00N,0.00E,357.93Azi)		
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
19400.00	90.00	360.00	10543.00	8918.66	-561.00	8933.10	0.00	0.00	0.00	
19500.00	90.00	360.00	10543.00	9018.66	-561.00	9033.04	0.00	0.00	0.00	
19600.00	90.00	360.00	10543.00	9118.66	-561.00	9132.97	0.00	0.00	0.00	
19700.00	90.00	360.00	10543.00	9218.66	-561.00	9232.91	0.00	0.00	0.00	
19800.00	90.00	360.00	10543.00	9318.66	-561.00	9332.84	0.00	0.00	0.00	
19900.00	90.00	360.00	10543.00	9418.66	-561.00	9432.78	0.00	0.00	0.00	
20000.00	90.00	360.00	10543.00	9518.66	-561.00	9532.71	0.00	0.00	0.00	
20100.00	90.00	360.00	10543.00	9618.66	-561.00	9632.65	0.00	0.00	0.00	
20200.00	90.00	360.00	10543.00	9718.66	-561.00	9732.58	0.00	0.00	0.00	
20300.00	90.00	360.00	10543.00	9818.66	-561.00	9832.52	0.00	0.00	0.00	
20400.00	90.00	360.00	10543.00	9918.66	-561.00	9932.45	0.00	0.00	0.00	
20500.00	90.00	360.00	10543.00	10018.66	-561.00	10032.39	0.00	0.00	0.00	
20600.00	90.00	360.00	10543.00	10118.66	-561.00	10132.32	0.00	0.00	0.00	
20636.34	90.00	360.00	10543.00	10155.00	-561.00	10168.64	0.00	0.00	0.00	
20700.00	90.00	1.91	10543.00	10218.65	-559.94	10232.21	3.00	0.00	3.00	
20711.99	90.00	2.27	10543.00	10230.63	-559.50	10244.17	3.00	0.00	3.00	
20800.00	90.00	2.27	10543.00	10318.57	-556.02	10331.92	0.00	0.00	0.00	
20900.00	90.00	2.27	10543.00	10418.49	-552.06	10431.63	0.00	0.00	0.00	
21000.00	90.00	2.27	10543.00	10518.41	-548.10	10531.35	0.00	0.00	0.00	
21100.00	90.00	2.27	10543.00	10618.34	-544.14	10631.06	0.00	0.00	0.00	
21200.00	90.00	2.27	10543.00	10718.26	-540.18	10730.77	0.00	0.00	0.00	
21300.00	90.00	2.27	10543.00	10818.18	-536.22	10830.49	0.00	0.00	0.00	
21400.00	90.00	2.27	10543.00	10918.10	-532.26	10930.20	0.00	0.00	0.00	
21500.00	90.00	2.27	10543.00	11018.02	-528.30	11029.91	0.00	0.00	0.00	
21600.00	90.00	2.27	10543.00	11117.94	-524.34	11129.63	0.00	0.00	0.00	
21700.00	90.00	2.27	10543.00	11217.87	-520.38	11229.34	0.00	0.00	0.00	
21800.00	90.00	2.27	10543.00	11317.79	-516.41	11329.05	0.00	0.00	0.00	
21900.00	90.00	2.27	10543.00	11417.71	-512.45	11428.77	0.00	0.00	0.00	
22000.00	90.00	2.27	10543.00	11517.63	-508.49	11528.48	0.00	0.00	0.00	
22100.00	90.00	2.27	10543.00	11617.55	-504.53	11628.19	0.00	0.00	0.00	
22200.00	90.00	2.27	10543.00	11717.47	-500.57	11727.91	0.00	0.00	0.00	
22300.00	90.00	2.27	10543.00	11817.39	-496.61	11827.62	0.00	0.00	0.00	
22400.00	90.00	2.27	10543.00	11917.32	-492.65	11927.33	0.00	0.00	0.00	
22500.00	90.00	2.27	10543.00	12017.24	-488.69	12027.05	0.00	0.00	0.00	
22600.00	90.00	2.27	10543.00	12117.16	-484.73	12126.76	0.00	0.00	0.00	
22700.00	90.00	2.27	10543.00	12217.08	-480.77	12226.47	0.00	0.00	0.00	
22800.00	90.00	2.27	10543.00	12317.00	-476.81	12326.19	0.00	0.00	0.00	
22900.00	90.00	2.27	10543.00	12416.92	-472.85	12425.90	0.00	0.00	0.00	
23000.00	90.00	2.27	10543.00	12516.85	-468.89	12525.61	0.00	0.00	0.00	
23100.00	90.00	2.27	10543.00	12616.77	-464.93	12625.33	0.00	0.00	0.00	
23199.31	90.00	2.27	10543.00	12716.00	-461.00	12724.35	0.00	0.00	0.00	PBHL 3-16H

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 3-16H			0.00	0.00	0.00	408237.43	1193849.30	48	4	31.639	N	103	40	11.004	W
PBHL 3-16H			10543.00	12716.00	-461.00	420961.63	1193912.02	48	6	37.133	N	103	40	17.797	W

LEAM Drilling Systems LLC
Planning Report

Company:	Continental Resources	**Date:** 03/05/2013	**Time:** 16:13:18	**Page:**	5
Field:	McKenzie County, ND	**Co-ordinate(NE) Reference:**	Well: 3-16H, True North		
Site:	Columbus Federal 3	**Vertical (TVD) Reference:**	GL 1920+KB 21 1941.0		
Well:	3-16H	**Section (VS) Reference:**	Well (0.00N,0.00E,357.93Azi)		
Wellpath:	OH	**Survey Calculation Method:**	Minimum Curvature	**Db:**	Adapti

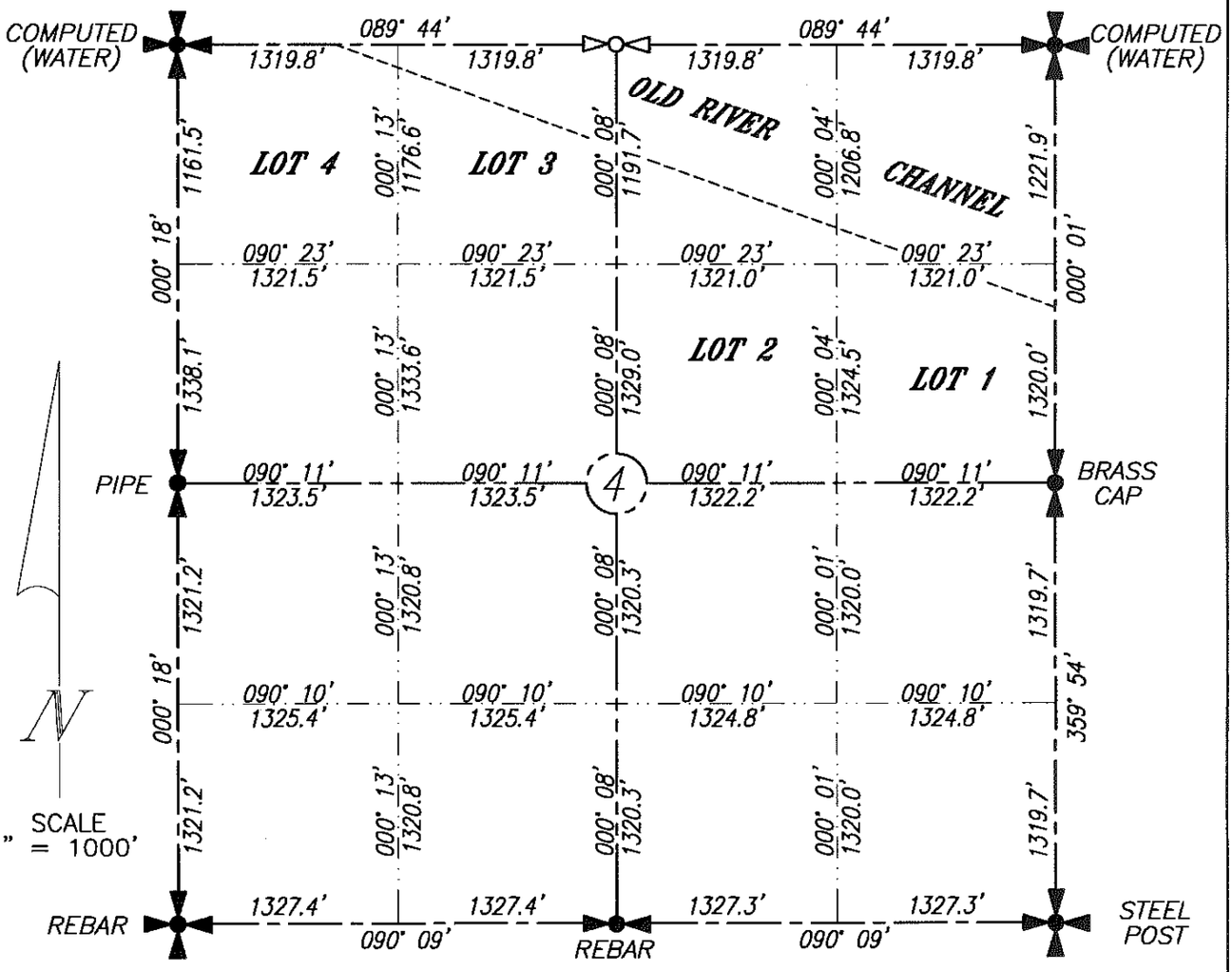
Casing Points

MD ft	TVD ft	Diameter in	Hole Size in	Name
10951.72	10543.00	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
10625.59	10511.00	Upper Bakken Shale		0.00	0.00
10679.26	10528.00	Middle Bakken Member		0.00	0.00
10794.57	10543.00	Middle Bakken Target		0.00	0.00

HORIZONTAL SECTION PLAT
CONTINENTAL RESOURCES INC.
COLUMBUS FEDERAL 3-16H
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
L.S. 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.

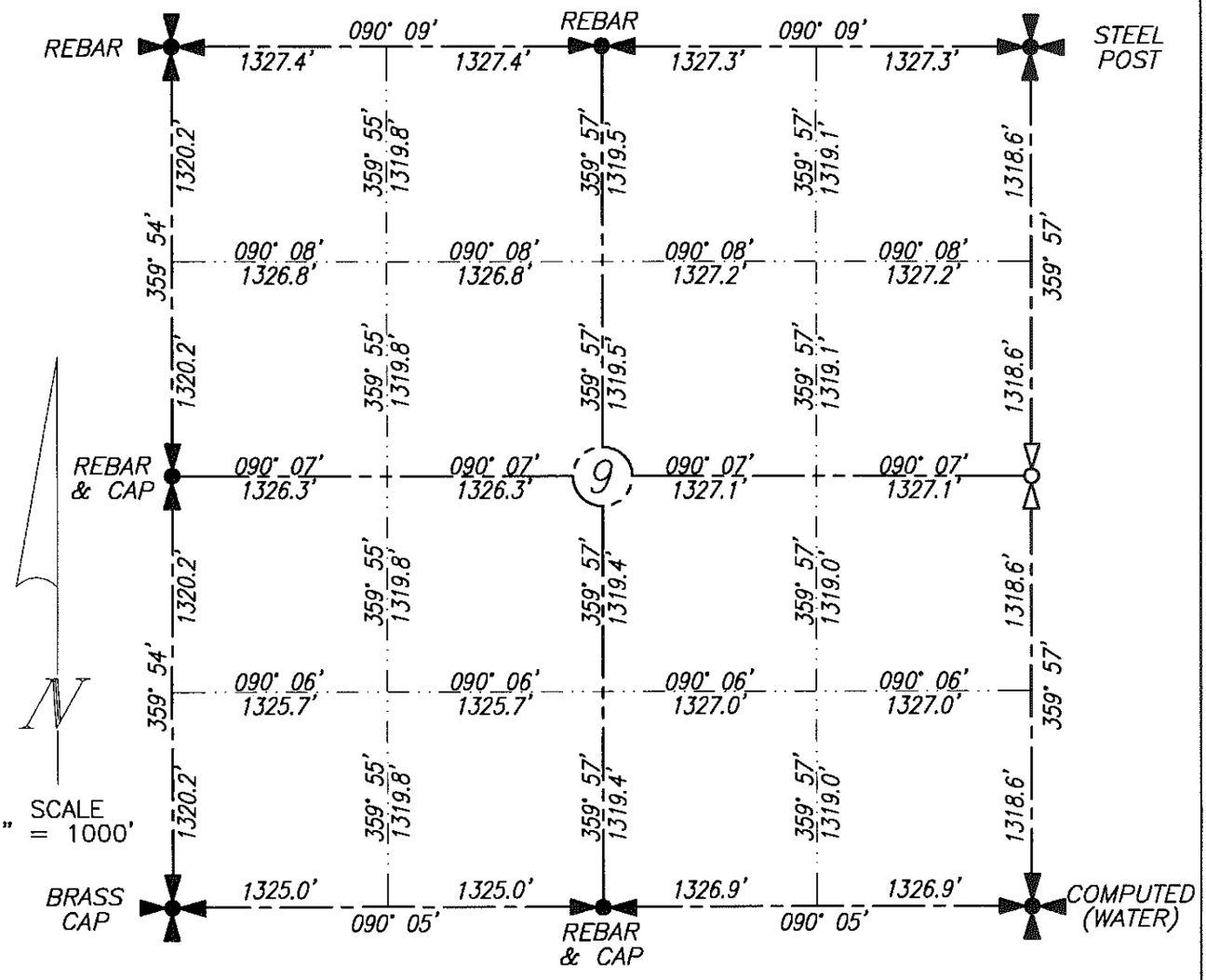
12-11-12

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 3-16H
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
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

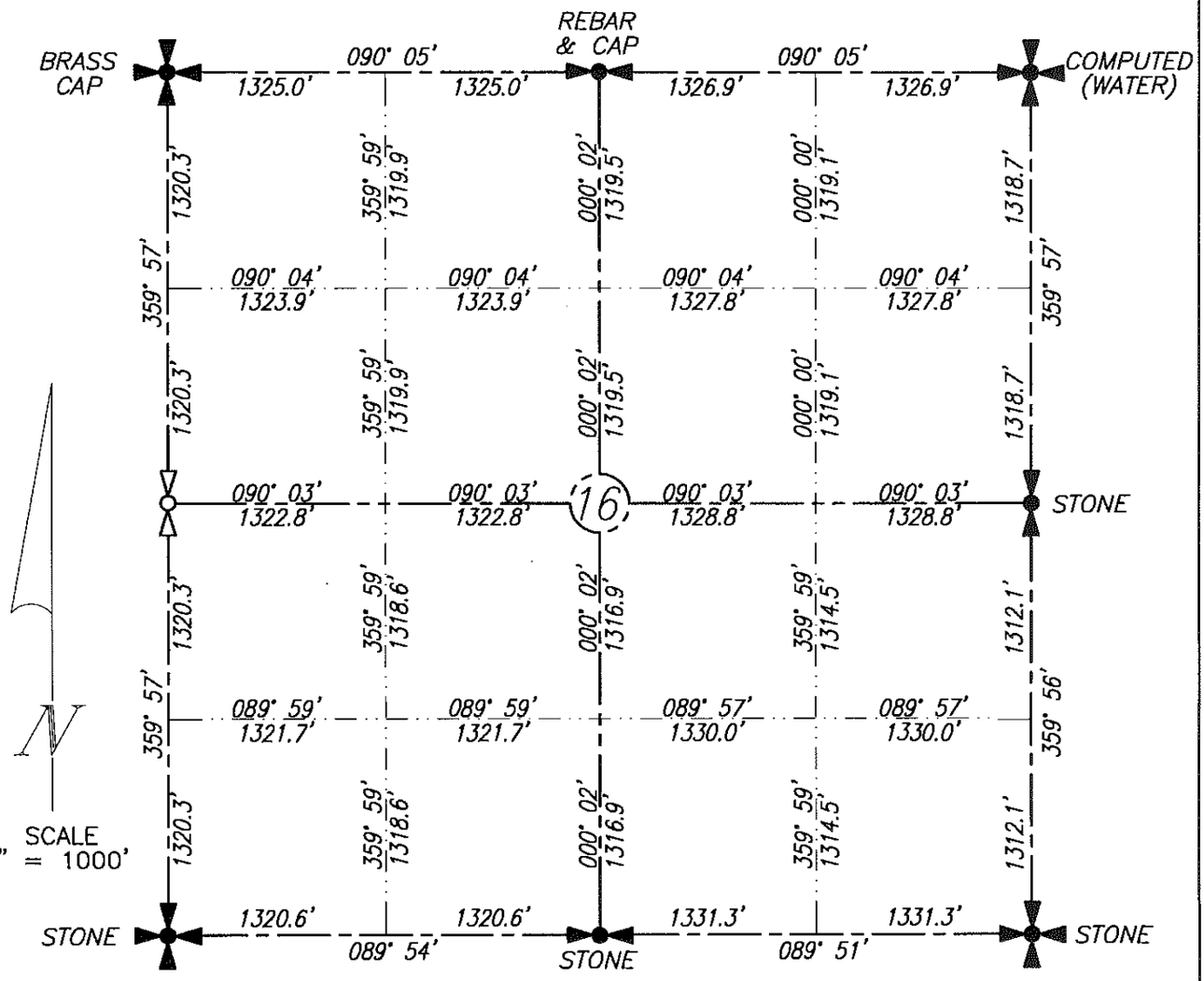
4-11-12

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 3-16H
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

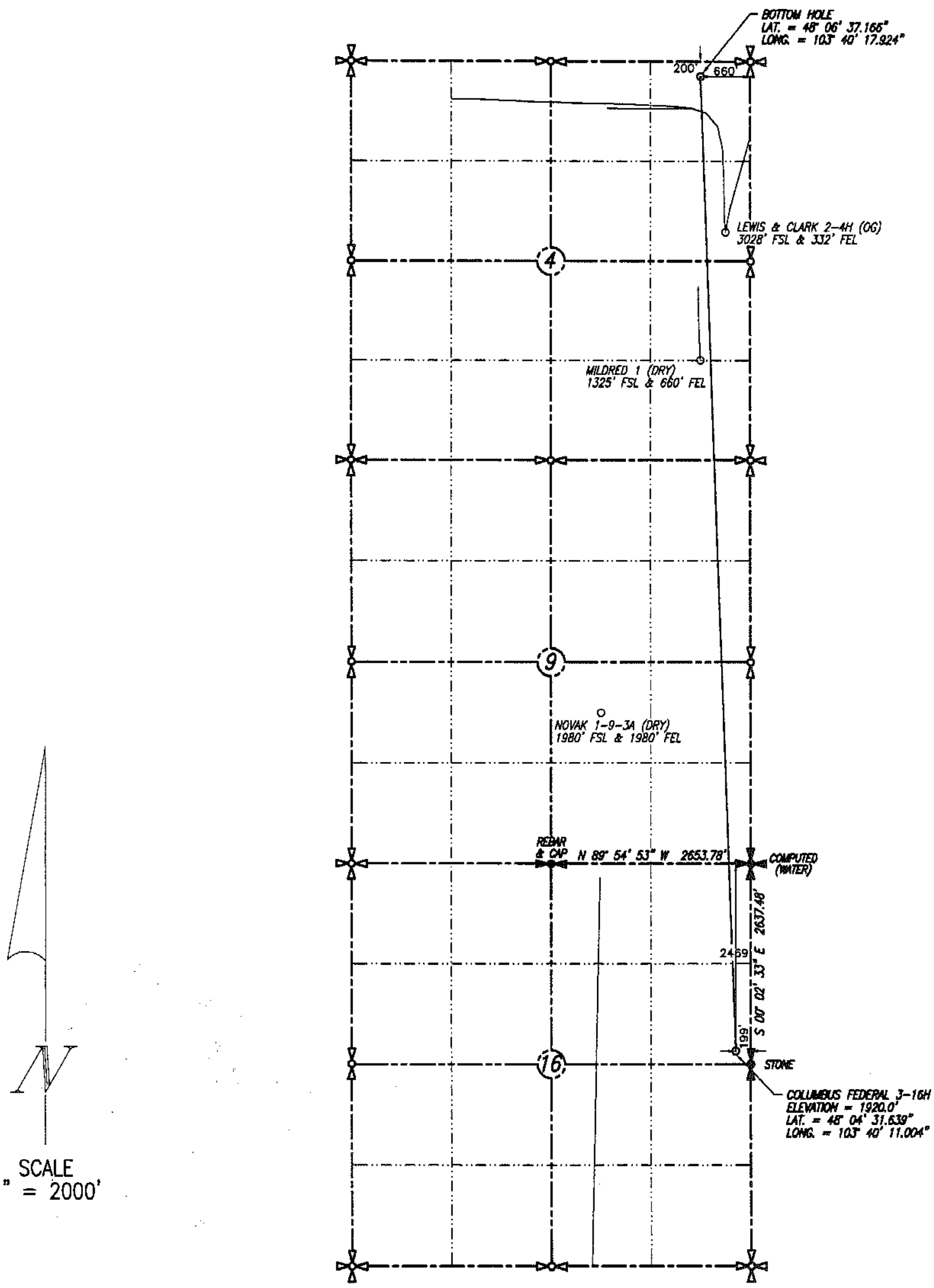
4-11-12

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 3-16H
SECTION 16, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA
2469' FNL & 199' FEL



SCALE
1" = 2000'

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

1-11-12

JOHN FAULSON R.L.S. 3366

JOHN FAULSON
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

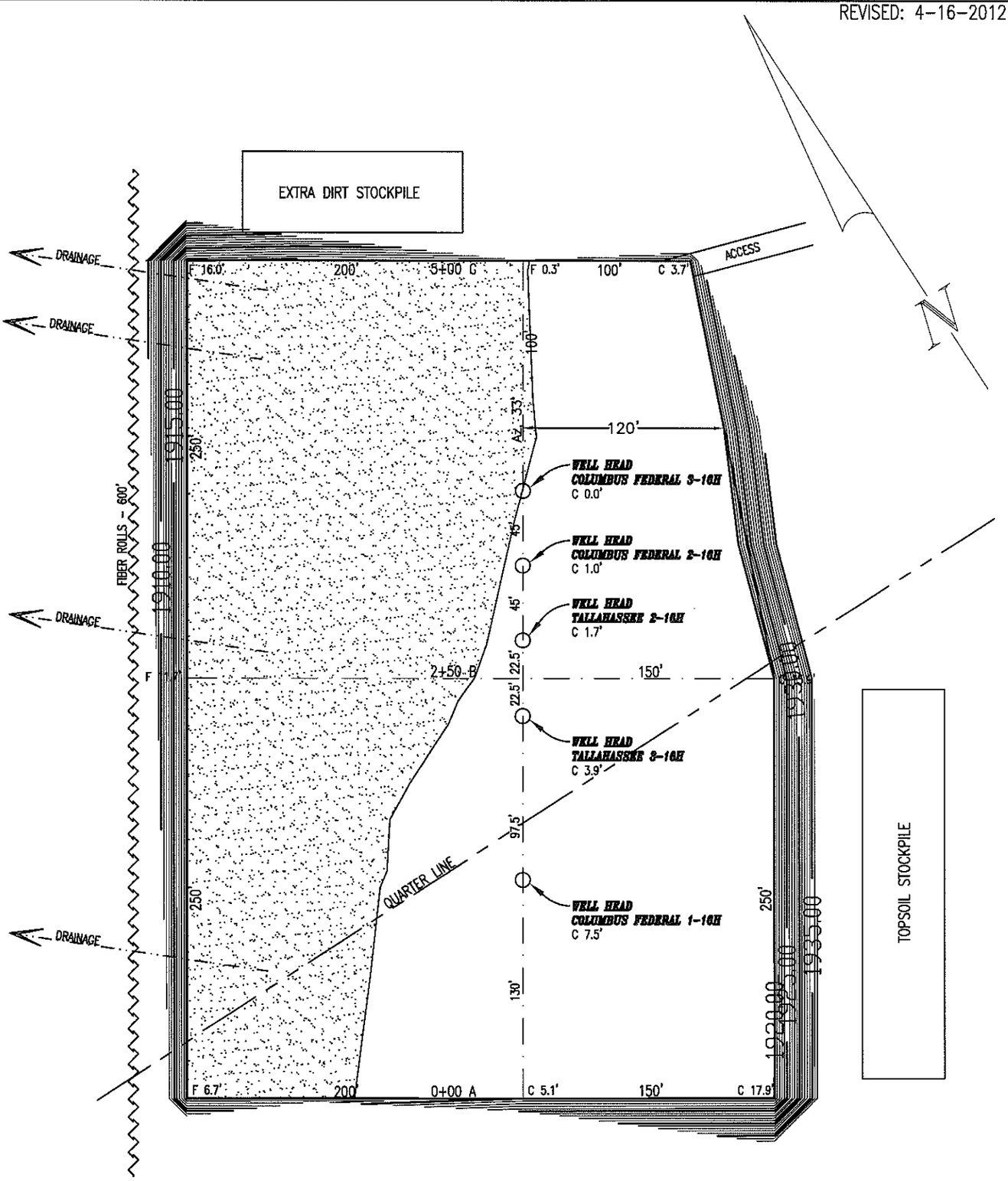
EXPLANATION AREA: NAD83(CORS96)

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 3-16H
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

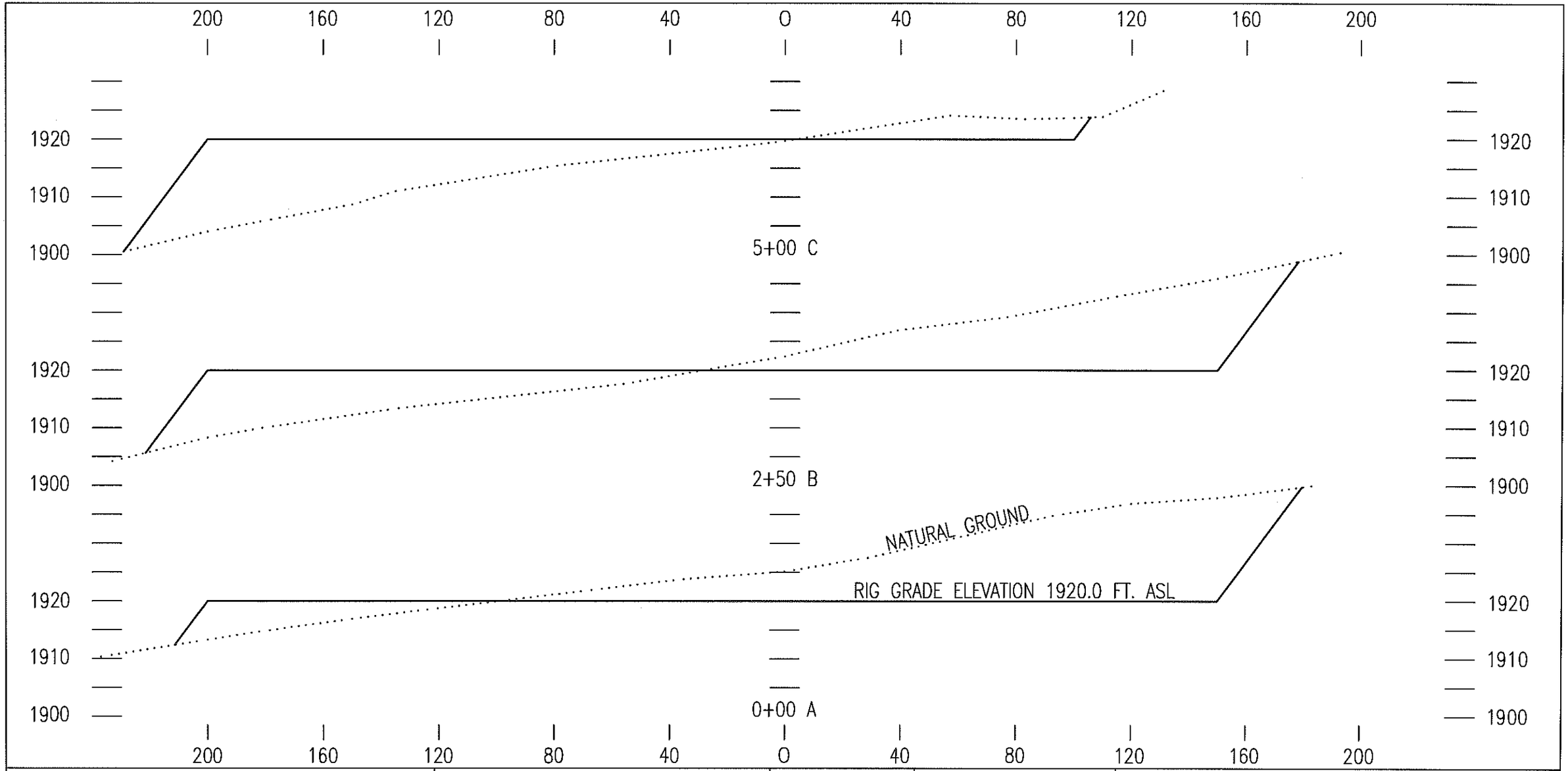
Use excess materials in access road fill

ALL INDICATED CUTS & FILLS ARE STAKED GRADE ELEVATIONS.

BACKSLOPES ASSUMED AT 1 1/2 : 1 %

Ground Elevation at Well Head: 1920.0 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 3-16H
SECTION 16, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA

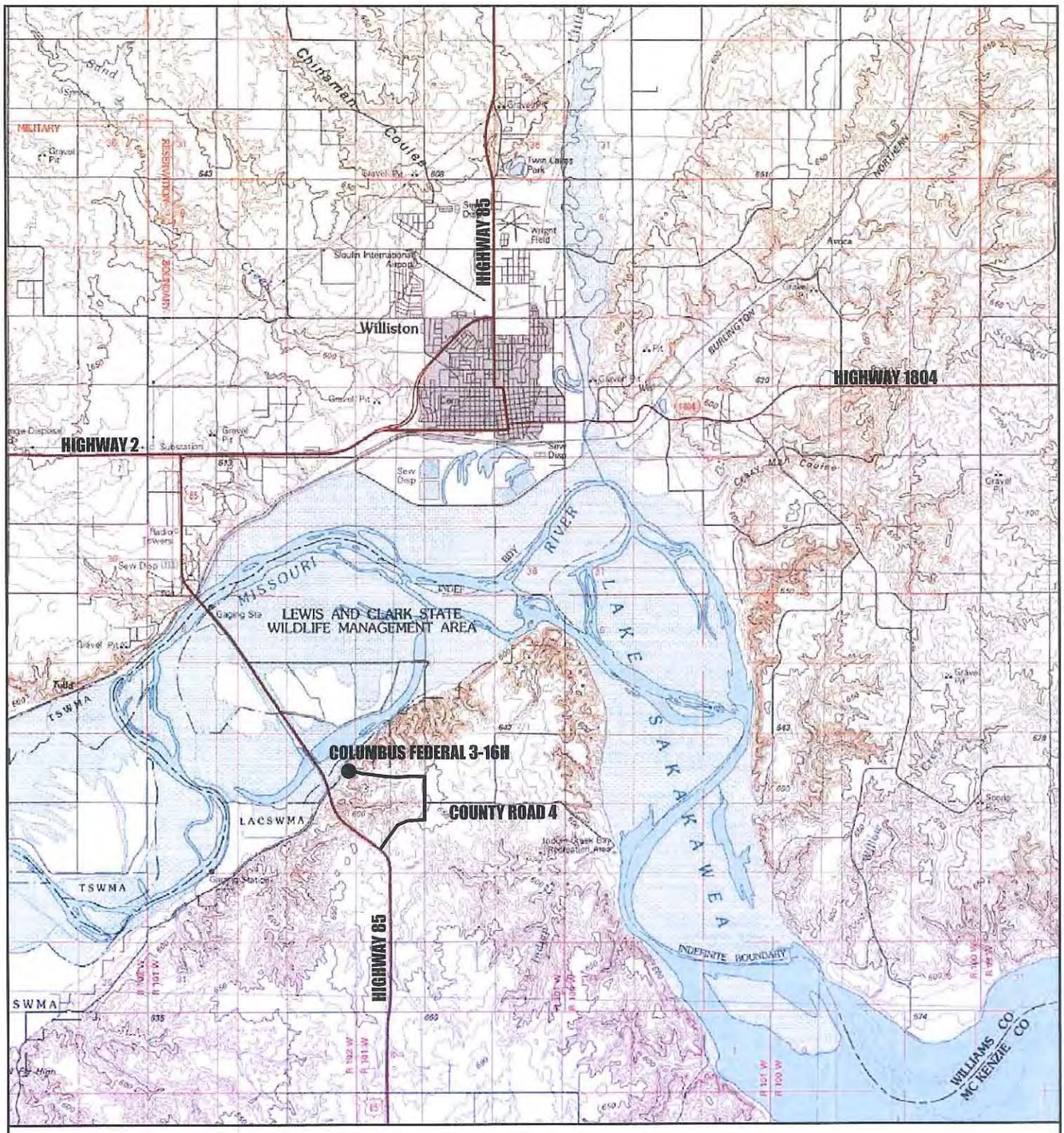
DRAWN BY: JH | PROJ. NO. 12-10

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

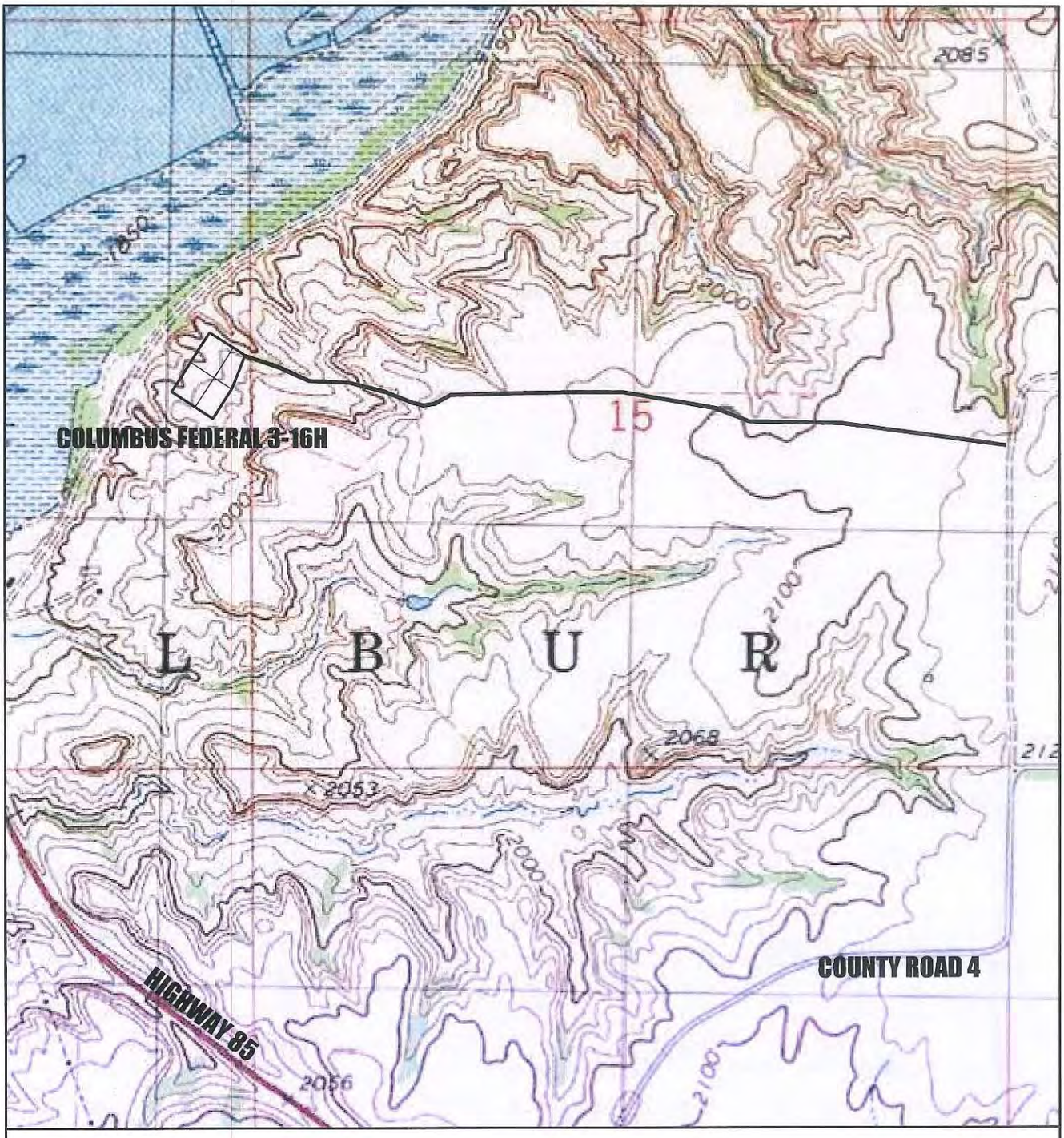


CONTINENTAL RESOURCES INC.

EXHIBIT 1

VICINITY MAP

COLUMBUS FEDERAL 3-16H
SECTION 16, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA



CONTINENTAL RESOURCES INC.

EXHIBIT 2

QUAD ACCESS

COLUMBUS FEDERAL 3-16H
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

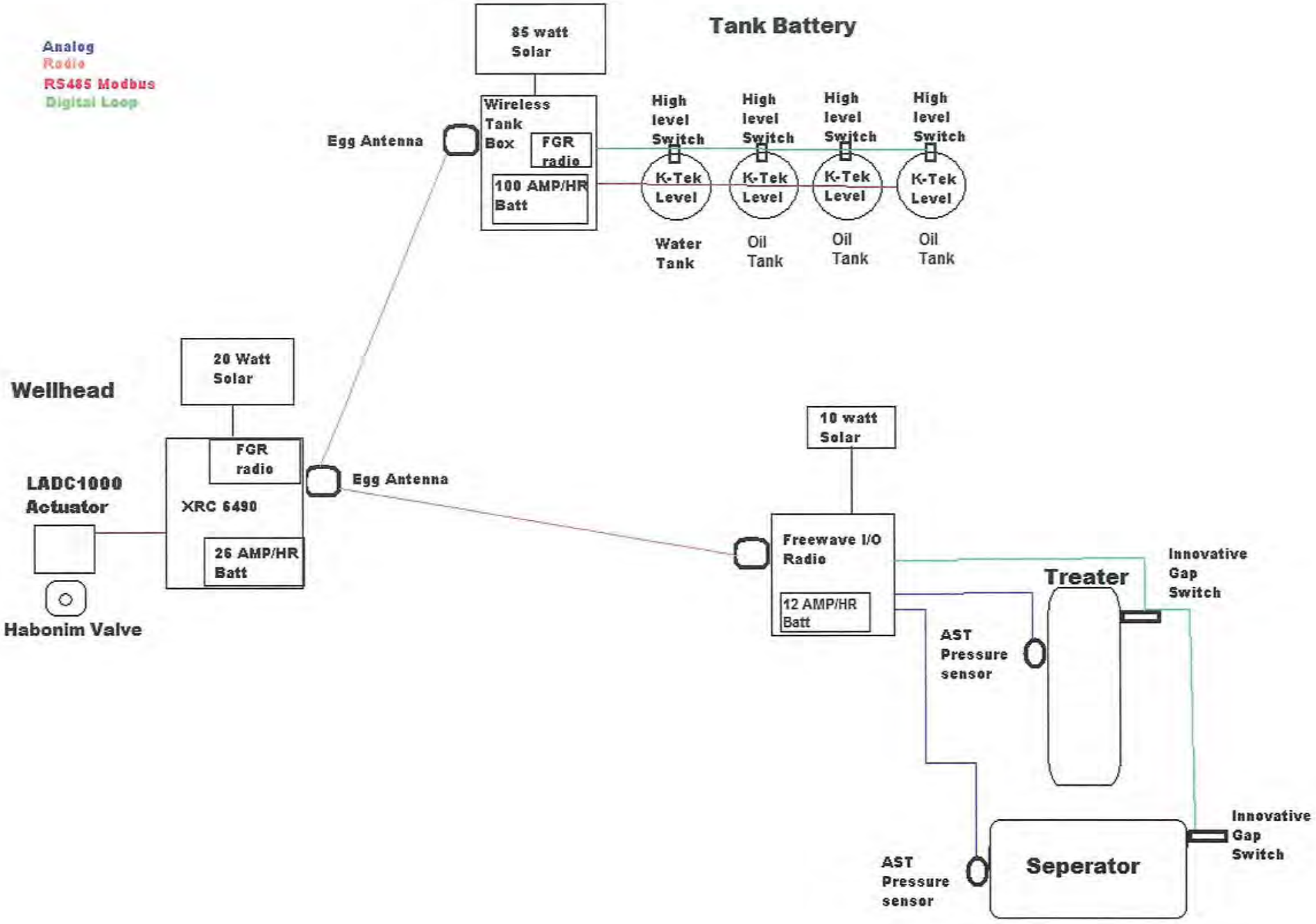
Commission No.: 11006023

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

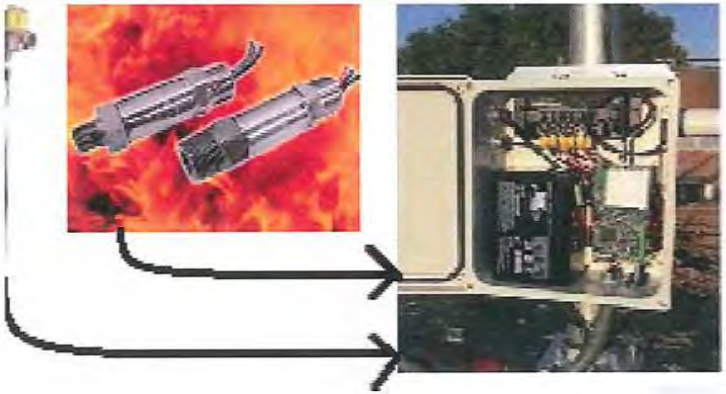
U003 Gap Switch and AST 4600 Transducer monitor pressures and liquid content of Flare and Sales Lines, transmitted to XRC via FreeWave Radio.

ABB TotalFlow XRC 6490

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

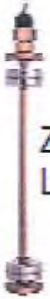
Winn-Marion's Well Hea Kit with FGRIO Radio and Power Supply

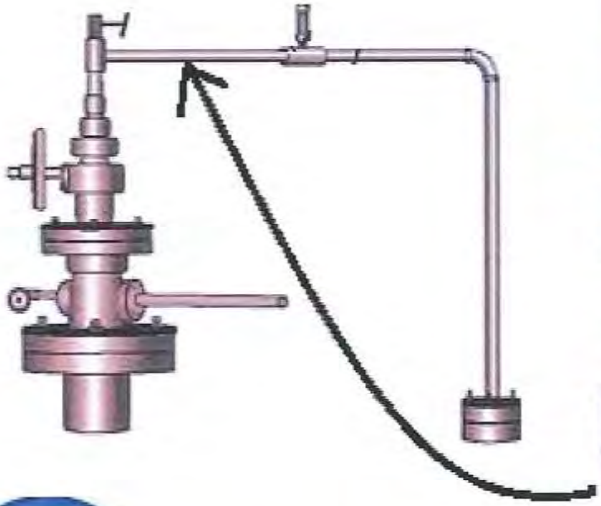
Tank Level information is passed from Tank Battery to XRC via FreeWave Radio



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.

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 3-16H

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
Regulatory Compliance Specialist

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