

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

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

David R. Catanach 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: 10-15-13

Well information;

Operator Encana, Well Name and Number Lybrook D32-2306

API# 30-043-21181, Section 32 Township 23 N, Range 6 E

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
- ☒ Regarding Hydraulic Fracturing, review EPA Underground Injection Control Guidance 84
- ☒ 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. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.
- ☒ Well-bore communication is regulated under 19.15.29 NMAC. This requires well-bore Communication to be reported in accordance with 19.15.29.8.

Charles L. ...
NMOCD Approved by Signature

12-8-2015
Date

RV

RECEIVED

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCT 18 2013

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. V-1399 & NMNM 117564
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name N/A
2. Name of Operator Encana Oil & Gas (USA) Inc.		7. If Unit or CA Agreement, Name and No. PENDING
3a. Address 370 17th Street, Suite 1700 Denver, CO 80202	3b. Phone No. (include area code) 720-876-3989	8. Lease Name and Well No. Lybrook D32-2306 01H
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface 1' FNL and 337' FWL Section 32, T23N, R6W At proposed prod. zone 750' FSL and 330' FWL Section 30, T23N, R6W		9. API Well No. 30-043-2181
14. Distance in miles and direction from nearest town or post office* +/- 53.7 miles southeast of the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM		10. Field and Pool, or Exploratory Lybrook Gallup
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) BHL is 330' from west lease line Section 30, T23N, R6W	16. No. of acres in lease ST NM V 1399-640 acres NMNM 117564-1283.97 ac 1323.52	11. Sec., T. R. M. or Blk. and Survey or Area Section 32, T23N, R6W NMPM
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. Lybrook I30-2306 01H is +/-1083' north of wellbore	19. Proposed Depth 5600' TVD/11028' MD	12. County or Parish Sandoval
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 7247 GL, 7263' KB	22. Approximate date work will start* 07/10/2014	13. State NM
23. Estimated duration 25 days		

24. Attachments

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

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

25. Signature *Brenda R. Linster* Name (Printed/Typed) Brenda R. Linster Date 10.15.13

Title Regulatory Lead

Approved by (Signature) *[Signature]* Name (Printed/Typed) Date 12/2/15

Title 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)

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

NMOCD

DRILLING OPERATIONS AUTHORIZED ARE SUBJECT TO COMPLIANCE WITH ATTACHED "GENERAL REQUIREMENTS".

This action is subject to technical and procedural review pursuant to 43 CFR 3165.3 and appeal pursuant to 43 CFR 3165.4

District I
1625 N. French Drive, Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
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 C-102
Revised August 1, 2011

OIL CONSERVATION DIVISION

1220 South St. Francis Drive
Santa Fe, NM 87505

Submit one copy to
Appropriate District Office

AMENDED REPORT
OCT 18 2013

Farmington Field Office
Division of Land Management

WELL LOCATION AND ACREAGE DEDICATION

¹ APT Number 30-043-21181	² Pool Code 42289 / 97232	³ Pool Name LYBROOK GALLUP/BASIN MANCOS
⁴ Property C 315099	⁵ Property Name LYBROOK D32-2306	⁶ Well Number 01H
⁷ GRID No. 282327	⁸ Operator Name ENCANA OIL & GAS (USA) INC.	⁹ Elevation 7247'

¹⁰ Surface Location

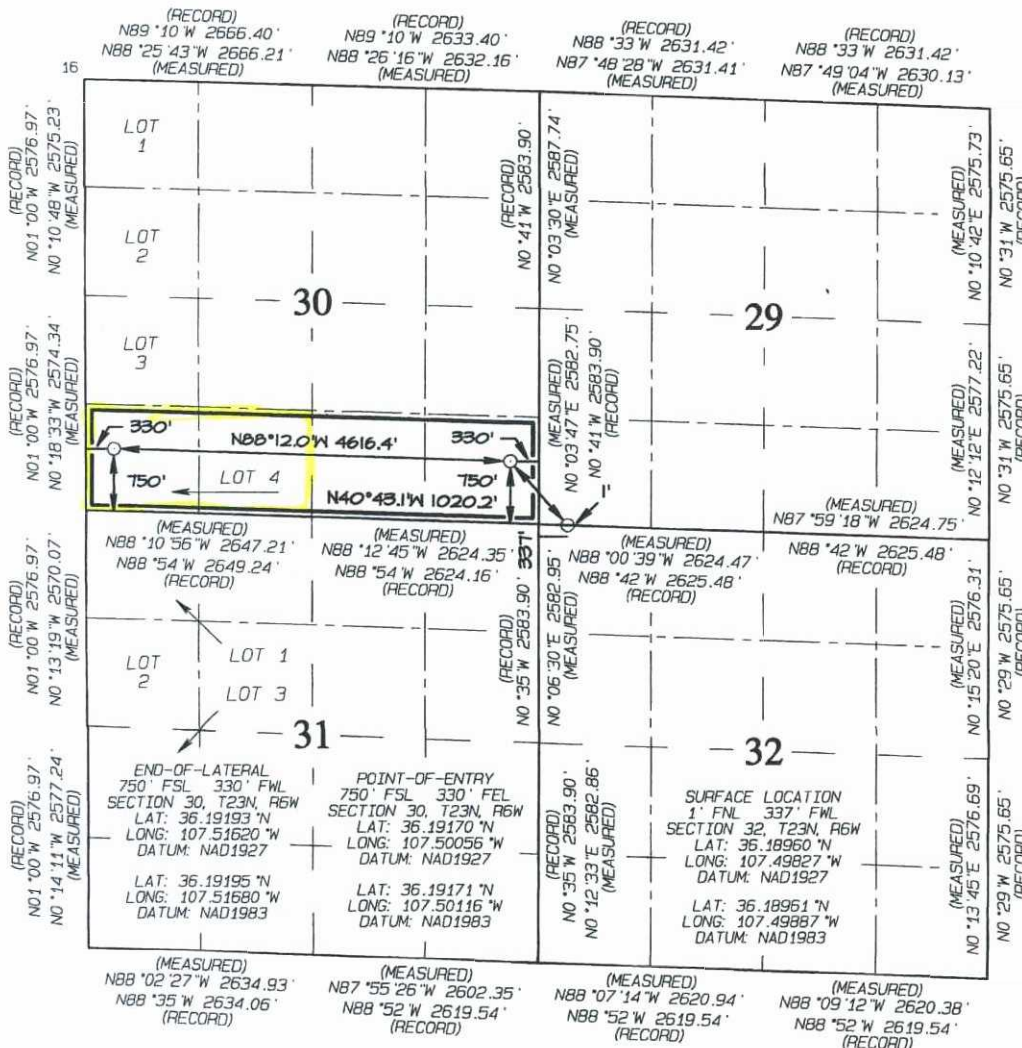
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	32	23N	6W	1	1	NORTH	337	WEST	SANDOVAL

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	30	23N	6W	4	750	SOUTH	330	WEST	SANDOVAL

¹² Dedicated Acres 160.79 Acres S2SW SEC 30 LYBROOK GALLUP/S2SE SEC 30 BASIN MANCOS	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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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



¹⁷ 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 unleased 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 heretofore entered by the division.

Signature: Holly Hill Date: 10/15/13
Printed Name: Holly Hill
E-mail Address: holly.hill@encana.com

¹⁸ 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 of Survey: JULY 24, 2013
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 D32-2306 01H
1' FNL & 337' FWL, Section 32, T23N, R6W, N.M.P.M., Sandoval County, NM

Latitude: 36.18961°N Longitude: 107.49887°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 50' to new access on right-hand side of existing roadway which continues for 1309' to Encana Lybrook D32-2306 01H location.

Lybrook D32-2306 01H
 SHL: NWNW Section 32, T23N, R6W
 1 FNL and 337 FWL
 BHL: SWSW Section 30, T23N, R6W
 750 FSL and 330 FWL
 Sandoval, New Mexico
 Lease Number: V-1399 & NMNM 117564

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.	1,514
Kirtland Sh.	1,740
Fruitland Coal	1,974
Pictured Cliffs Ss.	2,129
Lewis Sh.	2,213
Cliffhouse Ss.	2,981
Menefee Fn.	3,654
Point Lookout Ss.	4,397
Mancos Sh.	4,592
Mancos Silt	5,153
Gallup Fn.	5,405

The referenced surface elevation is 7,247', KB 7,263'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,974
Oil/Gas	Pictured Cliffs Ss.	2,129
Oil/Gas	Cliffhouse Ss.	2,981
Gas	Menefee Fn.	3,654
Oil/Gas	Point Lookout Ss.	4,397
Oil/Gas	Mancos Sh.	4,592
Oil/Gas	Mancos Silt	5,153
Oil/Gas	Gallup Fn.	5,405

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 D32-2306 01H

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1 FNL and 337 FWL

BHL: SWSW Section 30, T23N, R6W
750 FSL and 330 FWL

Sandoval, New Mexico

Lease Number: V-1399 & NMNM 117564

- 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'-6315'MD	8 3/4"	7"	26#	J55, LTC New
Production Liner	6115'-11028'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.

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 Sandoval, New Mexico
 Lease Number: V-1399 & NMNM 117564

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 16 ppg	Surface	None
Surface	500'	178sk	Type III Cement + 1% CaCl + 0.25lb/sk Cello Flake + 0.2% FL, 16ppg, 1.38cuft/sk	Surface	1 per joint on bottom 3 joints
Intermediate	6315'MD	30% open hole excess Stage 1 Lead: 266sks Stage 1 Tail: 182sks Stage 2 Lead: 193sks	Lead (Stages 1 and 2): PremLite + 3% CaCl + 0.25lb/sk CelloFlake + 5lb/sk LCM, 12.1ppg 2.13cuft/sk Tail (Stage 1): Type III Cmt + 1% CaCl + 0.25lb/sk Cello Flake 14.5ppg 1.38cuft/sk	Surface	1 per joint for bottom 3 joints, 1 every 3 joints for remaining joints
Production Liner*	6115'-11028'	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 4968'. Directional plans are attached.

Lybrook D32-2306 01H
 SHL: NWNW Section 32, T23N, R6W
 1 FNL and 337 FWL
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 750 FSL and 330 FWL
 Sandoval, New Mexico
 Lease Number: V-1399 & NMNM 117564

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5600'/11028'	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- 5623'TVD/6315'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"	6315'-11028'	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

8. ABNORMAL PRESSURES & HYDROGEN SULFIDE

The anticipated bottom hole pressure is +/- 2632 psi based on a 9.0 ppg at 5624' TVD of the landing point of the horizontal lateral. No abnormal pressure or temperatures are anticipated.

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750 FSL and 330 FWL
Sandoval, New Mexico
Lease Number: V-1399 & NMNM 117564

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 July 10, 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.

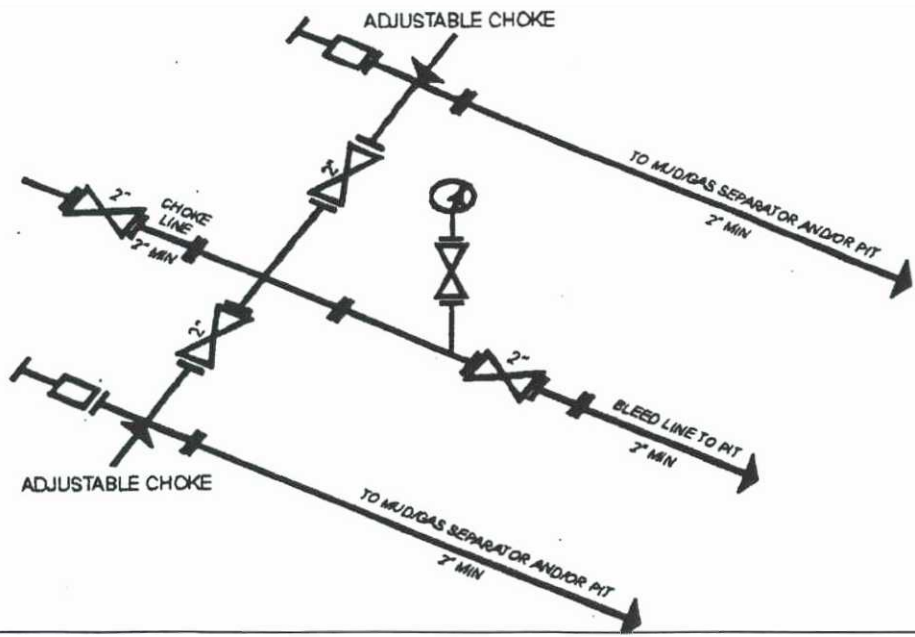
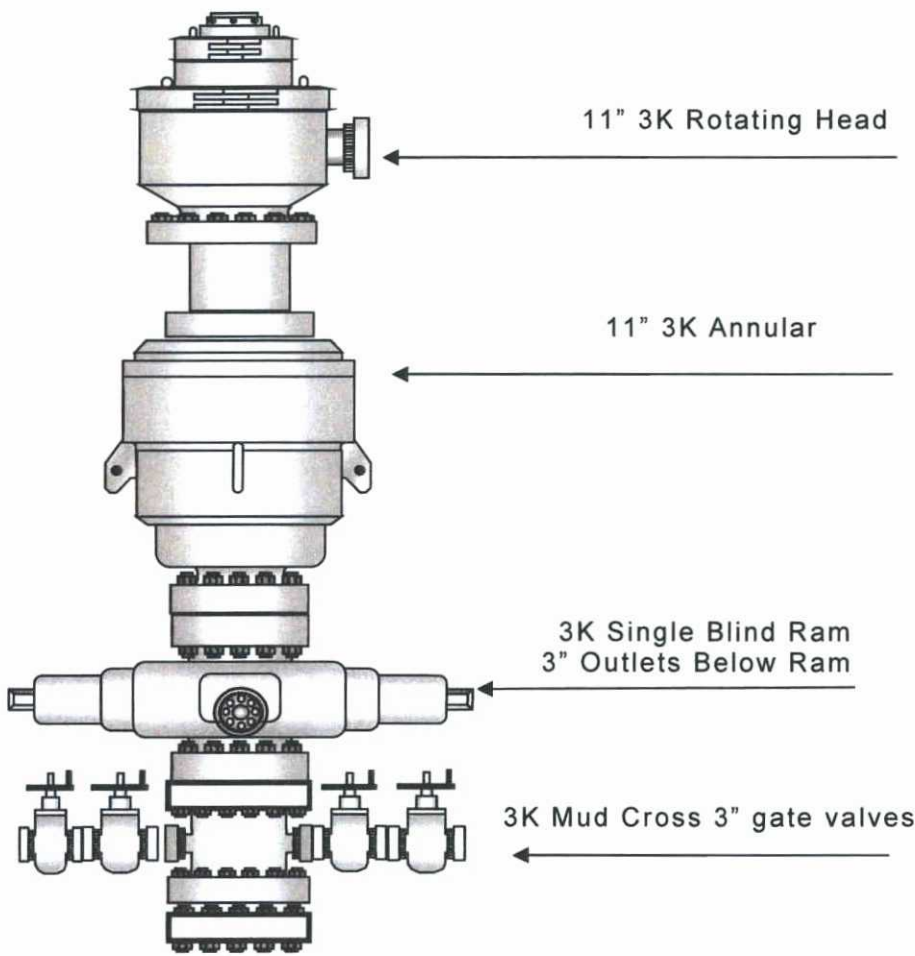
It is anticipated that the drilling of this well will take approximately 25 days.

WELLHEAD BLOWOUT CONTROL SYSTEM

encana

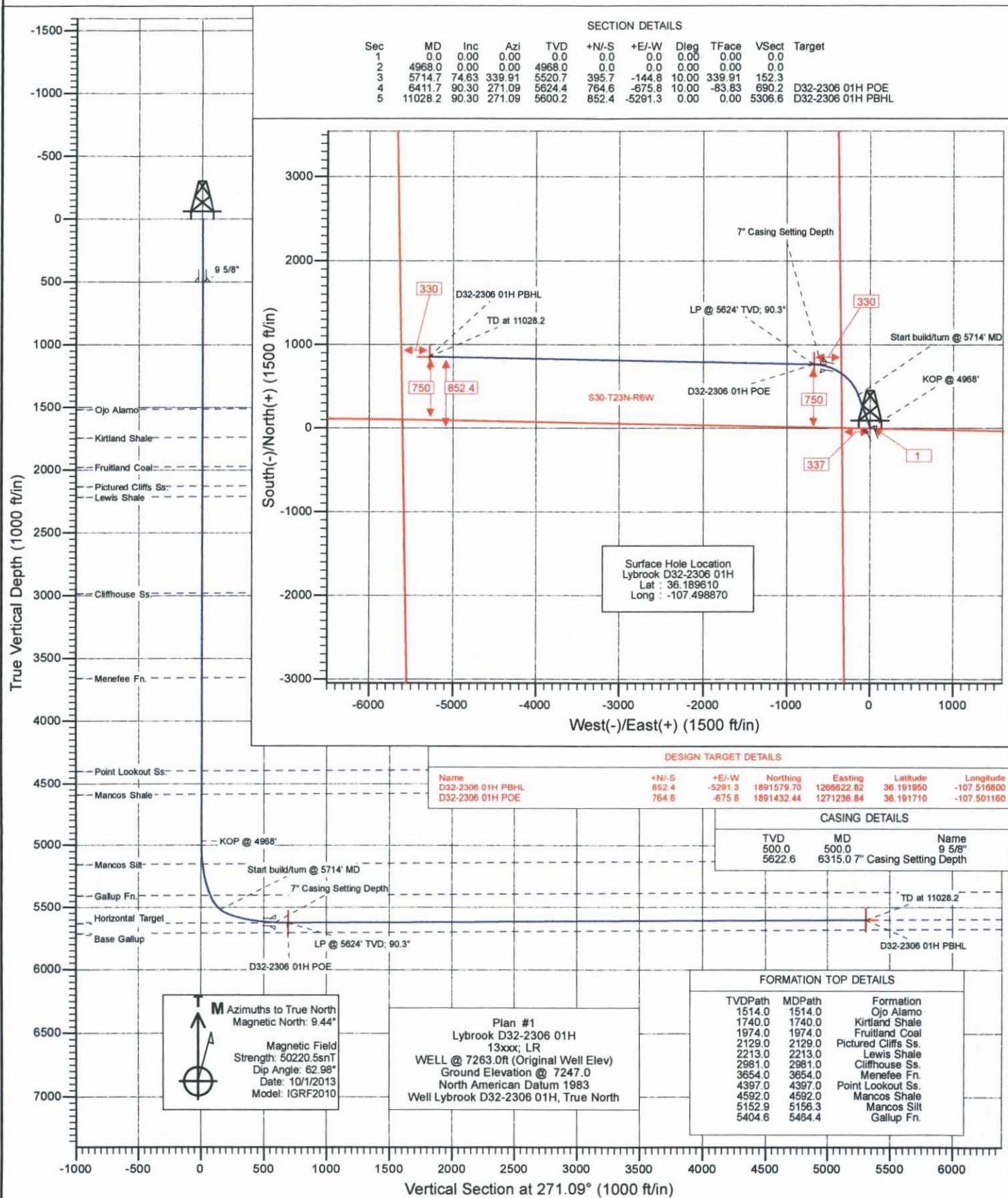
Well name and number:

Lybrook D32-2306 01H





Project: Sandoval County, NM
Site: Lybrook
Well: Lybrook D32-2306 01H
Wellbore: Hz
Design: Plan #1



Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook D32-2306 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 7263.0ft (Original Well Elev)
Project:	Sandoval County, NM	MD Reference:	WELL @ 7263.0ft (Original Well Elev)
Site:	Lybrook	North Reference:	True
Well:	Lybrook D32-2306 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #1		

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

Well	Lybrook D32-2306 01H					
Well Position	+N/-S	0.0 ft	Northing:	1,890,659.24 ft	Latitude:	36.189610
	+E/-W	0.0 ft	Easting:	1,271,902.75 ft	Longitude:	-107.498870
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	7,247.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/1/2013	9.44	62.98	50,220

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	271.09

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(°/100ft)	(°/100ft)	(°/100ft)	(°)	
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,968.0	0.00	0.00	4,968.0	0.0	0.0	0.00	0.00	0.00	0.00	
5,714.7	74.63	339.91	5,520.7	395.7	-144.8	10.00	10.00	0.00	339.91	
6,411.7	90.30	271.09	5,624.4	764.6	-675.8	10.00	2.25	-9.87	-83.83	D32-2306 01H POE
11,028.2	90.30	271.09	5,600.2	852.4	-5,291.3	0.00	0.00	0.00	0.00	D32-2306 01H PBHL

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: Lybrook
 Well: Lybrook D32-2306 01H
 Wellbore: Hz
 Design: Plan #1

Local Co-ordinate Reference:
 TVD Reference:
 MD Reference:
 North Reference:
 Survey Calculation Method:

Well Lybrook D32-2306 01H
 WELL @ 7263.0ft (Original Well Elev)
 WELL @ 7263.0ft (Original Well Elev)
 True
 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	
1,514.0	0.00	0.00	1,514.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	
1,740.0	0.00	0.00	1,740.0	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	
1,974.0	0.00	0.00	1,974.0	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	
2,129.0	0.00	0.00	2,129.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs Ss.
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	
2,213.0	0.00	0.00	2,213.0	0.0	0.0	0.0	0.00	0.00	Lewis Shale
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	
2,981.0	0.00	0.00	2,981.0	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	
3,654.0	0.00	0.00	3,654.0	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	
4,397.0	0.00	0.00	4,397.0	0.0	0.0	0.0	0.00	0.00	Point Lookout Ss.

Planning Report

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Wellbore: Hz
Design: Plan #1

Local Co-ordinate Reference: Well Lybrook D32-2306 01H
TVD Reference: WELL @ 7263.0ft (Original Well Elev)
MD Reference: WELL @ 7263.0ft (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	
4,592.0	0.00	0.00	4,592.0	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	
4,968.0	0.00	0.00	4,968.0	0.0	0.0	0.0	0.00	0.00	KOP @ 4968'
5,000.0	3.20	339.91	5,000.0	0.8	-0.3	0.3	10.00	10.00	
5,100.0	13.19	339.91	5,098.8	14.2	-5.2	5.5	10.00	10.00	
5,156.3	18.82	339.91	5,152.9	28.8	-10.5	11.1	10.00	10.00	Mancos Silt
5,200.0	23.19	339.91	5,193.7	43.5	-15.9	16.7	10.00	10.00	
5,300.0	33.18	339.91	5,281.7	87.8	-32.1	33.8	10.00	10.00	
5,400.0	43.18	339.91	5,360.3	145.8	-53.3	56.1	10.00	10.00	
5,464.4	49.61	339.91	5,404.6	189.5	-69.3	72.9	10.00	10.00	Gallup Fn.
5,500.0	53.17	339.91	5,426.9	215.7	-78.9	83.0	10.00	10.00	
5,600.0	63.17	339.91	5,479.5	295.4	-108.1	113.7	10.00	10.00	
5,700.0	73.16	339.91	5,516.7	382.4	-139.9	147.2	10.00	10.00	
5,714.7	74.63	339.91	5,520.7	395.7	-144.8	152.3	10.00	10.00	Start build/turn @ 5714' MD
5,800.0	75.72	331.15	5,542.6	470.6	-178.9	187.8	10.00	1.27	
5,900.0	77.39	321.02	5,565.9	551.2	-233.1	243.5	10.00	1.67	
6,000.0	79.44	311.03	5,586.1	621.6	-301.0	312.8	10.00	2.05	
6,100.0	81.79	301.18	5,602.4	679.6	-380.7	393.5	10.00	2.36	
6,200.0	84.38	291.45	5,614.5	723.6	-469.6	483.2	10.00	2.59	
6,300.0	87.14	281.81	5,621.9	752.0	-565.0	579.2	10.00	2.75	
6,315.0	87.56	280.37	5,622.6	754.9	-579.7	594.0	10.00	2.81	7" Casing Setting Depth
6,400.0	89.97	272.21	5,624.4	764.2	-664.1	678.5	10.00	2.84	
6,411.7	90.30	271.09	5,624.4	764.6	-675.8	690.2	10.00	2.84	LP @ 5624' TVD; 90.3°
6,500.0	90.30	271.09	5,623.9	766.2	-764.1	778.5	0.00	0.00	
6,600.0	90.30	271.09	5,623.4	768.1	-864.0	878.5	0.00	0.00	
6,700.0	90.30	271.09	5,622.9	770.0	-964.0	978.5	0.00	0.00	
6,800.0	90.30	271.09	5,622.3	771.9	-1,064.0	1,078.5	0.00	0.00	
6,900.0	90.30	271.09	5,621.8	773.8	-1,164.0	1,178.5	0.00	0.00	
7,000.0	90.30	271.09	5,621.3	775.8	-1,264.0	1,278.5	0.00	0.00	
7,100.0	90.30	271.09	5,620.8	777.7	-1,363.9	1,378.5	0.00	0.00	
7,200.0	90.30	271.09	5,620.3	779.6	-1,463.9	1,478.5	0.00	0.00	
7,300.0	90.30	271.09	5,619.7	781.5	-1,563.9	1,578.5	0.00	0.00	
7,400.0	90.30	271.09	5,619.2	783.4	-1,663.9	1,678.5	0.00	0.00	
7,500.0	90.30	271.09	5,618.7	785.3	-1,763.9	1,778.5	0.00	0.00	
7,600.0	90.30	271.09	5,618.2	787.2	-1,863.9	1,878.5	0.00	0.00	
7,700.0	90.30	271.09	5,617.6	789.1	-1,963.8	1,978.5	0.00	0.00	
7,800.0	90.30	271.09	5,617.1	791.0	-2,063.8	2,078.5	0.00	0.00	
7,900.0	90.30	271.09	5,616.6	792.9	-2,163.8	2,178.5	0.00	0.00	
8,000.0	90.30	271.09	5,616.1	794.8	-2,263.8	2,278.5	0.00	0.00	
8,100.0	90.30	271.09	5,615.5	796.7	-2,363.8	2,378.5	0.00	0.00	
8,200.0	90.30	271.09	5,615.0	798.6	-2,463.7	2,478.5	0.00	0.00	
8,300.0	90.30	271.09	5,614.5	800.5	-2,563.7	2,578.5	0.00	0.00	
8,400.0	90.30	271.09	5,614.0	802.4	-2,663.7	2,678.5	0.00	0.00	
8,500.0	90.30	271.09	5,613.4	804.3	-2,763.7	2,778.5	0.00	0.00	
8,600.0	90.30	271.09	5,612.9	806.2	-2,863.7	2,878.5	0.00	0.00	
8,700.0	90.30	271.09	5,612.4	808.1	-2,963.6	2,978.5	0.00	0.00	
8,800.0	90.30	271.09	5,611.9	810.0	-3,063.6	3,078.5	0.00	0.00	

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 Design: Plan #1

Local Co-ordinate Reference: Well Lybrook D32-2306 01H
 TVD Reference: WELL @ 7263.0ft (Original Well Elev)
 MD Reference: WELL @ 7263.0ft (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	90.30	271.09	5,611.3	811.9	-3,163.6	3,178.5	0.00	0.00	
9,000.0	90.30	271.09	5,610.8	813.8	-3,263.6	3,278.5	0.00	0.00	
9,100.0	90.30	271.09	5,610.3	815.7	-3,363.6	3,378.5	0.00	0.00	
9,200.0	90.30	271.09	5,609.8	817.6	-3,463.5	3,478.5	0.00	0.00	
9,300.0	90.30	271.09	5,609.3	819.5	-3,563.5	3,578.5	0.00	0.00	
9,400.0	90.30	271.09	5,608.7	821.4	-3,663.5	3,678.5	0.00	0.00	
9,500.0	90.30	271.09	5,608.2	823.3	-3,763.5	3,778.5	0.00	0.00	
9,600.0	90.30	271.09	5,607.7	825.2	-3,863.5	3,878.5	0.00	0.00	
9,700.0	90.30	271.09	5,607.2	827.1	-3,963.4	3,978.5	0.00	0.00	
9,800.0	90.30	271.09	5,606.6	829.0	-4,063.4	4,078.5	0.00	0.00	
9,900.0	90.30	271.09	5,606.1	830.9	-4,163.4	4,178.5	0.00	0.00	
10,000.0	90.30	271.09	5,605.6	832.8	-4,263.4	4,278.5	0.00	0.00	
10,100.0	90.30	271.09	5,605.1	834.7	-4,363.4	4,378.5	0.00	0.00	
10,200.0	90.30	271.09	5,604.5	836.7	-4,463.3	4,478.5	0.00	0.00	
10,300.0	90.30	271.09	5,604.0	838.6	-4,563.3	4,578.5	0.00	0.00	
10,400.0	90.30	271.09	5,603.5	840.5	-4,663.3	4,678.4	0.00	0.00	
10,500.0	90.30	271.09	5,603.0	842.4	-4,763.3	4,778.4	0.00	0.00	
10,600.0	90.30	271.09	5,602.4	844.3	-4,863.3	4,878.4	0.00	0.00	
10,700.0	90.30	271.09	5,601.9	846.2	-4,963.2	4,978.4	0.00	0.00	
10,800.0	90.30	271.09	5,601.4	848.1	-5,063.2	5,078.4	0.00	0.00	
10,900.0	90.30	271.09	5,600.9	850.0	-5,163.2	5,178.4	0.00	0.00	
11,000.0	90.30	271.09	5,600.3	851.9	-5,263.2	5,278.4	0.00	0.00	
11,028.2	90.30	271.09	5,600.2	852.4	-5,291.3	5,306.6	0.00	0.00	TD at 11028.2

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
D32-2306 01H PBHL - plan hits target center - Point	0.00	0.00	5,600.2	852.4	-5,291.3	1,891,579.70	1,266,622.82	36.191950	-107.516800
D32-2306 01H POE - plan hits target center - Point	0.00	0.00	5,624.4	764.6	-675.8	1,891,432.44	1,271,236.84	36.191710	-107.501160

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
6,315.0	5,622.6	7" Casing Setting Depth	0.000	0.000

Planning Report

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Wellbore: Hz
Design: Plan #1

Local Co-ordinate Reference: Well Lybrook D32-2306 01H
TVD Reference: WELL @ 7263.0ft (Original Well Elev)
MD Reference: WELL @ 7263.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,514.0	1,514.0	Ojo Alamo		-0.30	271.09
1,740.0	1,740.0	Kirtland Shale		-0.30	271.09
1,974.0	1,974.0	Fruitland Coal		-0.30	271.09
2,129.0	2,129.0	Pictured Cliffs Ss.		-0.30	271.09
2,213.0	2,213.0	Lewis Shale		-0.30	271.09
2,981.0	2,981.0	Cliffhouse Ss.		-0.30	271.09
3,654.0	3,654.0	Menefee Fn.		-0.30	271.09
4,397.0	4,397.0	Point Lookout Ss.		-0.30	271.09
4,592.0	4,592.0	Mancos Shale		-0.30	271.09
5,156.3	5,153.0	Mancos Silt		-0.30	271.09
5,464.4	5,405.0	Gallup Fn.		-0.30	271.09

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,968.0	4,968.0	0.0	0.0	KOP @ 4968'
5,714.7	5,520.7	395.7	-144.8	Start build/turn @ 5714' MD
6,411.7	5,624.4	764.6	-675.8	LP @ 5624' TVD; 90.3°
11,028.2	5,600.2	852.4	-5,291.3	TD at 11028.2

Lybrook D32-2306 01H

SHL: NWNW Section 32, T23N, R6W
1 FNL and 337 FWL

BHL: SWSW Section 30, T23N, R6W
750 FSL and 330 FWL

Sandoval, New Mexico

Lease Number: V-1399 & NMNM 117564

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 11 feet on the south corner (corner 3) and the maximum fill will be approximately 11 feet on the east side midline (corner 1).

4. As determined during the onsite on September 12, 2013, the following best management practices will be implemented:
 - a. The southern corner (corner 3) of the well pad will be slightly rounded.
 - b. Water will be diverted around the pad and silt traps installed as needed upon interim reclamation.
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 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 1,478.2 foot, up to 6-inch outside diameter, buried, steel well connect pipeline that was submitted to the BLM concurrently with the APD.

7. METHODS FOR HANDLING WASTE

A. Cuttings

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.