

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary-Designate

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey, Division Director
Oil Conservation Division



New Mexico Oil Conservation Division approval and conditions listed below are made in accordance with OCD Rule 19.15.7.11 and are in addition to the actions approved by BLM on the following 3160-3 APD form.

Operator Signature Date: 9/25/13

Well information;

Operator Encana, Well Name and Number Lybrook M28-2306 1H

API# 30-043-21178, Section 28, Township 23 NS, Range 6 E/W

Conditions of Approval:

(See the below checked and handwritten conditions)

- ☒ Notify Aztec OCD 24hrs prior to casing & cement.
- ☒ Hold C-104 for directional survey & "As Drilled" Plat
- ☐ Hold C-104 for NSL, NSP, DHC
- ☐ Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned
- ☐ Regarding the use of a pit, closed loop system or below grade tank, the operator must comply with the following as applicable:
 - A pit requires a complete C-144 be submitted and approved prior to the construction or use of the pit, pursuant to 19.15.17.8.A
 - A closed loop system requires notification prior to use, pursuant to 19.15.17.9.A
 - A below grade tank requires a registration be filed prior to the construction or use of the below grade tank, pursuant to 19.15.17.8.C
- ☐ Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string.
- ☐ Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils

Chauhan
NMOCD Approved by Signature

2-25-14
Date ca

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

CONFIDENTIAL

FORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010

APPLICATION FOR PERMIT TO DRILL OR REENTER **SEP 26 2013**

Lease Serial No.
NMNM 112953

1a. Type of work: ☒ DRILL ☐ REENTER		Farmington Field Office Bureau of Land Management		6. If Indian, Allottee or Tribe Name N/A
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone				7. If Unit or CA Agreement, Name and No. PENDING
2. Name of Operator Encana Oil & Gas (USA) Inc.				8. Lease Name and Well No. Lybrook M28-2306 01H
3a. Address 370 17th Street, Suite 1700 Denver, CO 80202		3b. Phone No. (include area code) 720-876-3989		9. API Well No. 30-043-21178
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface 354' FSL and 1265' FWL Section 28, T23N, R6W At proposed prod. zone 330' FSL and 550' FWL Section 33, T23N, R6W				10. Field and Pool, or Exploratory Lybrook Gallup
14. Distance in miles and direction from nearest town or post office* +/- 54.9 miles south of the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM		12. County or Parish Sandoval		13. State NM
15. Distance from proposed* location to nearest property or lease line, ft. BHL is 330' from south lease line Section 33, T23N, R6W (Also to nearest drig. unit line, if any)		16. No. of acres in lease NMNM 112953 1760 acres		17. Spacing Unit dedicated to this well 160.0 acres - W/2 W/2 Section 33
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. Pinon Tank ABZ FED 1 is +/- 326' east		19. Proposed Depth 5,640' TVD/10,880' MD		20. BLM/BIA Bond No. on file COB-000235 RCVD JAN 27 '14 OIL CONS. DIV.
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 7,220' GL, 7,236' KB		22. Approximate date work will start* 04/24/2014		23. Estimated duration 25 days DIST. 3

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

- Well plat certified by a registered surveyor.
- A Drilling Plan.
- A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
- Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
- Operator certification
- Such other site specific information and/or plans as may be required by the BLM.

25. Signature <i>Brenda R. Linster</i>	Name (Printed/Typed) Brenda R. Linster	Date 09/25/13
Title Regulatory Lead		
Approved by (Signature) <i>[Signature]</i>	Name (Printed/Typed) AFM	Date 1/17/14
Title AFM	Office FFO	

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

*(Instructions on page 2)

NMCCD
AV

BLM'S APPROVAL OR ACCEPTANCE OF THIS ACTION DOES NOT RELIEVE THE LESSEE AND OPERATOR FROM OBTAINING ANY OTHER AUTHORIZATION REQUIRED FOR OPERATIONS ON FEDERAL AND INDIAN LANDS

District I
1625 N. - Ranch Drive, Hobbs, NM 88240
Phone (575) 393-6161 Fax (575) 393-9720

District II
811 S. First Street, Artesia, NM 88210
Phone (575) 748-1283 Fax (575) 748-9720

District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone (505) 334-6178 Fax (505) 334-6170

District IV
1220 S. St. Francis Drive, Santa Fe, NM 87505
Phone (505) 476-3460 Fax (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

Form O-102
Revised August 1, 2011

Submit one copy to
Appropriate District Office

OIL CONSERVATION DIVISION

1220 South St. Francis Drive
Santa Fe, NM 87505

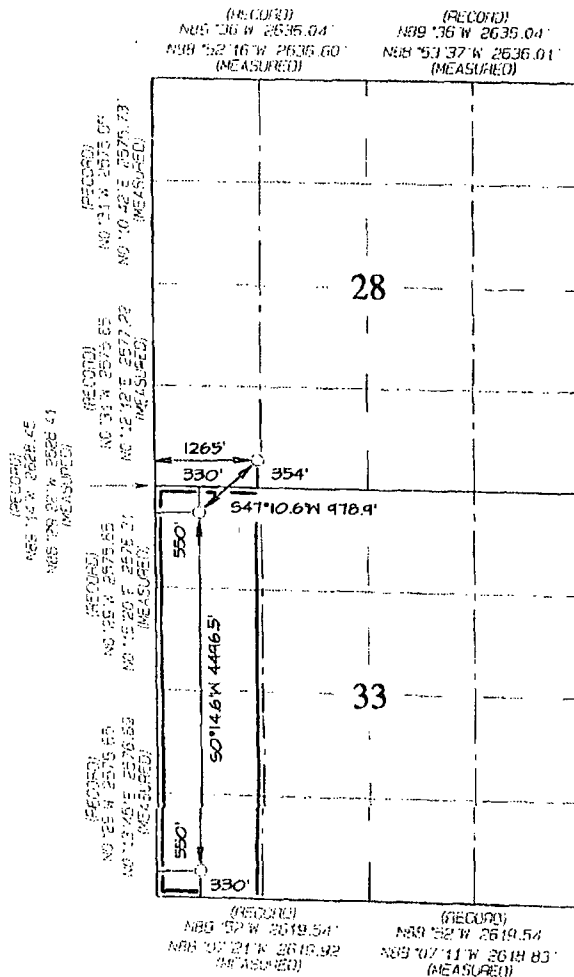
AMENDED REPORT
RECEIVED

WELL LOCATION AND ACREAGE DEDICATION PLAT

SEP 26 2013

*API Number 30-043-21178		*Pool Code 42289	*Pool Name LYBROOK GALLUP					
*Property Code 404116		*Property Name LYBROOK M28-2306		*Well Number 049				
*Operator No 282327		*Operator Name ENCANA OIL & GAS (USA) INC.		*Elevation 7220				
10 Surface Location								
U. or Loc. No. M	Section 28	Township 23N	Range 6W	Lot No. 354	Feet from the SOUTH	North/South line 1265	East/West line WEST	County SANDOVAL
11 Bottom Hole Location If Different From Surface								
U. or Loc. No. M	Section 33	Township 23N	Range 6W	Lot No. 330	Feet from the SOUTH	North/South line 550	East/West line WEST	County SANDOVAL
12 Dedicated Acres 160.0 Acres W/2 W/2 Section 33					13 Joint or Infill 14 Consolidation Code 15 Order No.			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION
UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A
NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



SURFACE LOCATION
354' FSL 1265' FWL
SECTION 28, 23N, 6W
LAT: 36.19023° N
LONG: 107.47735° W
DATUM: NAD1983

POINT-OF-ENTRY
330' FSL 550' FWL
SECTION 33, 23N, 6W
LAT: 36.18838° N
LONG: 107.47976° W
DATUM: NAD1983

END-OF-LATERAL
330' FSL 550' FWL
SECTION 33, 23N, 6W
LAT: 36.17603° N
LONG: 107.47663° W
DATUM: NAD1983

OPERATOR CERTIFICATION
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or undivided mineral interest in the land including the proposed bottom-hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order, as before stated.

Signature: *Brenda R. Linster* Date: 09-25-13
Printed Name: Brenda R. Linster
E-mail Address: brenda.linster@encana.com

SURVEYOR CERTIFICATION
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision and that the same is true and correct to the best of my belief.

Date Revised: AUGUST 23, 2013
Survey Date: SEPTEMBER 5, 2012
Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number 15269

Directions from the Intersection of US Hwy 550 & US Hwy 64
in Bloomfield, NM to Encana Oil & Gas (USA) Inc. Lybrook M28-2306 01H
354' ESL & 1265' FWL, Section 28, T23N, R6W, N.M.P.M., Sandoval County, NM

Latitude: 36.19024°N Longitude: 107.47796°W Datum: NAD1983

From the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM, travel Southerly on US Hwy 550 for 50.4 miles to Mile Marker 100.9;

Go right (Southerly) for 200' to fork in road;

Go right which is straight (South-westerly) for 2.0 miles to "T" intersection;

Go right (South-easterly) for 0.8 miles to fork in road;

Go left (South-easterly) for 0.3 miles to fork in road;

Go right (Southerly) for 0.3 miles to fork in road;

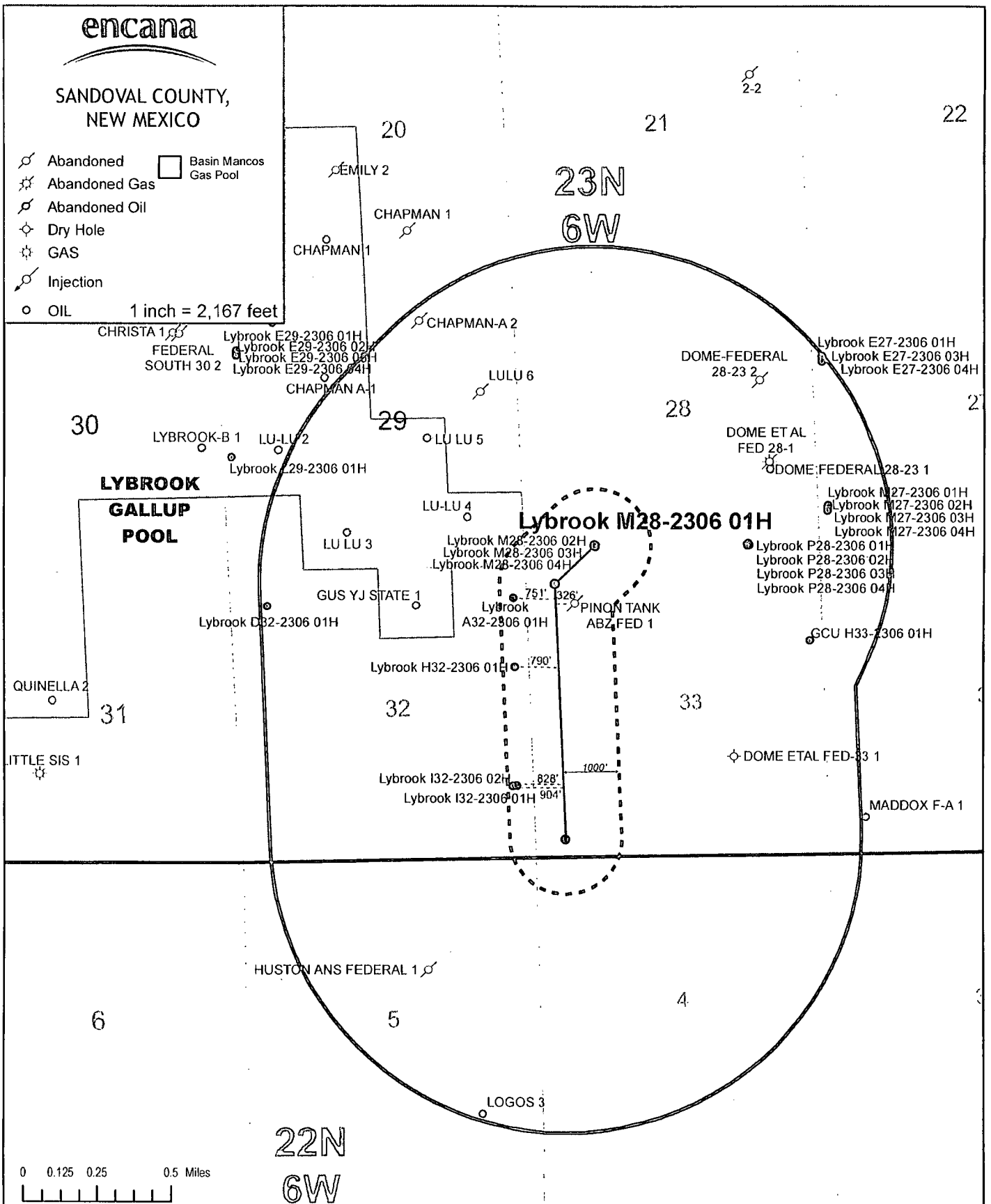
Go left (Easterly) for 0.6 miles to fork in road;

Go left (North-easterly) for 0.1 miles to new access on right-hand side of existing roadway which continues for 1882' to staked Encana Lybrook M28-2306 01H location.

encana

SANDOVAL COUNTY,
NEW MEXICO

- ⊗ Abandoned
 - ⊗ Abandoned Gas
 - ⊗ Abandoned Oil
 - ⊗ Dry Hole
 - ⊗ GAS
 - ⊗ Injection
 - OIL
- 1 inch = 2,167 feet
- Basin Mancos
Gas Pool



Lybrook M28-2306 01H
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 354 FSL and 1265 FWL
 BHL: SWSW Section 33, T23N, R6W
 330 FSL and 550 FWL
 Sandoval, New Mexico
 Lease Number: NMNM 112953

Encana Oil & Gas (USA) Inc. Drilling Plan

1. ESTIMATED TOPS OF GEOLOGICAL MARKERS (TVD)

The estimated tops of important geologic markers are as follows:

Formation	Depth (TVD) units = feet
Ojo Alamo Ss.	1,605
Kirtland Shale	1,748
Fruitland Coal	1,914
Pictured Cliffs Ss.	2,115
Lewis Shale	2,192
Cliffhouse Ss.	2,997
Menefee Fn.	3,673
Point Lookout Ss.	4,383
Mancos Shale	4,564
Mancos Silt	5,164
Gallup Fn.	5,411

The referenced surface elevation is 7220', KB 7236'

2. ESTIMATED DEPTH OF POTENTIAL WATER, OIL, GAS, & OTHER MINERAL BEARING FORMATIONS

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,914
Oil/Gas	Pictured Cliffs Ss.	2,115
Oil/Gas	Cliffhouse Ss.	2,997
Gas	Menefee Fn.	3,673
Oil/Gas	Point Lookout Ss.	4,383
Oil/Gas	Mancos Shale	4,564
Oil/Gas	Mancos Silt	5,164
Oil/Gas	Gallup Fn.	5,411

All shows of fresh water and minerals will be reported and protected.

3. PRESSURE CONTROL

- a) Pressure control equipment and configuration will be designed to meet 2M standards.
- b) Working pressure on rams and BOPE will be 3,000 psi
- c) Function test and visual inspection of the BOP will be conducted daily and noted in the IADC Daily Drilling Report.

Lybrook M28-2306 01H

SHL: SWSW Section 28, T23N, R6W
354 FSL and 1265 FWL

BHL: SWSW Section 33, T23N, R6W
330 FSL and 550 FWL

Sandoval, New Mexico

Lease Number: NMNM 112953

- d) The Annular BOP will be pressure tested to a minimum of 50 percent of its rated working pressure.
- e) Blind and Pipe Rams/BOP will be tested against a test plug to 100 percent of rated working pressure.
- f) Pressure tests are required before drilling out from under all casing strings set and cemented in place.
- g) BOP controls must be installed prior to drilling the surface casing plug and will remain in use until the well is completed or abandoned.
- h) BOP testing procedures and testing frequency will conform to Onshore Order No. 2.
- i) BOP remote controls shall be located on the rig floor at a location readily accessible to the driller. Master controls shall be on the ground at the accumulator and shall have the capability to function all preventers.
- j) The kill line shall be 2-inch minimum and contain two kill line valves, one of which shall be a check valve.
- k) The choke line shall be a 2-inch minimum and contain two choke line valves (2-inch minimum).
- l) The choke and manifold shall contain two adjustable chokes.
- m) Hand wheels shall be installed on all ram preventers.
- n) Safety valves and wrenches (with subs for drill string connections) shall be available on the rig floor at all times.
- o) Inside BOP or float sub shall also be available on the rig floor at all times.

Proposed BOP and choke manifold arrangements are attached.

4. CASING & CEMENTING PROGRAM

The proposed casing and cementing program has been designed to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones, and any prospectively valuable deposits of minerals. Any isolating medium other than cement shall receive approval prior to use. The casing setting depth shall be calculated to position the casing seat opposite a competent formation which will contain the maximum pressure to which it will be exposed during normal drilling operations. All indications of useable water shall be reported.

- a) The proposed casing design is as follows:

Casing	Depth	Hole Size	Csg Size	Weight	Grade
Conductor	0-60'	30"	20"	94#	H40, STC New
Surface	0'-500'	12 1/4"	9 5/8"	36#	J55, STC New
Intermediate	0'-6298'MD	8 3/4"	7"	26#	J55, LTC New
Production Liner	6098'-10880'MD	6 1/8"	4 1/2"	11.6#	B80*, LTC New

Casing String				Casing Strength Properties			Minimum Design Factors		
Size	Weight (lb/ft)	Grade	Connection	Collapse (psi)	Burst (psi)	Tensile (1000lb)	Collapse	Burst	Tension
9 5/8"	36	J55	STC	2020	3520	394	1.125	1.1	1.5
7"	26	J55	LTC	4320	4980	367	1.125	1.1	1.5
4 1/2"	11.6	B80	LTC	6350	7780	201	1.125	1.1	1.5

*B80 pipe specifications are attached

Casing design is subject to revision based on geologic conditions encountered.

Lybrook M28-2306 01H

SHL: SWSW Section 28, T23N, R6W
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BHL: SWSW Section 33, T23N, R6W
330 FSL and 550 FWL

Sandoval, New Mexico

Lease Number: NMNM 112953

All casing strings below the conductor shall be pressure tested to 0.22 psi per foot of casing string length or 1,500 psi, whichever is greater, but not to exceed 70 percent of the minimum internal yield. If pressure declines more than 10 percent in 30 minutes, corrective action shall be taken.

b) The proposed cementing program is as follows:

Top plugs shall be used to reduce contamination of cement by displacement fluid. A bottom plug or other acceptable technique, such as a pre-flush fluid, inner string cement method, etc. shall be utilized to help isolate the cement from contamination by the mud fluid being displaced ahead of the cement slurry.

Casing	Depth	Cement Volume (sacks)	Cement Type&Yield	Designed TOC	Centralizers
Conductor	60'	100sk	Type I Neat 14.8 ppg	Surface	None
Surface	500'	178sk	Type III Cement + 1% CaCl + 0.25lb/sk Cello Flake + 0.2% FL, 14.6ppg, 1.38cuf/sk	Surface	1 per joint on bottom 3 joints
Intermediate	6298'MD	30% open hole excess Stage 1 Lead: 256sks Stage 1 Tail: 182sks Stage 2 Lead: 192sks	Lead (Stages 1 and 2): PremLite + 3% CaCl + 0.25lb/sk CelloFlake + 5lb/sk LCM, 12.1ppg 2.13cuf/sk Tail (Stage 1): Type III Cmt + 1% CaCl + 0.25lb/sk Cello Flake 14.5ppg 1.38cuf/sk	Surface	1 per joint for bottom 3 joints, 1 every 3 joints for remaining joints
Production Liner*	6098'-10880'	None – External casing packers	N/A	N/A	N/A

*Production liner clarification: Utilizing external swell casing packer system for zonal isolation will not use cement in the production liner.

Actual volumes will be calculated and determined by conditions onsite. All cement slurries will meet or exceed minimum BLM and New Mexico Oil Conservation Division requirements. Slurries used will be the slurries listed above or equivalent slurries depending on service provider selected. Cement yields may change depending on slurries selected.

All waiting on cement times shall be a minimum of 8 hours or adequate to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out.

5. WELL PLAN & DIRECTIONAL DRILLING PROGRAM

The proposed horizontal well will have a kick off point of 4973'. Directional plans are attached.

Lybrook M28-2306 01H
 SHL: SWSW Section 28, T23N, R6W
 354 FSL and 1265 FWL
 BHL: SWSW Section 33, T23N, R6W
 330 FSL and 550 FWL
 Sandoval, New Mexico
 Lease Number: NMNM 112953

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5640'/10880'	Gallup

6. DRILLING FLUIDS PROGRAM

a) Surface through Intermediate Casing Point:

Hole Size (in)	Depth (ft)	Mud Type	Density (lb/gal)	Viscosity (sec/qt)	Fluid Loss (cc)
30"	0-60' TVD	Fresh Water	8.3-9.2	38-100	4-28
12 1/4"	0-500' TVD	Fresh Water	8.4-8.6	60-70	NC
8 3/4"	500'TVD- 5654'TVD/6298'MD	Fresh Water LSND	8.5-8.8	40-50	8-10

b) Intermediate Casing Point to TD:

Hole Size (in)	MD (ft)	Mud Type	Density (lb/gal)	Viscosity (sec/qt)	Fluid Loss (cc)
6 1/8"	6298'-10880'	Synthetic Oil Based Mud	8.6-9.0	15-25	<15

- c) There will be sufficient mud on location to control a blowout should one occur. Mud flow and volume will be monitored both visually and with electronic pit volume totalizers. Mud tests shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH.
- d) A closed-loop system will be used to recover drilling fluid and dry cuttings in both phases of the well and on all hole intervals, including fresh water and oil-based operations. Above-ground tanks will be utilized to hold cuttings and fluids for rig operations. A frac tank will be on location to store fresh water. Waste will be disposed of properly at an EPA-approved hazardous waste facility. Fresh water cuttings will be disposed of at Basin Disposal, Inc. and/or Industrial Ecosystems, Inc. The location will be lined in accordance with the Surface Use Plan of Operations.

7. TESTING, CORING and LOGGING

- a) Drill Stem Testing – None anticipated
 b) Coring – None anticipated.
 c) Mud Logging – Mud loggers will be on location from kick off point to TD.
 d) Logging – See Below

Cased Hole:
 CBL/CCL/GR/VDL will be run as needed for perforating control

Lybrook M28-2306 01H
SHL: SWSW Section 28, T23N, R6W
354 FSL and 1265 FWL
BHL: SWSW Section 33, T23N, R6W
330 FSL and 550 FWL
Sandoval, New Mexico
Lease Number: NMNM 112953

8. ABNORMAL PRESSURES & HYDROGEN SULFIDE

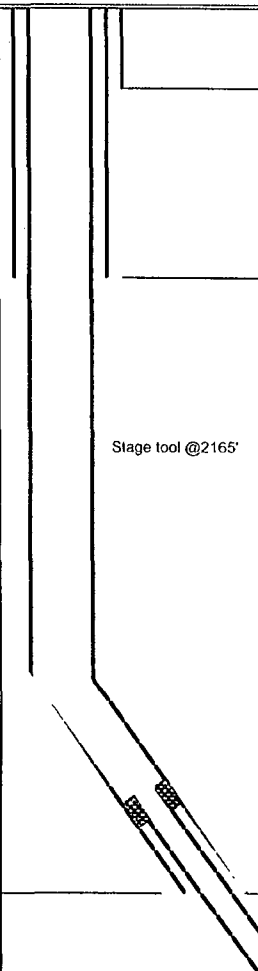
The anticipated bottom hole pressure is +/- 2647 psi based on a 9.0 ppg at 5656' TVD of the landing point of the horizontal lateral. No abnormal pressure or temperatures are anticipated.

No hydrogen sulfide gas is anticipated, however, if H₂S is encountered, the guidelines in Onshore Order No. 6 will be followed.

9. ANTICIPATED START DATE AND DURATION OF OPERATIONS

Drilling is estimated to commence on April 24, 2014. It is anticipated that completion operations will begin within 30 days after the well has been drilled depending on fracture treatment schedules with various pumping service companies.

It is anticipated that the drilling of this well will take approximately 25 days.

LOC: Sec 28-T23N-R6W County: Sandoval WELL: Lybrook M28-2306 01H			Encana Natural Gas WELL SUMMARY					ENG: 9/12/13 RIG: GLE: 7220 RKBE: 7236	
MWD LWD	OPEN HOLE LOGGING	FORM	DEPTH TVDMD			HOLE SIZE	CASING SPECS	MW MUD TYPE	DEVIATION INFORMATION
			60	60'		30	20" 94# 100sx Type I Neat 14.8ppg cmt	Fresh wtr 8.3-9.2	
Surveys After csg is run	None		500	500		12 1/4	9 5/8" 36ppf J55 STC TOC @ surface 178 sks Type III Cmt	Fresh wtr 8.4-8.6	Vertical <1°
Surveys every 500'	No OH logs Mud logger onsite	Ojo Alamo Kirtland Fruitland Coal Pictured Cliffs Ss Lewis Shale Cliffhouse Ss Menefee Fn Point Lookout Ss Mancos Sh KICK OFF PT Mancos Silt Gallup Top 7" csg setting	1605 1748 1914 2115 2192 2997 3673 4383 4564 4973 5164 5411 5654	6298		8 3/4	7" 26ppf J55 LTC TOC @ surface 30% OH excess: 639 sksTotal. Stage 1 Lead: 256sks Stage 1 Tail: 182sks. Stage 2 Lead: 192sks	Fresh Wtr 8.5-8.8	Vertical <1° KOP 4973 10 deg/100'
		horz target Base Gallup	5656 5704	6384		6 1/8	200' overlap at liner top 4496' Lateral	8.6-9.0 OBM	25deg updip 5640' TVD TD = 10880' MD
Surveys every 500' Gyro at CP MWD Gamma Directional	No OH Logs					4 1/2" 11.6ppf SB80 LTC Running external swellable csg packers for isolation of prod string Plan on setting top packer within 100' of intermediate casing shoe	Switch to OBM 8.6-9.0		

NOTES:

- 1) Drill with 30" bit to 60', set 20" 94# conductor pipe
- 2) Drill surface to 500', R&C 9 5/8" casing
- 3) N/U BOP and surface equipment
- 4) Drill to KOP of 4973', 8 3/4" hole size,
- 5) PU directional tools and start curve at 10deg/100' build rate
- 6) Drill to casing point of 6298' MD
- 7) R&C 7" casing, circ cmt to surface, switch to OBM
- 8) Land at 90deg, drill 4496' lateral to 10880', run 4 1/2" liner with external swellable csg packers



Boomerang Tube LLC

CASING (OR) TUBING DESCRIPTION AND PERFORMANCE PROPERTIES

Pipe Outside Diameter (ins)	_____	4.500
Pipe Wall Thickness (ins)	_____	0.250
Nominal Weight Per Foot (lbs)	_____	11.60
Thread Name	_____	Long Thread CSG
Grade Name	_____	SB-80
Pipe Minimum Yield (psi)	_____	80,000
Pipe Minimum Ultimate (psi)	_____	90,000
Coupling Minimum Yield (psi)	_____	80,000
Coupling Minimum Ultimate (psi)	_____	100,000
Coupling or Joint Outside Diameter (ins)	_____	5.000
Drift Diameter (ins)	_____	3.875
Plain End Weight per Foot (lbs)	_____	11.36
Joint Strength (lbs)	_____	201,000
Internal Yield (psi)	_____	7,780
Collapse Rating (psi)	_____	6,350

MAXIMUM DEPTH/LENGTH BASED ON MUD WTS & SAFETY FACTORS

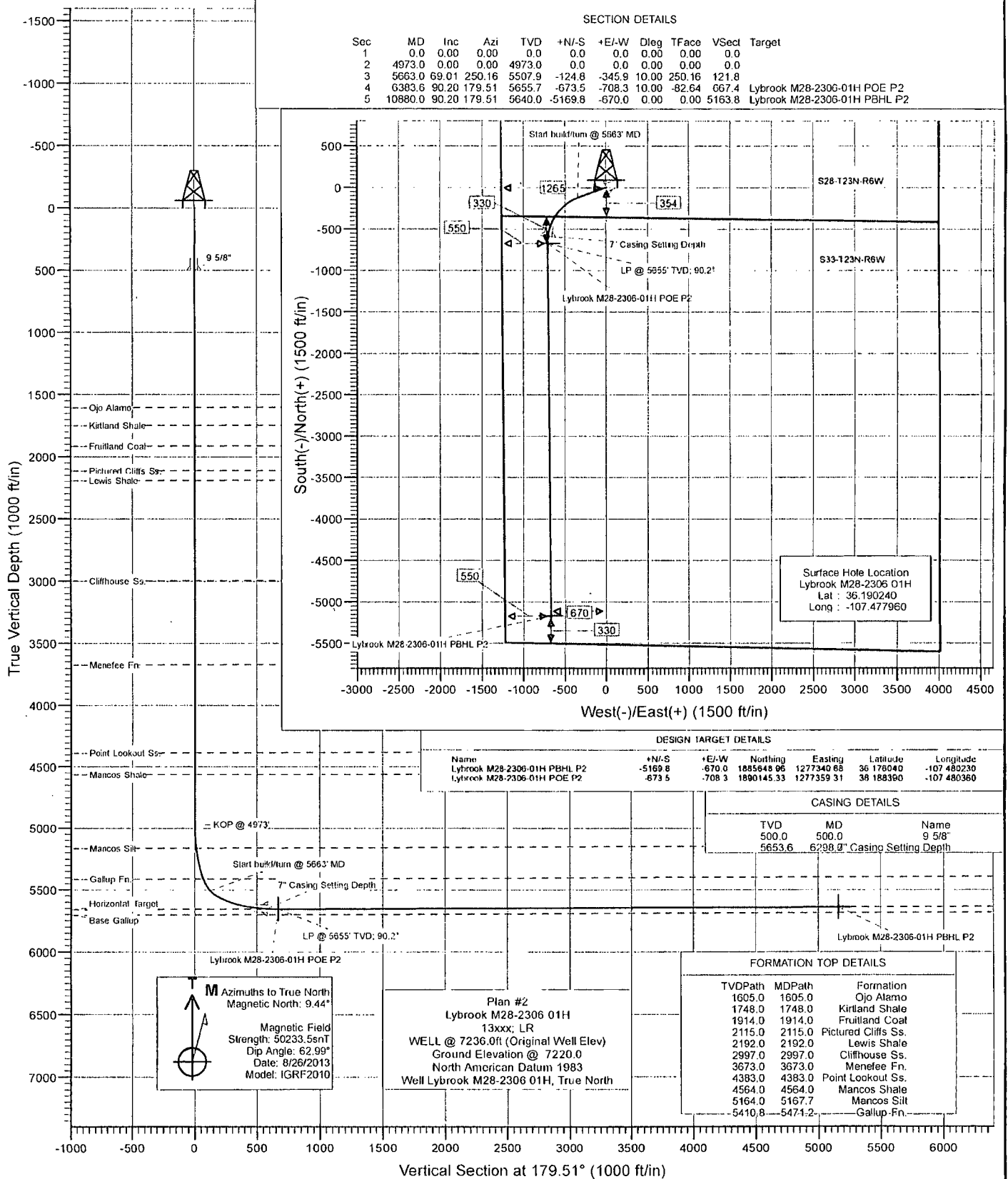
Drilling Mud Weight (ppg)	_____	9.625
Tension Safety Factor	_____	1.80
Maximum Tension Length (ft)	_____	9,630
Internal Yield Safety Factor	_____	1.10
Maximum Depth for Internal Yield (ft)	_____	14,150
Collapse Safety Factor	_____	1.125
Maximum Collapse Depth (ft)	_____	11,290

API RELATED VALUES and INTERMEDIATE CALCULATION RESULTS

Coupling Thread Fracture Strength	_____	464,000
Pipe Thread Fracture Strength (lbs)	_____	201,000
Pipe Body Plain End Yield (lbs)	_____	267,000
Round Thread Pull-Out (lbs)	_____	219,000
Minimum Make-up Torque (ft-lbs)	_____	1,640
Nominal Make-up Torque (ft-lbs)	_____	2,190
Maximum Make-up Torque (ft-lbs)	_____	2,740
Coupling Internal Yield (psi)	_____	10,660
Pipe Body Internal Yield (psi)	_____	7,780
Leak @ E1 or E7 plane (psi)	_____	17,920
Pipe Hydrostatic Test Pressure @ 80 % SMYS	_____	7,100



Project: Sandoval County, NM
Site: Lybrook
Well: Lybrook M28-2306 01H
Wellbore: Hz
Design: Plan #2



Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: Lybrook
 Well: Lybrook M28-2306 01H
 Wellbore: Hz
 Design: Plan #2

Local Co-ordinate Reference: Well Lybrook M28-2306 01H
 TVD Reference: WELL @ 7236.0ft (Original Well Elev)
 MD Reference: WELL @ 7236.0ft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Project	Sandoval County, NM		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Central Zone		

Site	Lybrook				
Site Position:		Northing:	1,882,676.45ft	Latitude:	36.168210
From:	Lat/Long	Easting:	1,287,068.90ft	Longitude:	-107.447150
Position Uncertainty:	0.0 ft	Slot Radius:	13.200in	Grid Convergence:	-0.71 °

Well	Lybrook M28-2306 01H					
Well Position	+N/-S	0.0 ft	Northing:	1,890,809.83 ft	Latitude:	36.190240
	+E/-W	0.0 ft	Easting:	1,278,076.07 ft	Longitude:	-107.477960
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level:	7,220.0ft	

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/26/2013	9.44	62.99	50,234

Design	Plan #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	179.51

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,973.0	0.00	0.00	4,973.0	0.0	0.0	0.00	0.00	0.00	0.00	
5,663.0	69.01	250.16	5,507.9	-124.8	-345.9	10.00	10.00	0.00	250.16	
6,383.6	90.20	179.51	5,655.7	-673.5	-708.3	10.00	2.94	-9.80	-82.64	Lybrook M28-2306-01
10,880.0	90.20	179.51	5,640.0	-5,169.8	-670.0	0.00	0.00	0.00	0.00	Lybrook M28-2306-01

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: Lybrook
 Well: Lybrook M28-2306 01H
 Wellbore: Hz
 Design: Plan #2

Local Co-ordinate Reference: Well Lybrook M28-2306 01H
 TVD Reference: WELL @ 7236.0ft (Original Well Elev)
 MD Reference: WELL @ 7236.0ft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	9 5/8"
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	
1,605.0	0.00	0.00	1,605.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	
1,748.0	0.00	0.00	1,748.0	0.0	0.0	0.0	0.00	0.00	Kirtland Shale
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	
1,914.0	0.00	0.00	1,914.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	
2,115.0	0.00	0.00	2,115.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs Ss.
2,192.0	0.00	0.00	2,192.0	0.0	0.0	0.0	0.00	0.00	Lewis Shale
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	
2,997.0	0.00	0.00	2,997.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss.
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	
3,673.0	0.00	0.00	3,673.0	0.0	0.0	0.0	0.00	0.00	Menefee Fn.
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	
4,383.0	0.00	0.00	4,383.0	0.0	0.0	0.0	0.00	0.00	Point Lookout Ss.

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: Lybrook
 Well: Lybrook M28-2306 01H
 Wellbore: Hz
 Design: Plan #2

Local Co-ordinate Reference: Well Lybrook M28-2306 01H
 TVD Reference: WELL @ 7236.0ft (Original Well Elev)
 MD Reference: WELL @ 7236.0ft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	
4,564.0	0.00	0.00	4,564.0	0.0	0.0	0.0	0.00	0.00	Mancos Shale
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	
4,973.0	0.00	0.00	4,973.0	0.0	0.0	0.0	0.00	0.00	KOP @ 4973'
5,000.0	2.70	250.16	5,000.0	-0.2	-0.6	0.2	10.00	10.00	
5,100.0	12.70	250.16	5,099.0	-4.8	-13.2	4.6	10.00	10.00	
5,167.7	19.47	250.16	5,164.0	-11.1	-30.8	10.9	10.00	10.00	Mancos Silt
5,200.0	22.70	250.16	5,194.1	-15.1	-41.8	14.7	10.00	10.00	
5,300.0	32.70	250.16	5,282.5	-30.8	-85.4	30.1	10.00	10.00	
5,400.0	42.71	250.16	5,361.5	-51.6	-142.9	50.3	10.00	10.00	
5,471.2	49.83	250.16	5,410.8	-69.0	-191.3	67.4	10.00	10.00	Gallup Fn.
5,500.0	52.71	250.16	5,428.8	-76.6	-212.4	74.8	10.00	10.00	
5,600.0	62.71	250.16	5,482.1	-105.3	-291.8	102.8	10.00	10.00	
5,663.0	69.01	250.16	5,507.9	-124.8	-345.9	121.8	10.00	10.00	Start build/turn @ 5663' MD
5,700.0	69.53	246.25	5,521.0	-137.6	-378.0	134.4	10.00	1.40	
5,800.0	71.36	235.81	5,554.5	-183.2	-460.2	179.3	10.00	1.83	
5,900.0	73.75	225.63	5,584.6	-243.6	-533.9	239.0	10.00	2.39	
6,000.0	76.61	215.72	5,610.2	-316.8	-596.8	311.7	10.00	2.86	
6,100.0	79.85	206.05	5,630.7	-400.7	-646.9	395.2	10.00	3.24	
6,200.0	83.36	196.59	5,645.3	-492.8	-682.8	486.9	10.00	3.51	
6,298.0	86.98	187.45	5,653.6	-588.2	-703.1	582.1	10.00	3.69	7" Casing Setting Depth
6,300.0	87.05	187.26	5,653.7	-590.2	-703.4	584.1	10.00	3.75	
6,383.6	90.20	179.51	5,655.7	-673.5	-708.3	667.4	10.00	3.77	LP @ 5655' TVD; 90.2° - Lybrook M28-2306-01
6,400.0	90.20	179.51	5,655.6	-689.9	-708.2	683.8	0.00	0.00	
6,500.0	90.20	179.51	5,655.3	-789.9	-707.3	783.8	0.00	0.00	
6,600.0	90.20	179.51	5,654.9	-889.9	-706.5	883.8	0.00	0.00	
6,700.0	90.20	179.51	5,654.6	-989.9	-705.6	983.8	0.00	0.00	
6,800.0	90.20	179.51	5,654.2	-1,089.9	-704.7	1,083.8	0.00	0.00	
6,900.0	90.20	179.51	5,653.9	-1,189.9	-703.9	1,183.8	0.00	0.00	
7,000.0	90.20	179.51	5,653.5	-1,289.9	-703.0	1,283.8	0.00	0.00	
7,100.0	90.20	179.51	5,653.2	-1,389.9	-702.2	1,383.8	0.00	0.00	
7,200.0	90.20	179.51	5,652.8	-1,489.9	-701.3	1,483.8	0.00	0.00	
7,300.0	90.20	179.51	5,652.5	-1,589.9	-700.5	1,583.8	0.00	0.00	
7,400.0	90.20	179.51	5,652.1	-1,689.9	-699.6	1,683.8	0.00	0.00	
7,500.0	90.20	179.51	5,651.8	-1,789.9	-698.8	1,783.8	0.00	0.00	
7,600.0	90.20	179.51	5,651.4	-1,889.9	-697.9	1,883.8	0.00	0.00	
7,700.0	90.20	179.51	5,651.1	-1,989.9	-697.1	1,983.8	0.00	0.00	
7,800.0	90.20	179.51	5,650.7	-2,089.9	-696.2	2,083.8	0.00	0.00	
7,900.0	90.20	179.51	5,650.4	-2,189.9	-695.4	2,183.8	0.00	0.00	
8,000.0	90.20	179.51	5,650.0	-2,289.9	-694.5	2,283.8	0.00	0.00	
8,100.0	90.20	179.51	5,649.7	-2,389.8	-693.7	2,383.8	0.00	0.00	
8,200.0	90.20	179.51	5,649.3	-2,489.8	-692.8	2,483.8	0.00	0.00	
8,300.0	90.20	179.51	5,649.0	-2,589.8	-692.0	2,583.8	0.00	0.00	
8,400.0	90.20	179.51	5,648.6	-2,689.8	-691.1	2,683.8	0.00	0.00	
8,500.0	90.20	179.51	5,648.3	-2,789.8	-690.3	2,783.8	0.00	0.00	
8,600.0	90.20	179.51	5,647.9	-2,889.8	-689.4	2,883.8	0.00	0.00	
8,700.0	90.20	179.51	5,647.6	-2,989.8	-688.6	2,983.8	0.00	0.00	
8,800.0	90.20	179.51	5,647.2	-3,089.8	-687.7	3,083.8	0.00	0.00	

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: Lybrook
Well: Lybrook M28-2306 01H
Wellbore: Hz
Design: Plan #2

Local Co-ordinate Reference: Well Lybrook M28-2306 01H
TVD Reference: WELL @ 7236.0ft (Original Well Elev)
MD Reference: WELL @ 7236.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
8,900.0	90.20	179.51	5,646.9	-3,189.8	-686.9	3,183.8	0.00	0.00	
9,000.0	90.20	179.51	5,646.5	-3,289.8	-686.0	3,283.8	0.00	0.00	
9,100.0	90.20	179.51	5,646.2	-3,389.8	-685.2	3,383.8	0.00	0.00	
9,200.0	90.20	179.51	5,645.8	-3,489.8	-684.3	3,483.8	0.00	0.00	
9,300.0	90.20	179.51	5,645.5	-3,589.8	-683.5	3,583.8	0.00	0.00	
9,400.0	90.20	179.51	5,645.1	-3,689.8	-682.6	3,683.8	0.00	0.00	
9,500.0	90.20	179.51	5,644.8	-3,789.8	-681.8	3,783.8	0.00	0.00	
9,600.0	90.20	179.51	5,644.4	-3,889.8	-680.9	3,883.8	0.00	0.00	
9,700.0	90.20	179.51	5,644.1	-3,989.8	-680.1	3,983.8	0.00	0.00	
9,800.0	90.20	179.51	5,643.7	-4,089.8	-679.2	4,083.8	0.00	0.00	
9,900.0	90.20	179.51	5,643.4	-4,189.8	-678.4	4,183.8	0.00	0.00	
10,000.0	90.20	179.51	5,643.0	-4,289.8	-677.5	4,283.8	0.00	0.00	
10,100.0	90.20	179.51	5,642.7	-4,389.8	-676.7	4,383.8	0.00	0.00	
10,200.0	90.20	179.51	5,642.3	-4,489.8	-675.8	4,483.8	0.00	0.00	
10,300.0	90.20	179.51	5,642.0	-4,589.8	-675.0	4,583.8	0.00	0.00	
10,400.0	90.20	179.51	5,641.6	-4,689.8	-674.1	4,683.8	0.00	0.00	
10,500.0	90.20	179.51	5,641.3	-4,789.7	-673.3	4,783.8	0.00	0.00	
10,600.0	90.20	179.51	5,640.9	-4,889.7	-672.4	4,883.8	0.00	0.00	
10,700.0	90.20	179.51	5,640.6	-4,989.7	-671.5	4,983.8	0.00	0.00	
10,800.0	90.20	179.51	5,640.2	-5,089.7	-670.7	5,083.8	0.00	0.00	
10,879.9	90.20	179.51	5,640.0	-5,169.7	-670.0	5,163.8	0.00	0.00	Lybrook M28-2306-01H PBHL
10,880.0	90.20	179.51	5,640.0	-5,169.8	-670.0	5,163.8	0.00	0.00	TD at 10880.0 - Lybrook M28-2306-01H PBHL I

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Lybrook M28-2306-01H	0.00	0.00	5,665.0	-5,169.8	-670.0	1,885,648.96	1,277,340.68	36.176040	-107.480230
- plan misses target center by 25.0ft at 10879.9ft MD (5640.0 TVD, -5169.7 N, -670.0 E)									
- Point									
Lybrook M28-2306-01H	0.00	0.00	5,640.0	-5,169.8	-670.0	1,885,648.96	1,277,340.68	36.176040	-107.480230
- plan hits target center									
- Point									
Lybrook M28-2306-01H	0.00	0.00	5,655.7	-673.5	-708.3	1,890,145.33	1,277,359.31	36.188390	-107.480360
- plan hits target center									
- Point									
Lybrook M28-2306-01H	0.00	0.00	5,680.7	-673.5	-708.3	1,890,145.33	1,277,359.31	36.188390	-107.480360
- plan misses target center by 25.0ft at 6383.6ft MD (5655.7 TVD, -673.5 N, -708.3 E)									
- Point									

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
500.0	500.0	9 5/8"	0.000	0.000
6,298.0	5,653.6	7" Casing Setting Depth	0.000	0.000

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: Lybrook
 Well: Lybrook M28-2306 01H
 Wellbore: Hz
 Design: Plan #2

Local Co-ordinate Reference: Well Lybrook M28-2306 01H
 TVD Reference: WELL @ 7236.0ft (Original Well Elev)
 MD Reference: WELL @ 7236.0ft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,605.0	1,605.0	Ojo Alamo		-0.20	179.51	
1,748.0	1,748.0	Kirtland Shale		-0.20	179.51	
1,914.0	1,914.0	Fruitland Coal		-0.20	179.51	
2,115.0	2,115.0	Pictured Cliffs Ss.		-0.20	179.51	
2,192.0	2,192.0	Lewis Shale		-0.20	179.51	
2,997.0	2,997.0	Cliffhouse Ss.		-0.20	179.51	
3,673.0	3,673.0	Menefee Fn.		-0.20	179.51	
4,383.0	4,383.0	Point Lookout Ss.		-0.20	179.51	
4,564.0	4,564.0	Mancos Shale		-0.20	179.51	
5,167.7	5,164.0	Mancos Silt		-0.20	179.51	
5,471.2	5,411.0	Gallup Fn.		-0.20	179.51	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
4,973.0	4,973.0	0.0	0.0	KOP @ 4973'	
5,663.0	5,507.9	-124.8	-345.9	Start build/turn @ 5663' MD	
6,383.6	5,655.7	-673.5	-708.3	LP @ 5655' TVD; 90.2°	
10,880.0	5,640.0	-5,169.8	-670.0	TD at 10880.0	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook M28-2306 01H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 7236.0ft (Original Well Elev)
Reference Site:	Lybrook	MD Reference:	WELL @ 7236.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook M28-2306 01H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Hz	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Reference	Plan #2
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	MD Interval 100.0ft
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 1,536.2ft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	Systematic Ellipse
Scan Method:	Closest Approach 3D
Error Surface:	Elliptical Conic

Survey Tool Program	Date	9/3/2013
From (ft)	To (ft)	Survey (Wellbore)
0.0	10,879.6	Plan #2 (Hz)
	Tool Name	Description
	Geolink MWD	Geolink MWD

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Lybrook						
Lybrook M28-2306 02H - Hz - Plan #2	4,900.0	4,900.0	29.7	12.7	1.744	CC, ES
Lybrook M28-2306 02H - Hz - Plan #2	5,000.0	5,000.0	30.3	12.9	1.743	SF

Cathedral Energy Services

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: Lybrook
Site Error: 0.0ft
Reference Well: Lybrook M28-2306 01H
Well Error: 0.0ft
Reference Wellbore: Hz
Reference Design: Plan #2

Local Co-ordinate Reference: Well Lybrook M28-2306 01H
TVD Reference: WELL @ 7236.0ft (Original Well Elev)
MD Reference: WELL @ 7236.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Offset Design Lybrook - Lybrook M28-2306 02H - Hz - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-Geolink MWD														Offset Well Error: 0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	97.03	-3.6	29.5	29.7					
100.0	100.0	100.0	100.0	0.1	0.1	97.03	-3.6	29.5	29.7	29.4	0.29	101.411		
200.0	200.0	200.0	200.0	0.3	0.3	97.03	-3.6	29.5	29.7	29.1	0.64	46.296		
300.0	300.0	300.0	300.0	0.5	0.5	97.03	-3.6	29.5	29.7	28.7	0.99	29.995		
400.0	400.0	400.0	400.0	0.7	0.7	97.03	-3.6	29.5	29.7	28.4	1.34	22.184		
500.0	500.0	500.0	500.0	0.8	0.8	97.03	-3.6	29.5	29.7	28.0	1.69	17.600		
600.0	600.0	600.0	600.0	1.0	1.0	97.03	-3.6	29.5	29.7	27.7	2.04	14.587		
700.0	700.0	700.0	700.0	1.2	1.2	97.03	-3.6	29.5	29.7	27.3	2.39	12.454		
800.0	800.0	800.0	800.0	1.4	1.4	97.03	-3.6	29.5	29.7	27.0	2.74	10.885		
900.0	900.0	900.0	900.0	1.5	1.5	97.03	-3.6	29.5	29.7	26.6	3.09	9.636		
1,000.0	1,000.0	1,000.0	1,000.0	1.7	1.7	97.03	-3.6	29.5	29.7	26.3	3.43	8.657		
1,100.0	1,100.0	1,100.0	1,100.0	1.9	1.9	97.03	-3.6	29.5	29.7	26.0	3.78	7.858		
1,200.0	1,200.0	1,200.0	1,200.0	2.1	2.1	97.03	-3.6	29.5	29.7	25.6	4.13	7.195		
1,300.0	1,300.0	1,300.0	1,300.0	2.2	2.2	97.03	-3.6	29.5	29.7	25.3	4.48	6.634		
1,400.0	1,400.0	1,400.0	1,400.0	2.4	2.4	97.03	-3.6	29.5	29.7	24.9	4.83	6.155		
1,500.0	1,500.0	1,500.0	1,500.0	2.6	2.6	97.03	-3.6	29.5	29.7	24.6	5.18	5.740		
1,600.0	1,600.0	1,600.0	1,600.0	2.8	2.8	97.03	-3.6	29.5	29.7	24.2	5.53	5.378		
1,700.0	1,700.0	1,700.0	1,700.0	2.9	2.9	97.03	-3.6	29.5	29.7	23.9	5.88	5.059		
1,800.0	1,800.0	1,800.0	1,800.0	3.1	3.1	97.03	-3.6	29.5	29.7	23.5	6.23	4.775		
1,900.0	1,900.0	1,900.0	1,900.0	3.3	3.3	97.03	-3.6	29.5	29.7	23.2	6.58	4.522		
2,000.0	2,000.0	2,000.0	2,000.0	3.5	3.5	97.03	-3.6	29.5	29.7	22.8	6.93	4.294		
2,100.0	2,100.0	2,100.0	2,100.0	3.6	3.6	97.03	-3.6	29.5	29.7	22.5	7.27	4.088		
2,200.0	2,200.0	2,200.0	2,200.0	3.8	3.8	97.03	-3.6	29.5	29.7	22.1	7.62	3.900		
2,300.0	2,300.0	2,300.0	2,300.0	4.0	4.0	97.03	-3.6	29.5	29.7	21.8	7.97	3.730		
2,400.0	2,400.0	2,400.0	2,400.0	4.2	4.2	97.03	-3.6	29.5	29.7	21.4	8.32	3.573		
2,500.0	2,500.0	2,500.0	2,500.0	4.3	4.3	97.03	-3.6	29.5	29.7	21.1	8.67	3.429		
2,600.0	2,600.0	2,600.0	2,600.0	4.5	4.5	97.03	-3.6	29.5	29.7	20.7	9.02	3.297		
2,700.0	2,700.0	2,700.0	2,700.0	4.7	4.7	97.03	-3.6	29.5	29.7	20.4	9.37	3.174		
2,800.0	2,800.0	2,800.0	2,800.0	4.9	4.9	97.03	-3.6	29.5	29.7	20.0	9.72	3.060		
2,900.0	2,900.0	2,900.0	2,900.0	5.0	5.0	97.03	-3.6	29.5	29.7	19.7	10.07	2.954		
3,000.0	3,000.0	3,000.0	3,000.0	5.2	5.2	97.03	-3.6	29.5	29.7	19.3	10.42	2.855		
3,100.0	3,100.0	3,100.0	3,100.0	5.4	5.4	97.03	-3.6	29.5	29.7	19.0	10.77	2.762		
3,200.0	3,200.0	3,200.0	3,200.0	5.6	5.6	97.03	-3.6	29.5	29.7	18.6	11.11	2.675		
3,300.0	3,300.0	3,300.0	3,300.0	5.7	5.7	97.03	-3.6	29.5	29.7	18.3	11.46	2.594		
3,400.0	3,400.0	3,400.0	3,400.0	5.9	5.9	97.03	-3.6	29.5	29.7	17.9	11.81	2.517		
3,500.0	3,500.0	3,500.0	3,500.0	6.1	6.1	97.03	-3.6	29.5	29.7	17.6	12.16	2.445		
3,600.0	3,600.0	3,600.0	3,600.0	6.3	6.3	97.03	-3.6	29.5	29.7	17.2	12.51	2.377		
3,700.0	3,700.0	3,700.0	3,700.0	6.4	6.4	97.03	-3.6	29.5	29.7	16.9	12.86	2.312		
3,800.0	3,800.0	3,800.0	3,800.0	6.6	6.6	97.03	-3.6	29.5	29.7	16.5	13.21	2.251		
3,900.0	3,900.0	3,900.0	3,900.0	6.8	6.8	97.03	-3.6	29.5	29.7	16.2	13.56	2.193		
4,000.0	4,000.0	4,000.0	4,000.0	7.0	7.0	97.03	-3.6	29.5	29.7	15.8	13.91	2.138		
4,100.0	4,100.0	4,100.0	4,100.0	7.1	7.1	97.03	-3.6	29.5	29.7	15.5	14.26	2.086		
4,200.0	4,200.0	4,200.0	4,200.0	7.3	7.3	97.03	-3.6	29.5	29.7	15.1	14.60	2.036		
4,300.0	4,300.0	4,300.0	4,300.0	7.5	7.5	97.03	-3.6	29.5	29.7	14.8	14.95	1.988		
4,400.0	4,400.0	4,400.0	4,400.0	7.7	7.7	97.03	-3.6	29.5	29.7	14.4	15.30	1.943		
4,500.0	4,500.0	4,500.0	4,500.0	7.8	7.8	97.03	-3.6	29.5	29.7	14.1	15.65	1.900		
4,600.0	4,600.0	4,600.0	4,600.0	8.0	8.0	97.03	-3.6	29.5	29.7	13.7	16.00	1.858		
4,700.0	4,700.0	4,700.0	4,700.0	8.2	8.2	97.03	-3.6	29.5	29.7	13.4	16.35	1.819		
4,800.0	4,800.0	4,800.0	4,800.0	8.3	8.3	97.03	-3.6	29.5	29.7	13.0	16.70	1.781		
4,900.0	4,900.0	4,900.0	4,900.0	8.5	8.5	97.03	-3.6	29.5	29.7	12.7	17.05	1.744 CC, ES		
4,948.8	4,948.8	4,948.8	4,948.8	8.6	8.6	-153.60	-3.6	29.5	30.2	13.0	17.22	1.756		
5,000.0	5,000.0	5,000.0	5,000.0	8.7	8.7	-153.65	-3.6	29.5	30.3	12.9	17.39	1.743 SF		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: Lybrook
Site Error: 0.0ft
Reference Well: Lybrook M28-2306 01H
Well Error: 0.0ft
Reference Wellbore: Hz
Reference Design: Plan #2

Local Co-ordinate Reference: Well Lybrook M28-2306 01H
TVD Reference: WELL @ 7236.0ft (Original Well Elev)
MD Reference: WELL @ 7236.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Offset Design Lybrook - Lybrook M28-2306 02H - Hz - Plan #2														Offset Site Error:	0.0 ft
Survey Program: O-Geolink MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)				Between Centres (ft)	Between Ellipses (ft)		
5,100.0	5,099.0	5,092.5	5,092.1	8.9	8.9	-155.92	-7.3	35.6	49.4	31.0	17.40	2.821			
5,200.0	5,194.1	5,172.0	5,169.6	9.1	9.0	-155.02	-16.5	51.0	95.9	78.6	17.31	5.543			
5,300.0	5,282.5	5,233.1	5,226.9	9.4	9.2	-152.20	-27.3	68.9	164.1	147.2	16.94	9.088			
5,400.0	5,361.5	5,275.2	5,265.0	9.9	9.3	-146.53	-36.6	84.3	247.3	230.6	16.70	14.812			
5,500.0	5,428.8	5,300.0	5,286.7	10.7	9.4	-133.66	-42.7	94.5	339.8	322.3	17.53	19.386			
5,600.0	5,482.1	5,313.0	5,297.9	11.9	9.4	-100.66	-46.0	100.1	437.0	416.1	20.95	20.861			
5,700.0	5,521.0	5,315.1	5,299.8	13.3	9.4	-69.44	-46.6	101.0	535.4	513.7	21.75	24.615			
5,800.0	5,554.5	5,317.4	5,301.7	14.9	9.4	-71.91	-47.2	102.1	631.3	608.0	23.38	27.005			
5,900.0	5,584.6	5,322.0	5,305.6	16.5	9.4	-71.61	-48.5	104.1	723.2	698.6	24.59	29.415			
6,000.0	5,610.2	5,328.7	5,311.3	18.1	9.5	-70.72	-50.3	107.2	809.9	784.5	25.43	31.849			
6,100.0	5,630.7	5,337.4	5,318.6	19.5	9.5	-69.90	-52.8	111.3	890.7	864.8	25.80	34.394			
6,200.0	5,645.3	5,350.0	5,329.0	20.8	9.6	-69.56	-56.4	117.3	964.7	938.7	26.01	37.090			
6,300.0	5,653.7	5,350.0	5,329.0	21.9	9.6	-68.86	-56.4	117.3	1,031.4	1,005.8	25.62	40.258			
6,400.0	5,655.6	5,377.0	5,350.8	22.9	9.7	-70.02	-64.6	131.0	1,090.0	1,064.4	25.58	42.618			
6,500.0	5,655.3	5,400.0	5,368.8	23.9	9.8	-71.36	-72.0	143.3	1,149.4	1,122.2	27.12	42.378			
6,600.0	5,654.9	5,413.4	5,379.0	25.0	9.9	-72.12	-76.5	150.8	1,213.5	1,184.9	28.63	42.380			
6,700.0	5,654.6	5,433.9	5,394.2	26.2	10.0	-73.25	-83.6	162.6	1,281.8	1,251.5	30.27	42.347			
6,800.0	5,654.2	5,457.8	5,405.2	27.4	25.9	-90.04	-1,078.6	620.1	1,324.9	1,278.4	46.50	28.495			
6,900.0	5,653.9	5,477.8	5,404.9	28.7	27.2	-90.04	-1,178.6	621.0	1,324.9	1,275.3	49.61	26.709			
7,000.0	5,653.5	5,497.8	5,404.5	30.0	28.7	-90.04	-1,278.6	621.8	1,324.9	1,272.2	52.77	25.110			
7,100.0	5,653.2	5,517.8	5,404.2	31.4	30.1	-90.04	-1,378.6	622.7	1,324.9	1,269.0	55.97	23.673			
7,200.0	5,652.8	5,537.8	5,403.8	32.8	31.6	-90.04	-1,478.6	623.5	1,324.9	1,265.7	59.20	22.379			
7,300.0	5,652.5	5,557.8	5,403.5	34.3	33.1	-90.04	-1,578.6	624.4	1,324.9	1,262.5	62.47	21.210			
7,400.0	5,652.1	5,577.8	5,403.1	35.8	34.7	-90.04	-1,678.6	625.2	1,324.9	1,259.2	65.76	20.148			
7,500.0	5,651.8	5,597.8	5,402.8	37.3	36.2	-90.04	-1,778.6	626.1	1,324.9	1,255.9	69.07	19.182			
7,600.0	5,651.4	5,617.8	5,402.4	38.8	37.8	-90.04	-1,878.6	626.9	1,324.9	1,252.5	72.40	18.300			
7,700.0	5,651.1	5,637.8	5,402.1	40.4	39.4	-90.04	-1,978.5	627.8	1,324.9	1,249.2	75.75	17.491			
7,800.0	5,650.7	5,657.8	5,401.7	41.9	41.0	-90.04	-2,078.5	628.7	1,324.9	1,245.8	79.11	16.748			
7,900.0	5,650.4	5,677.8	5,401.4	43.5	42.6	-90.04	-2,178.5	629.5	1,324.9	1,242.5	82.48	16.064			
8,000.0	5,650.0	5,697.8	5,401.0	45.1	44.2	-90.04	-2,278.5	630.4	1,324.9	1,239.1	85.87	15.431			
8,100.0	5,649.7	5,717.8	5,400.7	46.7	45.9	-90.04	-2,378.5	631.2	1,325.0	1,235.7	89.26	14.844			
8,200.0	5,649.3	5,737.8	5,400.3	48.3	47.5	-90.04	-2,478.5	632.1	1,325.0	1,232.3	92.66	14.299			
8,300.0	5,649.0	5,757.8	5,400.0	50.0	49.2	-90.04	-2,578.5	632.9	1,325.0	1,228.9	96.07	13.792			
8,400.0	5,648.6	5,777.8	5,400.6	51.6	50.9	-90.04	-2,678.5	633.8	1,325.0	1,225.5	99.49	13.318			
8,500.0	5,648.3	5,797.8	5,400.3	53.2	52.5	-90.04	-2,778.5	634.6	1,325.0	1,222.1	102.91	12.875			
8,600.0	5,647.9	5,817.8	5,400.9	54.9	54.2	-90.04	-2,878.5	635.5	1,325.0	1,218.6	106.34	12.460			
8,700.0	5,647.6	5,837.8	5,400.6	56.5	55.9	-90.04	-2,978.5	636.3	1,325.0	1,215.2	109.77	12.070			
8,800.0	5,647.2	5,857.8	5,400.2	58.2	57.6	-90.04	-3,078.5	637.2	1,325.0	1,211.8	113.21	11.704			
8,900.0	5,646.9	5,877.8	5,400.9	59.9	59.3	-90.04	-3,178.5	638.1	1,325.0	1,208.3	116.65	11.359			
9,000.0	5,646.5	5,897.8	5,400.5	61.6	60.9	-90.04	-3,278.5	638.9	1,325.0	1,204.9	120.10	11.033			
9,100.0	5,646.2	5,917.8	5,400.2	63.2	62.6	-90.04	-3,378.5	639.8	1,325.0	1,201.4	123.55	10.725			
9,200.0	5,645.8	5,937.8	5,400.8	64.9	64.3	-90.04	-3,478.5	640.6	1,325.0	1,198.0	127.00	10.433			
9,300.0	5,645.5	5,957.8	5,400.5	66.6	66.0	-90.04	-3,578.5	641.5	1,325.0	1,194.5	130.45	10.157			
9,400.0	5,645.1	5,977.8	5,400.1	68.3	67.8	-90.04	-3,678.5	642.3	1,325.0	1,191.1	133.91	9.895			
9,500.0	5,644.8	5,997.8	5,400.8	70.0	69.5	-90.04	-3,778.5	643.2	1,325.0	1,187.6	137.37	9.645			
9,600.0	5,644.4	6,017.8	5,400.4	71.7	71.2	-90.04	-3,878.5	644.0	1,325.0	1,184.2	140.84	9.408			
9,700.0	5,644.1	6,037.8	5,400.1	73.4	72.9	-90.04	-3,978.5	644.9	1,325.0	1,180.7	144.30	9.182			
9,800.0	5,643.7	6,057.8	5,400.7	75.1	74.6	-90.04	-4,078.5	645.7	1,325.0	1,177.2	147.77	8.967			
9,900.0	5,643.4	6,077.8	5,400.4	76.8	76.3	-90.04	-4,178.5	646.6	1,325.0	1,173.8	151.24	8.761			
10,000.0	5,643.0	6,097.8	5,400.0	78.5	78.0	-90.04	-4,278.4	647.5	1,325.0	1,170.3	154.71	8.565			
10,100.0	5,642.7	6,117.8	5,400.7	80.2	79.7	-90.04	-4,378.4	648.3	1,325.0	1,166.8	158.18	8.377			
10,200.0	5,642.3	6,137.8	5,400.3	81.9	81.5	-90.04	-4,478.4	649.2	1,325.0	1,163.4	161.66	8.197			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Reference Site: Lybrook
 Site Error: 0.0ft
 Reference Well: Lybrook M28-2306 01H
 Well Error: 0.0ft
 Reference Wellbore: Hz
 Reference Design: Plan #2

Local Co-ordinate Reference: Well Lybrook M28-2306 01H
 TVD Reference: WELL @ 7236.0ft (Original Well Elev)
 MD Reference: WELL @ 7235.0ft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: USA EDM 5000 Multi Users DB
 Offset TVD Reference: Offset Datum

Offset Design Lybrook - Lybrook M28-2306 02H - Hz - Plan #2														Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Tooface (°)	Offset Wellbore Centre		Distance		Total Uncertainty Axis	Separation Factor	Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N-S (ft)	+E-W (ft)	Between Centres (ft)	Between Ellipses (ft)					
10,300.0	5,642.0	10,187.8	5,643.0	83.6	83.2	-90.04	-4,578.4	650.0	1,325.0	1,159.9	165.13	8.024			
10,400.0	5,641.6	10,287.8	5,642.7	85.4	84.9	-90.04	-4,678.4	650.9	1,325.0	1,156.4	168.61	7.859			
10,500.0	5,641.3	10,387.8	5,642.3	87.1	86.6	-90.04	-4,778.4	651.7	1,325.0	1,152.9	172.09	7.700			
10,600.0	5,640.9	10,487.8	5,642.0	88.8	88.4	-90.04	-4,878.4	652.6	1,325.0	1,149.5	175.57	7.547			
10,700.0	5,640.6	10,587.8	5,641.6	90.5	90.1	-90.04	-4,978.4	653.4	1,325.0	1,146.0	179.05	7.401			
10,800.0	5,640.2	10,687.8	5,641.3	92.2	91.8	-90.04	-5,078.4	654.3	1,325.0	1,142.5	182.53	7.259			
10,880.0	5,640.0	10,767.8	5,641.0	93.6	93.2	-90.04	-5,158.4	655.0	1,325.0	1,139.7	185.31	7.150			

Cathedral Energy Services

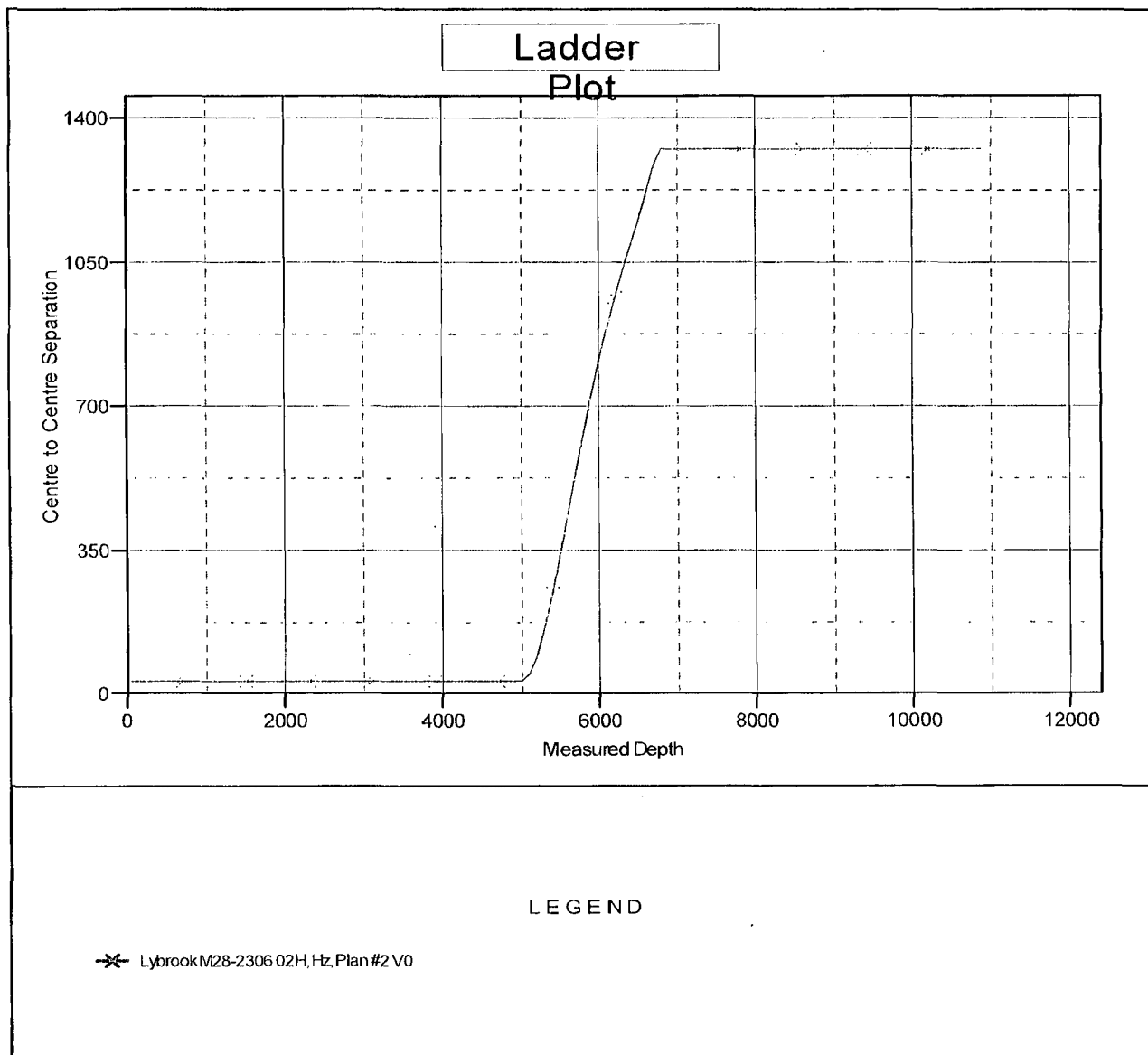
Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: Lybrook
Site Error: 0.0ft
Reference Well: Lybrook M28-2306 01H
Well Error: 0.0ft
Reference Wellbore: Hz
Reference Design: Plan #2

Local Co-ordinate Reference: Well Lybrook M28-2306 01H
TVD Reference: WELL @ 7236.0ft (Original Well Elev)
MD Reference: WELL @ 7236.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Reference Depths are relative to WELL @ 7236.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -106.250000 °

Coordinates are relative to: Lybrook M28-2306 01H
Coordinate System is US State Plane 1983, New Mexico Central Zone
Grid Convergence at Surface is: -0.73°



Lybrook M28-2306 01H

SHL: SWSW Section 28, T23N, R6W
354 FSL and 1265 FWL

BHL: SWSW Section 33, T23N, R6W
330 FSL and 550 FWL

Sandoval County, New Mexico

Lease Number: NM 112953

be hauled to an approved disposal site or stockpiled at the edge of the well pad and buried in the cut slopes of the pad during interim reclamation.

Any trees smaller than 3-inches in diameter, slash and brush will be chipped, shredded or mulched and incorporated into the topsoil for later use in interim reclamation.

Remaining brush will be brush-hogged or scalped at ground-level prior to ground disturbance.

2. After removal of vegetation, topsoil will be segregated and windrowed on the edge of the. Topsoil will be defined as the top six (6) inches of soil. The stockpiled topsoil will be free of brush and tree limbs, trunks and root balls, but may include chipped or mulched material so long as it is incorporated into the topsoil stockpile.

Topsoil will be stockpiled separate from subsoil with a noticeable gap left between the stockpiles. Vehicle/equipment traffic will be prevented from crossing topsoil stockpiles.

Topsoil will not be stripped when soils are moisture-saturated or frozen below the stripping depth.

If the location becomes prone to wind or water erosion, Encana will take appropriate measures to prevent topsoil loss from wind. Such measures may include using tackifiers or water to wet the topsoil stockpile so that a crust is created across the exposed soil to prevent soil loss.

3. All construction materials for the well pad will consist of native borrow and subsoil accumulated during well pad construction. If additional fill or surfacing material is required, it will be obtained from existing permitted or private sources and will be hauled in by trucks over existing access roads.

The maximum cut will be approximately 15 feet on the east corner (corner 3) and the maximum fill will be approximately 19 feet on the west corner (corner 6).

4. As determined during the onsite on July 31, 2013, the following best management practices will be implemented:
 - a. The western corner (corner 6) of the well pad will need to be rounded.
 - b. Water will be diverted around the pad and silt traps installed as needed upon interim reclamation.
 - c. A high-wall will be constructed between Corners 3 and 4 with a 1:1 ratio.
5. Construction equipment may include chain saws, a brush hog, scraper, maintainer, excavator, and dozer. Construction for the access road and well pad will take approximately 2 to 4 weeks.

C. Pipeline

See the Plan of Development submitted with the final Standard SF-299 Application for authorization to construct, operate, maintain and terminate a 2,176 up to 6-inch buried, steel well connect pipeline that was submitted to the BLM concurrently with the APD.

7. METHODS FOR HANDLING WASTE

A. Cuttings

Lybrook M28-2306 01H

SHL: SWSW Section 28, T23N, R6W
354 FSL and 1265 FWL

BHL: SWSW Section 33, T23N, R6W
330 FSL and 550 FWL

Sandoval County, New Mexico

Lease Number: NM 112953

1. A closed-loop system will be used. Cuttings will be moved through a shaker system on the drill rig that separates drilling fluids from the cuttings. Cuttings will be stored onsite in above-ground storage tanks. Cuttings will be pulled from the storage tanks, mixed with saw dust or similar absorbent material, and disposed of at the Envirotech, Inc. and/or Industrial Ecosystem, Inc. waste disposal facilities.
2. The closed-loop system storage tanks will be adequately sized to ensure confinement of all fluids and will provide sufficient freeboard to prevent uncontrolled releases.
3. A 20-mil liner will be installed under tanks, pumps, ancillary facilities, and truck loading/unloading areas associated with the closed-loop system.

B. Drilling Fluids

- ✓ 1. A closed-loop system will be used. Drilling fluids will be stored onsite in above-ground storage tanks. Upon termination of drilling operations, the drilling fluids will be recycled and transferred to other permitted closed-loop systems or returned to the vendor for reuse, as practical. Residual fluids will be vacuumed from the storage tanks and disposed of at Basin Disposal, Inc. and/or Industrial Ecosystem, Inc. waste disposal facilities.
2. The closed-loop system storage tanks will be adequately sized to ensure confinement of all fluids and will provide sufficient freeboard to prevent uncontrolled releases.
3. The closed-loop system storage tanks will be placed in bermed secondary containment sized to accommodate a minimum of 110 percent of the volume of the largest storage tank.
4. A 20-mil liner will be installed under tanks, pumps, ancillary facilities, and truck loading/unloading areas associated with the closed-loop system.

C. Flowback Water

1. The water-based solution that flows back to the surface during and after completion operations will be placed in storage tanks on the location.
2. Flowback water will be confined to a storage tank for a period not to exceed 90 days after initial production and will be disposed of at Basin Disposal, Inc. and/or Industrial Ecosystem, Inc. waste disposal facilities.

D. Spills – any spills of non-freshwater fluids will be immediately cleaned up and removed to an approved disposal site.

E. Sewage – self-contained, chemical toilets will be provided for human waste disposal. The toilet holding tanks will be pumped, as needed, and the contents thereof disposed of in an approved sewage disposal facility. The toilets will be onsite during all operations.

F. Garbage and other waste material – garbage, trash and other waste materials will be collected in a portable, self-contained and fully-enclosed trash container during drilling and completion operations. The accumulated trash will be removed, as needed, and will be disposed of at an authorized sanitary landfill. No trash will be buried or burned on location.

G. Immediately after removal of the drilling rig, all debris and other waste materials not contained in the trash container will be cleaned up and removed from the well location.

H. No chemicals subject to reporting under SARA Title III in an amount equal to or greater than

Lybrook M28-2306 01H

SHL: SWSW Section 28, T23N, R6W
354 FSL and 1265 FWL

BHL: SWSW Section 33, T23N, R6W
330 FSL and 550 FWL

Sandoval County, New Mexico

Lease Number: NM 112953

10,000 pounds will be used, produced, stored, transported, or disposed of annually in association with the drilling, testing or completing of this well.

- I. No extremely hazardous substances, as defined in 40 CFR 355, in threshold planning quantities, will be used, produced, stored, transported, or disposed of in association with the drilling, testing, or completing of this well.

8. ANCILLARY FACILITIES

- A. Standard drilling operation equipment that will be on location includes: drilling rig with associated equipment, temporary office trailers equipped with sleeping quarters for essential company personnel, toilet facilities, and trash containers.

9. WELL SITE LAYOUT

- A. The proposed well pad layout is shown on Sheets F-1, F-2, G-1, and G-2. Cross sections have been drafted to visualize the planned cuts and fills across the location. Refer to Item 6 for construction materials and methods.
- B. No permanent living facilities are planned. Office trailers equipped with living quarters will be provided on location during drilling and completions operations.
- C. The production facility layout is being deferred until the Facility and Reclamation onsite with the BLM Representative. Production

10. PLANS FOR SURFACE RECLAMATION

The project falls within the Pinyon-Juniper Vegetation Community. During the onsite on July 31 2013, plant species were picked from the Pinyon-Juniper Community Seed List. These species will be used in the revegetation seed mixture. Please see Reclamation Plan (Appendix A).

The well pad, road and pipeline will fall under the BLM Vegetation Reclamation Procedure B. A site-specific Reclamation Plan is located in Appendix A. The BLM will be contacted 48 hours prior to construction and reclamation.

11. SURFACE OWNERSHIP

Bureau of Land Management and State of New Mexico Land

12. OTHER INFORMATION

- A. A Standard Form SF-299 Application for authorization to construct, operate, maintain and terminate a 30-foot overall right-of-way access road with a 14-foot road running surface was submitted to the Bureau of Land Management on June 20, 2013. A Surface Use Plan of Operation was submitted to the Bureau of Land Management concurrently with the APD reflecting a 1,636' access road. Issued Serial Number NMNM 130760.
- B. Well Pad is on lease and will not require a right-of-way.
- C. A final Standard Form 299 Application and Plan of Development for authorization to construct, operate, maintain and terminate a 1,934 foot, up to 6-inch buried, steel well connect pipeline was submitted to the Bureau of Land Management concurrently with the APD. Issued Serial Number 130761.
- D. A Class III Cultural Resource Inventory of the proposed well pad, access road, and pipeline route will be conducted and filed with the BLM-Farmington Field Office.

WELLHEAD BLOWOUT CONTROL SYSTEM

encana

Well name and number:

Lybrook M28-2306 01H

