

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: 2-5-15

Well information;

Operator Encana, Well Name and Number Lybrook m23 2306 #1H

API# 30-043-21266, Section 23, Township 23 N/S, 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
- ☒ 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.

NMOCD Approved by Signature

6-22-2015
Date KE

JUN 15 2015

RECEIVED

Form 3160-3
(March 2012)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

5. Lease Serial No.

NMNM 117564

6. If Indian, Allottee or Tribe Name
N/A7. If Unit or CA Agreement, Name and No.
N/A8. Lease Name and Well No.
Lybrook M23-2306 01H

9. API Well No.

30-043-21266

10. Field and Pool, or Exploratory
COUNSELORS GALLUP-DAKOTA11. Sec., T. R. M. or Blk. and Survey or Area
Section 23, T23N, R6W NMPM

Sec 27, T23N R6W

12. County or Parish
Sandoval13. State
NM1a. Type of work: ☒ DRILL☐ REENTER1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other☒ Single Zone ☐ Multiple Zone

2. Name of Operator Encana Oil & Gas (USA) Inc.

3a. Address 370 17th Street, Suite 1700
Denver, CO 802023b. Phone No. (include area code)
720-876-3740

4. Location of Well (Report location clearly and in accordance with any State requirements.)*

At surface M 660' FSL and 517' FWL, Section 23, T23N, R6W SWSW

At proposed prod. zone D 470' FNL and 330' FWL, Section 27, T23N, R6W NWNW

14. Distance in miles and direction from nearest town or post office*

+/-56.8 miles South from the intersection of US HWY 550 & HWY 64 in Bloomfield, NM

15. Distance from proposed*
location to nearest
property or lease line, ft. BHL is 330' FWL, Section 27,
T23N, R6W
(Also to nearest drig. unit line, if any)16. No. of acres in lease
NMNM 117564- 1283.52
acres 1323.5217. Spacing Unit dedicated to this well
320 Acres - N/2 Section 27, T23N, R6W18. Distance from proposed location*
to nearest well, drilling, completed,
applied for, on this lease, ft. SHL is +/- 30 W of Gallo
Canyon M23-2306 02H19. Proposed Depth
5,549' TVD; 10,833' MD20. BLM/BIA Bond No. on file
COB-00023521. Elevations (Show whether DF, KDB, RT, GL, etc.)
6,992' GL; 7,008' KB22. Approximate date work will start*
07/01/201523. Estimated duration
20 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

Rosalie Thim

Name (Printed Typed)

Rosalie Thim

Date

02/05/2015

Title

Regulatory Analyst

Approved by (Signature)

D. Mankes

Name (Printed Typed)

Office

FFO

Date

6/10/15

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.BLM'S APPROVAL OR ACCEPTANCE OF THIS
AC (Continued on page 2) LEASE THE LESSEE AND
OPERATOR FROM OIL AND GAS AND OTHER
AUTHORIZATION REQUIRED FOR OPERATIONS
ON FEDERAL AND INDIAN LANDS

*(Instructions on page 2)

NMCDV

This action is subject to
technical and procedural review
pursuant to 43 CFR 3165.3 and
appeal pursuant to 43 CFR 3165.4DRILLING OPERATIONS AUTHORIZED
ARE SUBJECT TO COMPLIANCE WITH
ATTACHED "GENERAL REQUIREMENTS"

DISTRICT I

1625 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II

811 S. First St., Artesia, N.M. 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III

1000 Rio Brazos Rd., Aztec, N.M. 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV

1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 478-3460 Fax: (505) 478-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised August 1, 2011

OIL CONSERVATION DIVISION

1220 South St. Francis Dr.
Santa Fe, NM 87505

Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-043-21266	² Pool Code 13379	³ Pool Name COUNSELORS GALLUP-DAKOTA
⁴ Property Code 314992	⁵ Property Name LYBROOK M23-2306	⁶ Well Number 01H
⁷ OGRID No. 282327	⁸ Operator Name ENCANA OIL & GAS (USA) INC.	⁹ Elevation 6992.3

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
M	23	23N	6W		660'	SOUTH	517'	WEST	SANDOVAL

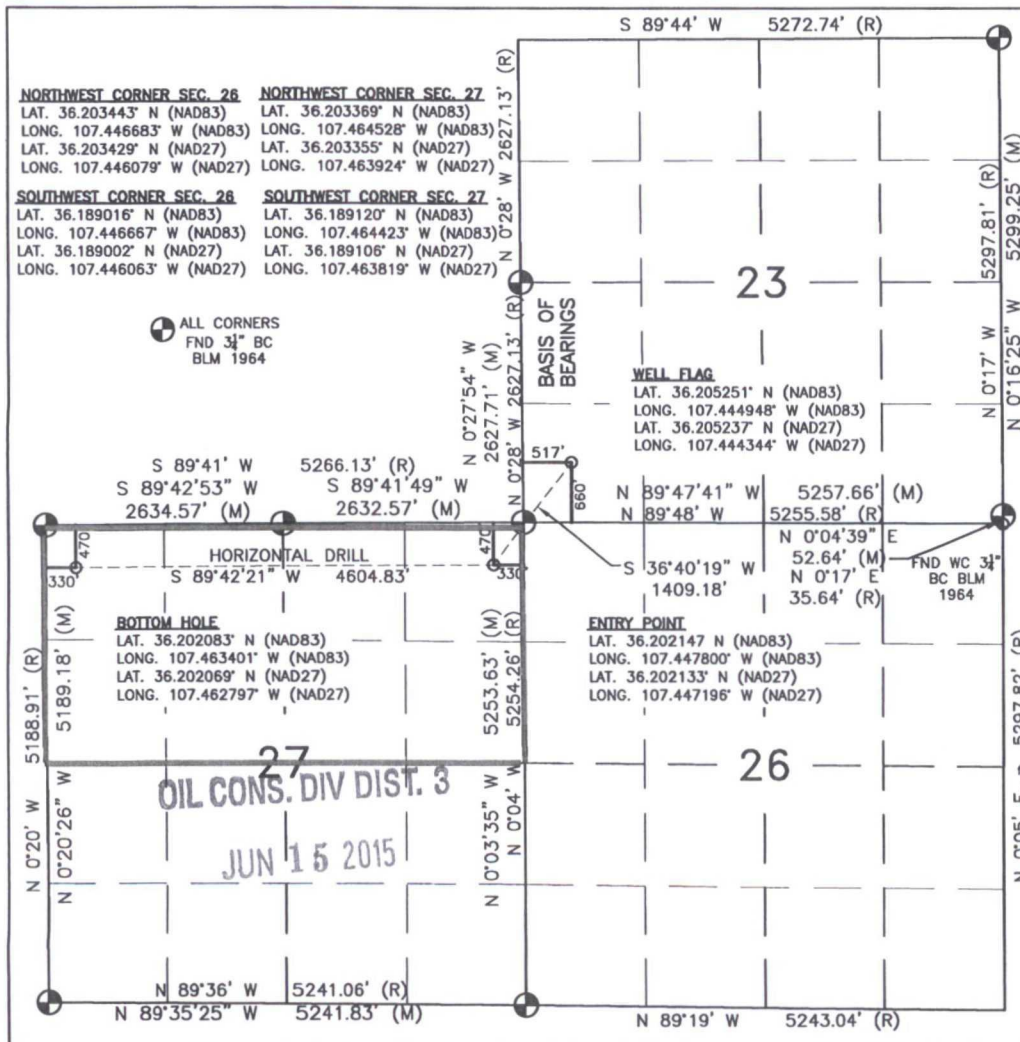
¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	27	23N	6W		470'	NORTH	330'	WEST	SANDOVAL

¹² Dedicated Acres 320.00 ACRES - N/2 SEC. 27	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

16

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.

Rosalie Thim 02/05/15
Signature Date

Rosalie Thim
Printed Name

rosalie.thim@encana.com
E-mail Address

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.

MARCH 12, 2014

Date of Survey

Signature and Seal of Professional Surveyor:

David Russell
DAVID R. RUSSELL
REGISTERED PROFESSIONAL LAND SURVEYOR
10201
Certificate Number 10201

Lybrook M23-2306 01H

SHL: 660' FSL, 517' FWL Sec 23 T23N R06W

BHL: 470' FNL, 330' FWL Sec 27 T23N R06W

Sandoval, New Mexico

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
San Jose Fn.	n/a
Nacimiento Fn.	surface
Ojo Alamo Ss.	1,509
Kirtland Shale	1,623
Fruitland Coal	1,795
Pictured Cliffs Ss.	2,054
Lewis Shale	2,175
Cliffhouse Ss.	2,863
Menefee Fn.	3,573
Point Lookout Ss.	4,281
Mancos Shale	4,479
Mancos Silt	5,065
Gallup Fn.	5,312
Base Gallup	5,624

The referenced surface elevation is 6992', KB 7008'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,795
Oil/Gas	Pictured Cliffs Ss.	2,054
Oil/Gas	Cliffhouse Ss.	2,863
Gas	Menefee Fn.	3,573
Oil/Gas	Point Lookout Ss.	4,281
Oil/Gas	Mancos Shale	4,479
Oil/Gas	Mancos Silt	5,065
Oil/Gas	Gallup Fn.	5,312

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

Lybrook M23-2306 01H

SHL: 660' FSL, 517' FWL Sec 23 T23N R06W

BHL: 470' FNL, 330' FWL Sec 27 T23N R06W

Sandoval, New Mexico

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.
- 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 (MD)	Hole Size	Csg Size	Weight	Grade
Conductor	0'-60'	26"	16"	42.09#	
Surface	0'-500'	12 1/4"	9 5/8"	36#	J55, STC New
Intermediate	0'-5735'	8 3/4"	7"	26#	J55, LTC New
Production Liner	5635'-10833'	6 1/8"	4 1/2"	11.6#	B80*, LTC New

Casing String				Casing Strength Properties			Minimum Design Factors		
Size	Weight (ppf)	Grade	Connection	Collapse (psi)	Burst (psi)	Tensile (1000lbs)	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
4.5"	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 M23-2306 01H**SHL: 660' FSL, 517' FWL Sec 23 T23N R06W****BHL: 470' FNL, 330' FWL Sec 27 T23N R06W****Sandoval, New Mexico**

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

Casing	Depth (MD)	Cement Volume (sacks)	Cement Type & Yield	Designed TOC	Centralizers
Conductor	0'-60'	100 sks	Type I Neat 16 ppg	Surface	None
Surface	0'-500'	228 sks	Type III Cement + 1% bwoc Calcium Chloride + 0.25 lbs/sack Cello Flake + 0.2% bwoc FL-52A + 58.9% Fresh Water	Surface	1 per joint on bottom 3 joints
Intermediate	0'-5735'	100% open hole excess Stage 1 Lead: 535 sks Stage 1 Tail: 406 sks	Lead: PremLite + 3% CaCl + 0.25lb/sk CelloFlake + 5lb/sk LCM, 12.1ppg 2.13cuft/sk Tail: Type III Cmt + 1% CaCl + 0.25lb/sk Cello Flake 14.5ppg 1.38cuft/sk	Surface	1 every 3 joints through water bearing zones
Production Liner	5635'-10833'	50% OH excess Stage 1 Blend Total: 294sks	Blend: Premium Lite High Strength FM + 0.7% bwoc R-3 + 3% bwow Potassium Chloride + 0.25lbs/sack Cello Flake + 0.5% bwoc CD-32 + 1.15% bwoc FL- 52A + 60 lbs/sack Calcium Carbonate + 124.4% Fresh Water. Yield 2.63 cuft/sk	Liner Hanger	N/A

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 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 2500'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5549'/10833'	Gallup

Lybrook M23-2306 01H

SHL: 660' FSL, 517' FWL Sec 23 T23N R06W

BHL: 470' FNL, 330' FWL Sec 27 T23N R06W

Sandoval, New Mexico

6. DRILLING FLUIDS PROGRAM

a) Surface through Intermediate Casing Point:

Hole Size (in)	Depth (TVD/MD)	Mud Type	Density (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
30"	0-60'/60'	Fresh Water	8.3-9.2	38-100	4-28
12 1/4"	0'-500'/500'	Fresh Water	8.3-10	60-70	NC
8 3/4"	500'/500'-5448'/5735'	Fresh Water LSND	8.3-10	40-50	8-10

b) Intermediate Casing Point to TD:

Hole Size (in)	Depth (TVD/MD)	Mud Type	Density (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
6 1/8"	5448'/5735'- 5549'/10833'	Fresh Water LSND	8.3-10	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. 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, & LOGGING

- a) Drill Stem Testing - None anticipated.
- b) Coring - None anticipated.
- c) Mudd 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 +/- 2606 psi based on a 9.0 ppg at 5568' TVD of the horizontal lateral target. 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 July 1, 2015. 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 20 days.

LOC: 660' FSL, 517' FWL Sec 23 T23N R06W County: Sandoval WELL: Lybrook M23-2306 01H			Encana Natural Gas WELL SUMMARY				ENG: Michael Sanch 2-3-15 RIG: Unassigned GLE: 6992 RKBE: 7008		
MWD LWD	OPEN HOLE LOGGING	FORM	DEPTH TVDMD			HOLE SIZE	CASING SPECS	MW MUD TYPE	DEVIATION INFORMATION
			60 0	60' 		26	16" 42.09# 100sx Type I Neat 16.0ppg cmt	Fresh wtr 8.3-9.2	
Multi-Well pad take survey every stand and run anti-collision report prior to spud	None	San Jose Fn. Nacimiento Fn. 9 5/8" Csg	surface 500	500.00		12 1/4	9 5/8" 36ppf J55 LTC TOC Surface with 100% OH Excess: 228 sks Type III Cement + 1% bwoc Calcium Chloride + 0.25 lbs/sack Cello Flake + 0.2% bwoc FL-52A + 58.9% Fresh Water.	Fresh wtr 8.3-10	Vertical <1°
Survey Every 60'-120", updating anticollision report after surveys. Stop operations and contact drilling engineer if separation factor approaches 1.5	No OH logs	Ojo Alamo Ss. Kirtland Shale	1,509 1,623			8 3/4	7" 26ppf J55 LTC TOC @ surface (100% OH excess - 70% Lead 30% Tail) Stage 1 Total: 942sks Stage 1 Lead: 535 sks Premium Lite FM + 3% CaCl2 + 0.25/sk Cello Flake + 5#/sk LCM-1 + 8% Bentonite + 0.4% FL-52A + 0.4% Sodium Metasilicate. Mixed at 12.1 ppg. Yield 2.13 cuft/sk. Stage 1 Tail: 406 sks Type III Cement + 1% CaCl2 + 0.25#/sk Cello Flake + 0.2% FL-52A. Mixed at 14.6 ppg. Yield 1.38 cuft/sk.	Fresh Wtr 8.3-10	Vertical <1°
		Fruitland Coal	1,795						
		Pictured Cliffs Ss. Lewis Shale	2,054 2,175						
		Cliffhouse Ss. Menefee Fn.	2,863 3,573						
Surveys every 30' through the curve	Mud logger onsite	Point Lookout Ss. Mancos Shale	4,281 4,479						
		KOP	2,500 2,500						
		Mancos Silt	5,065						
		Gallup Fn.	5,312						
		7" Csg	5,448	5,735'					
Surveys every stand to TD unless directed otherwise by Geologist	No OH Logs	Horizontal Target TD	5,568 5,549	10,833			100' overlap at liner top		Horz Inc/TVD 90.2deg/5568ft
		Base Gallup	5,624				5098' Drilled Lateral		
MWD Gamma Directional							4 1/2" 11.6ppf SB80 LTC TOC @ hanger (50% OH excess) Stage 1 Total: 294sks Stage 1 Blend: 294 sks Premium Lite High Strength FM + 0.7% bwoc R-3 + 3% bwow Potassium Chloride + 0.25lbs/sack Cello Flake + 0.5% bwoc CD-32 + 1.15% bwoc FL-52A + 60 lbs/sack Calcium Carbonate + 124.4% Fresh Water. Yield 2.63 cuft/sk.	WBM 8.3-10	

NOTES:

- 1) Drill with 26" bit to 60', set 16" 42.09ppf 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 2500', 8 3/4 inch holesize
- 5) Start curve at 10deg/100' build rate
- 6) Drill to csg point of 5735' MD
- 7) R&C 7" csg, circ cmt to surface
- 8) Land at ~55 deg, drill lateral to 10833' run 4 1/2 inch cemented liner

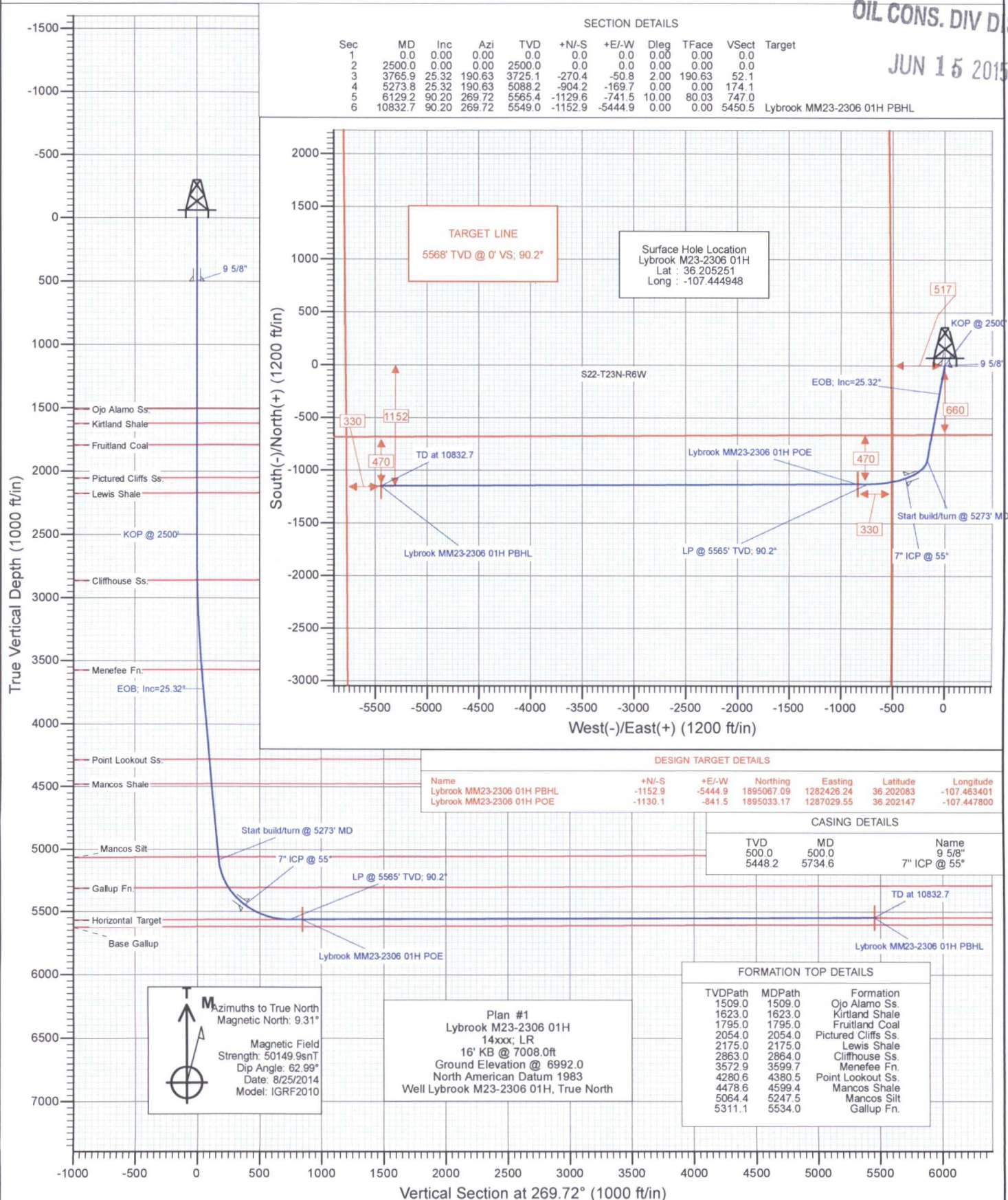


Project: Sandoval County, NM
 Site: S23-T23N-R6W
 Well: Lybrook M23-2306 01H
 Wellbore: HZ
 Design: Plan #1



OIL CONS. DIV DIST. 3

JUN 15 2015



Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook M23-2306 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	16' KB @ 7008.0ft
Project:	Sandoval County, NM	MD Reference:	16' KB @ 7008.0ft
Site:	S23-T23N-R6W	North Reference:	True
Well:	Lybrook M23-2306 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		S23-T23N-R6W			
Site Position:		Northing:	1,896,152.77 ft	Latitude:	36.205251
From:	Lat/Long	Easting:	1,287,884.94 ft	Longitude:	-107.444948
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-0.71 °

Well	Lybrook M23-2306 01H					
Well Position	+N/-S	0.0 ft	Northing:	1,896,152.77 ft	Latitude:	36.205251
	+E/-W	0.0 ft	Easting:	1,287,884.94 ft	Longitude:	-107.444948
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	6,992.0 ft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/25/2014	9.31	62.99	50,150

Design	Plan #1			
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	269.72

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	
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,765.9	25.32	190.63	3,725.1	-270.4	-50.8	2.00	2.00	0.00	190.63	
5,273.8	25.32	190.63	5,088.2	-904.2	-169.7	0.00	0.00	0.00	0.00	
6,129.2	90.20	269.72	5,565.4	-1,129.6	-741.5	10.00	7.59	9.25	80.03	
10,832.7	90.20	269.72	5,549.0	-1,152.9	-5,444.9	0.00	0.00	0.00	0.00	Lybrook MM23-2306 (

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook M23-2306 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	16' KB @ 7008.0ft
Project:	Sandoval County, NM	MD Reference:	16' KB @ 7008.0ft
Site:	S23-T23N-R6W	North Reference:	True
Well:	Lybrook M23-2306 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

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	
1,509.0	0.00	0.00	1,509.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo Ss.
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	
1,623.0	0.00	0.00	1,623.0	0.0	0.0	0.0	0.00	0.00	Kirtland Shale
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	
1,795.0	0.00	0.00	1,795.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
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	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	
2,054.0	0.00	0.00	2,054.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs Ss.
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	
2,175.0	0.00	0.00	2,175.0	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	KOP @ 2500'
2,600.0	2.00	190.63	2,600.0	-1.7	-0.3	0.3	2.00	2.00	
2,700.0	4.00	190.63	2,699.8	-6.9	-1.3	1.3	2.00	2.00	
2,800.0	6.00	190.63	2,799.5	-15.4	-2.9	3.0	2.00	2.00	
2,864.0	7.28	190.63	2,863.0	-22.7	-4.3	4.4	2.00	2.00	Cliffhouse Ss.
2,900.0	8.00	190.63	2,898.7	-27.4	-5.1	5.3	2.00	2.00	
3,000.0	10.00	190.63	2,997.5	-42.8	-8.0	8.2	2.00	2.00	
3,100.0	12.00	190.63	3,095.6	-61.5	-11.5	11.8	2.00	2.00	
3,200.0	14.00	190.63	3,193.1	-83.6	-15.7	16.1	2.00	2.00	
3,300.0	16.00	190.63	3,289.6	-109.1	-20.5	21.0	2.00	2.00	
3,400.0	18.00	190.63	3,385.3	-137.8	-25.9	26.5	2.00	2.00	
3,500.0	20.00	190.63	3,479.8	-169.8	-31.9	32.7	2.00	2.00	
3,599.7	21.99	190.63	3,572.9	-204.9	-38.5	39.5	2.00	2.00	Menefee Fn.
3,600.0	22.00	190.63	3,573.2	-205.0	-38.5	39.5	2.00	2.00	
3,700.0	24.00	190.63	3,665.2	-243.4	-45.7	46.9	2.00	2.00	
3,765.9	25.32	190.63	3,725.1	-270.4	-50.8	52.1	2.00	2.00	EOB; Inc=25.32°
3,800.0	25.32	190.63	3,755.9	-284.8	-53.5	54.8	0.00	0.00	
3,900.0	25.32	190.63	3,846.3	-326.8	-61.3	62.9	0.00	0.00	
4,000.0	25.32	190.63	3,936.7	-368.8	-69.2	71.0	0.00	0.00	
4,100.0	25.32	190.63	4,027.1	-410.9	-77.1	79.1	0.00	0.00	
4,200.0	25.32	190.63	4,117.5	-452.9	-85.0	87.2	0.00	0.00	
4,300.0	25.32	190.63	4,207.9	-494.9	-92.9	95.3	0.00	0.00	

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: S23-T23N-R6W
Well: Lybrook M23-2306 01H
Wellbore: HZ
Design: Plan #1

Local Co-ordinate Reference:
TVD Reference: 16' KB @ 7008.0ft
MD Reference: 16' KB @ 7008.0ft
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
4,380.5	25.32	190.63	4,280.6	-528.7	-99.2	101.8	0.00	0.00	Point Lookout Ss.
4,400.0	25.32	190.63	4,298.3	-536.9	-100.8	103.4	0.00	0.00	
4,500.0	25.32	190.63	4,388.7	-579.0	-108.7	111.5	0.00	0.00	
4,599.4	25.32	190.63	4,478.6	-620.8	-116.5	119.6	0.00	0.00	Mancos Shale
4,600.0	25.32	190.63	4,479.1	-621.0	-116.6	119.6	0.00	0.00	
4,700.0	25.32	190.63	4,569.5	-663.0	-124.5	127.7	0.00	0.00	
4,800.0	25.32	190.63	4,659.9	-705.1	-132.3	135.8	0.00	0.00	
4,900.0	25.32	190.63	4,750.3	-747.1	-140.2	143.9	0.00	0.00	
5,000.0	25.32	190.63	4,840.7	-789.1	-148.1	152.0	0.00	0.00	
5,100.0	25.32	190.63	4,931.1	-831.1	-156.0	160.1	0.00	0.00	
5,200.0	25.32	190.63	5,021.5	-873.2	-163.9	168.2	0.00	0.00	
5,247.5	25.32	190.63	5,064.4	-893.1	-167.6	172.0	0.00	0.00	Mancos Silt
5,273.8	25.32	190.63	5,088.2	-904.2	-169.7	174.1	0.00	0.00	Start build/turn @ 5273' MD
5,300.0	25.89	196.55	5,111.8	-915.2	-172.4	176.9	10.00	2.19	
5,400.0	30.01	216.12	5,200.3	-956.4	-193.4	198.1	10.00	4.12	
5,500.0	36.30	230.42	5,284.1	-995.6	-231.0	235.9	10.00	6.29	
5,534.0	38.76	234.29	5,311.1	-1,008.2	-247.5	252.4	10.00	7.22	Gallup Fn.
5,600.0	43.83	240.69	5,360.7	-1,031.5	-284.2	289.2	10.00	7.69	
5,700.0	52.05	248.39	5,427.7	-1,063.0	-351.2	356.4	10.00	8.22	
5,734.6	54.99	250.64	5,448.2	-1,072.8	-377.3	382.5	10.00	8.52	7" ICP @ 55°
5,800.0	60.66	254.50	5,483.1	-1,089.3	-430.1	435.4	10.00	8.67	
5,900.0	69.52	259.63	5,525.2	-1,109.4	-518.4	523.8	10.00	8.85	
6,000.0	78.50	264.20	5,552.7	-1,122.8	-613.4	618.9	10.00	8.99	
6,100.0	87.56	268.49	5,564.8	-1,129.1	-712.4	717.9	10.00	9.05	
6,129.2	90.20	269.72	5,565.4	-1,129.6	-741.5	747.0	10.00	9.07	LP @ 5565' TVD; 90.2°
6,200.0	90.20	269.72	5,565.1	-1,129.9	-812.3	817.9	0.00	0.00	
6,229.2	90.20	269.72	5,565.0	-1,130.1	-841.5	847.0	0.00	0.00	Lybrook MM23-2306 01H POE
6,300.0	90.20	269.72	5,564.8	-1,130.4	-912.3	917.9	0.00	0.00	
6,400.0	90.20	269.72	5,564.4	-1,130.9	-1,012.3	1,017.9	0.00	0.00	
6,500.0	90.20	269.72	5,564.1	-1,131.4	-1,112.3	1,117.9	0.00	0.00	
6,600.0	90.20	269.72	5,563.7	-1,131.9	-1,212.3	1,217.9	0.00	0.00	
6,700.0	90.20	269.72	5,563.4	-1,132.4	-1,312.3	1,317.9	0.00	0.00	
6,800.0	90.20	269.72	5,563.0	-1,132.9	-1,412.3	1,417.9	0.00	0.00	
6,900.0	90.20	269.72	5,562.7	-1,133.4	-1,512.3	1,517.9	0.00	0.00	
7,000.0	90.20	269.72	5,562.3	-1,133.9	-1,612.3	1,617.9	0.00	0.00	
7,100.0	90.20	269.72	5,562.0	-1,134.4	-1,712.3	1,717.9	0.00	0.00	
7,200.0	90.20	269.72	5,561.7	-1,134.9	-1,812.3	1,817.9	0.00	0.00	
7,300.0	90.20	269.72	5,561.3	-1,135.4	-1,912.3	1,917.9	0.00	0.00	
7,400.0	90.20	269.72	5,561.0	-1,135.9	-2,012.3	2,017.8	0.00	0.00	
7,500.0	90.20	269.72	5,560.6	-1,136.3	-2,112.3	2,117.8	0.00	0.00	
7,600.0	90.20	269.72	5,560.3	-1,136.8	-2,212.3	2,217.8	0.00	0.00	
7,700.0	90.20	269.72	5,559.9	-1,137.3	-2,312.3	2,317.8	0.00	0.00	
7,800.0	90.20	269.72	5,559.6	-1,137.8	-2,412.3	2,417.8	0.00	0.00	
7,900.0	90.20	269.72	5,559.2	-1,138.3	-2,512.3	2,517.8	0.00	0.00	
8,000.0	90.20	269.72	5,558.9	-1,138.8	-2,612.3	2,617.8	0.00	0.00	
8,100.0	90.20	269.72	5,558.5	-1,139.3	-2,712.3	2,717.8	0.00	0.00	
8,200.0	90.20	269.72	5,558.2	-1,139.8	-2,812.3	2,817.8	0.00	0.00	
8,300.0	90.20	269.72	5,557.8	-1,140.3	-2,912.3	2,917.8	0.00	0.00	
8,400.0	90.20	269.72	5,557.5	-1,140.8	-3,012.3	3,017.8	0.00	0.00	
8,500.0	90.20	269.72	5,557.1	-1,141.3	-3,112.3	3,117.8	0.00	0.00	
8,600.0	90.20	269.72	5,556.8	-1,141.8	-3,212.3	3,217.8	0.00	0.00	
8,700.0	90.20	269.72	5,556.4	-1,142.3	-3,312.3	3,317.8	0.00	0.00	

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: S23-T23N-R6W
Well: Lybrook M23-2306 01H
Wellbore: HZ
Design: Plan #1

Local Co-ordinate Reference: Well Lybrook M23-2306 01H
TVD Reference: 16' KB @ 7008.0ft
MD Reference: 16' KB @ 7008.0ft
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
8,800.0	90.20	269.72	5,556.1	-1,142.8	-3,412.3	3,417.8	0.00	0.00	
8,900.0	90.20	269.72	5,555.7	-1,143.3	-3,512.3	3,517.8	0.00	0.00	
9,000.0	90.20	269.72	5,555.4	-1,143.8	-3,612.3	3,617.8	0.00	0.00	
9,100.0	90.20	269.72	5,555.0	-1,144.3	-3,712.3	3,717.8	0.00	0.00	
9,200.0	90.20	269.72	5,554.7	-1,144.8	-3,812.3	3,817.8	0.00	0.00	
9,300.0	90.20	269.72	5,554.3	-1,145.3	-3,912.3	3,917.8	0.00	0.00	
9,400.0	90.20	269.72	5,554.0	-1,145.8	-4,012.3	4,017.8	0.00	0.00	
9,500.0	90.20	269.72	5,553.6	-1,146.3	-4,112.3	4,117.8	0.00	0.00	
9,600.0	90.20	269.72	5,553.3	-1,146.7	-4,212.3	4,217.8	0.00	0.00	
9,700.0	90.20	269.72	5,552.9	-1,147.2	-4,312.3	4,317.8	0.00	0.00	
9,800.0	90.20	269.72	5,552.6	-1,147.7	-4,412.3	4,417.8	0.00	0.00	
9,900.0	90.20	269.72	5,552.2	-1,148.2	-4,512.3	4,517.8	0.00	0.00	
10,000.0	90.20	269.72	5,551.9	-1,148.7	-4,612.3	4,617.8	0.00	0.00	
10,100.0	90.20	269.72	5,551.5	-1,149.2	-4,712.3	4,717.8	0.00	0.00	
10,200.0	90.20	269.72	5,551.2	-1,149.7	-4,812.3	4,817.8	0.00	0.00	
10,300.0	90.20	269.72	5,550.8	-1,150.2	-4,912.3	4,917.8	0.00	0.00	
10,400.0	90.20	269.72	5,550.5	-1,150.7	-5,012.3	5,017.8	0.00	0.00	
10,500.0	90.20	269.72	5,550.1	-1,151.2	-5,112.3	5,117.8	0.00	0.00	
10,600.0	90.20	269.72	5,549.8	-1,151.7	-5,212.3	5,217.8	0.00	0.00	
10,700.0	90.20	269.72	5,549.4	-1,152.2	-5,312.3	5,317.8	0.00	0.00	
10,800.0	90.20	269.72	5,549.1	-1,152.7	-5,412.3	5,417.8	0.00	0.00	
10,832.7	90.20	269.72	5,549.0	-1,152.9	-5,444.9	5,450.5	0.00	0.00	TD at 10832.7 - Lybrook MM23-2306 01H PBHI

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 MM23-2306 01H	0.00	0.00	5,565.0	-1,130.1	-841.5	1,895,033.17	1,287,029.55	36.202147	-107.447800
- plan hits target center									
- Point									
Lybrook MM23-2306 01H	0.00	0.00	5,549.0	-1,152.9	-5,444.9	1,895,067.09	1,282,426.24	36.202083	-107.463401
- plan hits target center									
- Point									
	500.0	500.0	9 5/8"					0.000	0.000
	5,734.6	5,448.2	7" ICP @ 55°					0.000	0.000

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook M23-2306 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	16' KB @ 7008.0ft
Project:	Sandoval County, NM	MD Reference:	16' KB @ 7008.0ft
Site:	S23-T23N-R6W	North Reference:	True
Well:	Lybrook M23-2306 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,509.0	1,509.0	Ojo Alamo Ss.		-0.20	269.72	
1,623.0	1,623.0	Kirtland Shale		-0.20	269.72	
1,795.0	1,795.0	Fruitland Coal		-0.20	269.72	
2,054.0	2,054.0	Pictured Cliffs Ss.		-0.20	269.72	
2,175.0	2,175.0	Lewis Shale		-0.20	269.72	
2,864.0	2,863.0	Cliffhouse Ss.		-0.20	269.72	
3,599.7	3,573.0	Menefee Fn.		-0.20	269.72	
4,380.5	4,281.0	Point Lookout Ss.		-0.20	269.72	
4,599.4	4,479.0	Mancos Shale		-0.20	269.72	
5,247.5	5,065.0	Mancos Silt		-0.20	269.72	
5,534.0	5,312.0	Gallup Fn.		-0.20	269.72	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
2,500.0	2,500.0	0.0	0.0	KOP @ 2500'	
3,765.9	3,725.1	-270.4	-50.8	EOB; Inc=25.32°	
5,273.8	5,088.2	-904.2	-169.7	Start build/turn @ 5273' MD	
6,129.2	5,565.4	-1,129.6	-741.5	LP @ 5565' TVD; 90.2°	
10,832.7	5,549.0	-1,152.9	-5,444.9	TD at 10832.7	

Lybrook M23-2306 01H

**SHL: SWSW Section 23, T23N, R6W
660 FSL and 517 FWL**

**BHL: NWNW Section 27, T23N, R6W
470 FNL and 330 FWL**

Sandoval County, New Mexico

Lease Number: NMNM 117564

5. Clean out pond near corner 3 for construction material for the roads.
 6. A 100' X 100' at STA 9+42.44 to STA 10+42.44 pond will be constructed for the Gallo Canyon Unit M24-2306 well pad.
 7. 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
1. See the Plan of Development submitted with the final Standard SF-299 Application for authorization to construct, operate, maintain and terminate a 1257 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.

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.

ENCANA OIL & GAS (USA) INC.

LYBROOK M23-2306 #01H

660' FSL & 517' FWL

LOCATED IN THE SW/4 SW/4 OF SECTION 23, T23N, R6W,
N.M.P.M.,
SANDOVAL COUNTY, NEW MEXICO

DIRECTIONS

- 1) FROM THE INTERSECTION OF HWY 64 & HWY 550 IN BLOOMFIELD, GO SOUTH ON HWY 550, 56.5 MILES (M.P. 95.1) .
- 2) TURN LEFT ONTO DIRT ROAD AND GO 0.3 MILES TO WHERE ACCESS IS STAKED ON LEFT SIDE OF ROAD.

WELL FLAG LOCATED AT LAT. 36.205251° N, LONG. 107.444948° W (NAD 83).



WELLHEAD BLOWOUT CONTROL SYSTEM

encana

Well Name and Number:
Lybrook M23-2306 01H

