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 3160-4 or 3160-5 form.

Operator Signature Date: March 22, 2013

Well information: 30-043-21137, Encana, Lybrook A01-2206 01H, NE 1, T22N, R6W

Conditions of Approval:

Hold C104 for Directional Survey & As Drilled Plat

JUN 21 2013

NMOCD Approved by Signature

Date

Form 3160-5
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

CONFIDENTIAL

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

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE – *Other instructions on page 2.*

MAR 25 2013

Farmington Field Office
Bureau of Land Management

1. Type of Well ☑ Oil Well ☐ Gas Well ☐ Other	5. Lease Serial No. NMNM 109385
	6. If Indian, Allottee or Tribe Name N/A
	7. If Unit of CA/Agreement, Name and/or No. N/A
	8. Well Name and No. Lybrook A01-2206 01H
2. Name of Operator Encana Oil & Gas (USA) Inc.	9. API Well No. ~~PENDING~~ 30-043-21137
3a. Address 370 17th Street, Suite 1700 Denver, CO 80202	3b. Phone No. *(include area code)* 720-876-5353
	10. Field and Pool or Exploratory Area Wildcat (Gallup)
4. Location of Well *(Footage, Sec., T.,R.,M., or Survey Description)* SHL: 1126' FNL and 546' FEL Sec 1, T22N, R6W BHL: 660' FNL and 330' FWL Sec 1, T22N, R6W	11. Country or Parish, State Sandoval, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☑ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other _____
	☑ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.)

Encana Oil & Gas (USA) Inc. (Encana) would like to revise the hole sizes, casing sizes, and cement plans for the Lybrook A01-2206 01H well. Encana would like to change the intermediate hole size from 8 1/2" to 8 3/4" and change the cementing program to accomidate the hole size changes. 10pt plan and wellbore diagram is also updated to reflect the most recent directional plan. Please see attached 10 point drilling plan, wellbore diagram, and directional plan. Drilling is estimated to commence on September 22, 2013.

RCVD JUN 17 '13
OIL CONS. DIV.
DIST. 3

14. I hereby certify that the foregoing is true and correct. Name *(Printed/Typed)* Amie Weis	Title Drilling Engineer
Signature Amie Weis	Date 3/22/2013

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by Matthew	Title AFM	Date 6/10/13
Conditions of approval, if any, are attached. Approval of this notice 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.	Office FFO	

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.

(Instructions on page 2)

NMOCD

LOC: Sec 1-T22N-R6W County: Sandoval WELL: Lybrook A01-2206 01H	Encana Natural Gas WELL SUMMARY	encana natural gas	ENG: J. Fox/ A. RIG: GLE: 6880 RKBE: 6893	3/22/13

MWD LWD	OPEN HOLE LOGGING	FORM	DEPTH TVD	DEPTH MD	HOLE SIZE	CASING SPECS	MW MUD TYPE	DEVIATION INFORMATION
			60	60'	30	**20" 94#** 100sx Type I Neat 48.8ppg 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	Ojo Alamo Kirtland Fruitland Coal Pictured Cliffs Ss Lewis Shale Cliffhouse Ss Menefee Fn Point Lookout Ss	1318 1457 1558 1840 1958 2680 3391 4086		8 3/4	**7" 26ppf J55 LTC** Stage tool @ 1890' TOC @ surface 30% OH excess: 568 sks total Stage 1 Lead: 238sks Stage 1 Tail: 164sks Stage 2 Lead: 167sks	Fresh Wtr 8.5-8.8	Vertical <1°
	Mud logger onsite	Mancos Sh **KICK OFF PT** Mancos Silt Top Mancos Silt Base Gallup Top	4293 4605 4855 5033 5128					KOP 4605 10 deg/100'
Surveys every 500' Gyro at CP MWD Gamma Directional	No OH Logs	horz target Base Gallup	**5327** **5369** 5438	**5596** **5852**	6 1/8	200' overlap at liner top 3771' Lateral **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	8.6-9.0 OBM Switch to OBM 8.6-9.0	.25deg updip 5342'TVD TD = 9623' MD

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 4605' , 8 3/4" hole size,
5) PU directional tools and start curve at 10deg/100' build rate
6) Drill to casing point of 5596' MD
7) R&C 7" casing, circ cmt to surface, switch to OBM
8) Land at 90deg, drill 3771' lateral to 9623', run 4 1/2" liner with external swellable csg packers

Lybrook A01-2206 01H
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1126 FNL and 546 FEL
BHL: NENE Section 1, T22N, R6W
660 FNL and 330 FWL
Sandoval County, New Mexico
Lease Number: NMNM 109385

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)
Ojo Alamo Ss.	1318'
Kirtland	1457'
Fruitland Coal	1558'
Pictured Cliffs	1840'
Lewis	1958'
Cliffhouse	2680'
Menefee	3391'
Point Lookout	4086'
Mancos Shale	4293'
Mancos Silt	4855'
Gallup	5128'

The referenced surface elevation is 6880', KB 6893'

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

Substance	Formation	Depth (TVD)
Gas	Fruitland Coal	1558'
Gas	Pictured Cliffs	1840'
Gas	Cliffhouse	2680'
Gas	Point Lookout	4086'
Oil/Gas	Mancos	4293'

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.
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'-5596'MD	8 3/4"	7"	26#	J55, LTC New
Production Liner	5396'-9623'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.

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.

Lybrook A01-2206 01H
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Sandoval County, New Mexico
Lease Number: NMNM 109385

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	5596'MD	30% open hole excess 568 sk total Stage 1 Lead:238sk Stage 1 Tail: 164sk Stage 2 Lead: 167sk	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 per joint for bottom 3 joints, 1 every 3 joints for remaining joints
Production Liner*	5396'-9623'	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 4605'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5342'/9623'	Gallup

Lybrook A01-2206 01H
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Sandoval County, New Mexico
Lease Number: NMNM 109385

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-5327'TVD/5596'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"	5596'-9623'	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 wit 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 +/- 2577 psi based on a 9.0 ppg at 5369' TVD of the landing point of the horizontal lateral. No abnormal pressure or temperatures are anticipated.

No hydrogen sulfide gas is anticipated, however, if H_2S is encountered, the guidelines in Onshore Order No. 6 will be followed.

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Sandoval County, New Mexico
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9. ANTICIPATED START DATE AND DURATION OF OPERATIONS

Drilling is estimated to commence on September 22, 2013. 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.

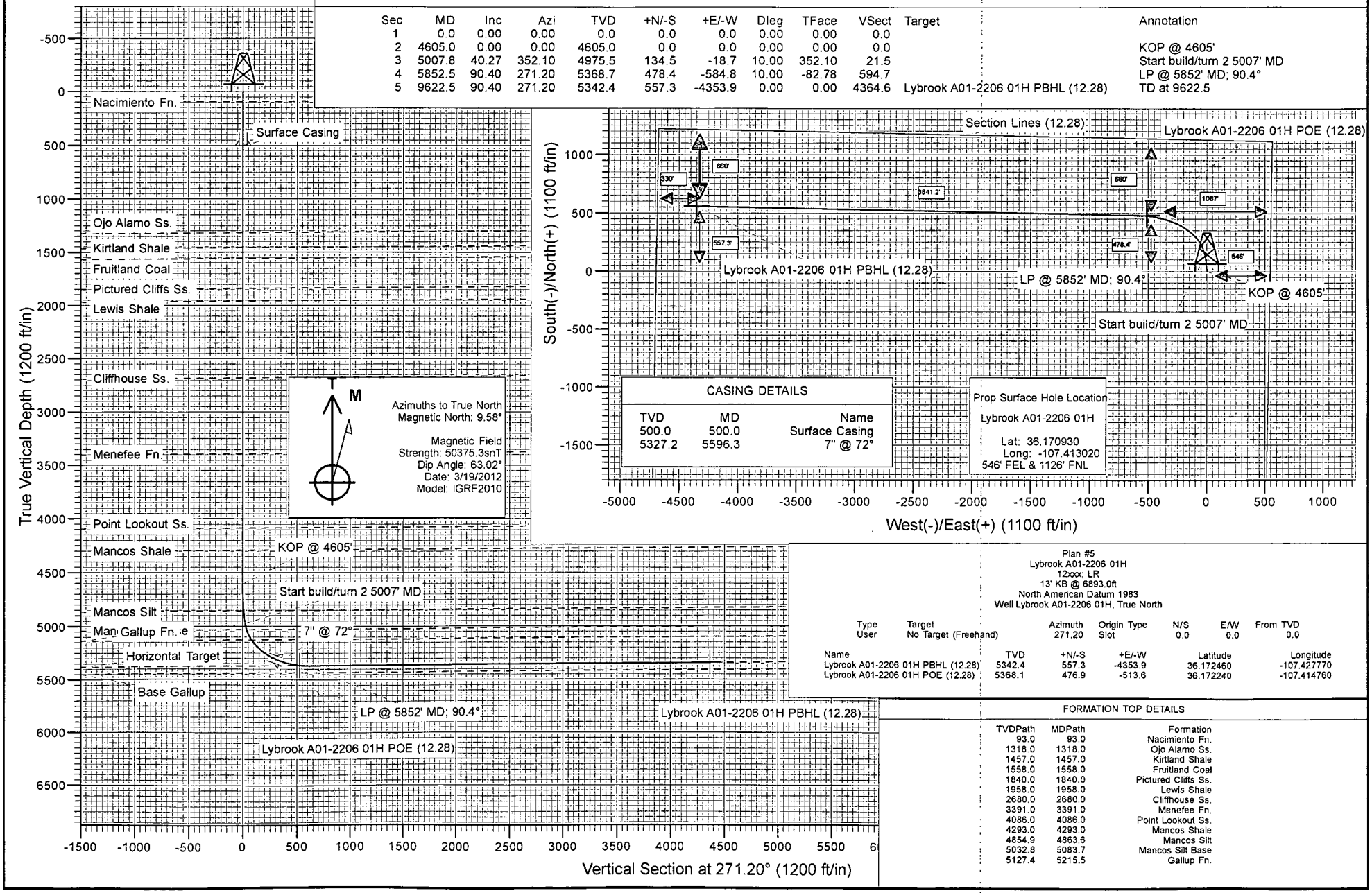
It is anticipated that the drilling of this well will take approximately 25 days.

encana™ natural gas

Project: Sandoval County, NM
Site: Lybrook
Well: Lybrook A01-2206 01H
Wellbore: Hz
Design: Plan #5

CATHEDRAL

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0		
2	4605.0	0.00	0.00	4605.0	0.0	0.0	0.00	0.00	0.0		KOP @ 4605'
3	5007.8	40.27	352.10	4975.5	134.5	-18.7	10.00	352.10	21.5		Start build/turn 2 5007' MD
4	5852.5	90.40	271.20	5368.7	478.4	-584.8	10.00	-82.78	594.7		LP @ 5852' MD; 90.4°
5	9622.5	90.40	271.20	5342.4	557.3	-4353.9	0.00	0.00	4364.6	Lybrook A01-2206 01H PBHL (12.28)	TD at 9622.5



CASING DETAILS

TVD	MD	Name
500.0	500.0	Surface Casing
5327.2	5596.3	7" @ 72°

Prop Surface Hole Location
Lybrook A01-2206 01H
Lat: 36.170930
Long: -107.413020
546' FEL & 1126' FNL

Plan #5
Lybrook A01-2206 01H
12xxx; LR
13' KB @ 6893.0ft
North American Datum 1983
Well Lybrook A01-2206 01H, True North

Type	Target	Azimuth	Origin Type	N/S	E/W	From TVD
User	No Target (Freehand)	271.20	Slot	0.0	0.0	0.0

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
Lybrook A01-2206 01H PBHL (12.28)	5342.4	557.3	-4353.9	36.172460	-107.427770
Lybrook A01-2206 01H POE (12.28)	5368.1	476.9	-513.6	36.172240	-107.414760

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
93.0	93.0	Nacimiento Fn.
1318.0	1318.0	Ojo Alamo Ss.
1457.0	1457.0	Kirtland Shale
1558.0	1558.0	Fruitland Coal
1840.0	1840.0	Pictured Cliffs Ss.
1958.0	1958.0	Lewis Shale
2680.0	2680.0	Cliffhouse Ss.
3391.0	3391.0	Menefee Fn.
4086.0	4086.0	Point Lookout Ss.
4293.0	4293.0	Mancos Shale
4854.9	4863.6	Mancos Silt
5032.8	5083.7	Mancos Silt Base
5127.4	5215.5	Gallup Fn.

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Lybrook A01-2206 01H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	13' KB @ 6893.0ft
Project:	Sandoval County, NM	**MD Reference:**	13' KB @ 6893.0ft
Site:	Lybrook	**North Reference:**	True
Well:	Lybrook A01-2206 01H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #5		

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 A01-2206 01H					
Well Position	**+N/-S**	0.0 ft	**Northing:**	1,883,544.16 ft	**Latitude:**	36.170930
	+E/-W	0.0 ft	**Easting:**	1,297,155.01 ft	**Longitude:**	-107.413020
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	6,880.0 ft

Wellbore	Hz				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	3/19/2012	9.58	63.02	50,375

Design	Plan #5				
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	271.20	

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	
4,605.0	0.00	0.00	4,605.0	0.0	0.0	0.00	0.00	0.00	0.00	
5,007.8	40.27	352.10	4,975.5	134.5	-18.7	10.00	10.00	0.00	352.10	
5,852.5	90.40	271.20	5,368.7	478.4	-584.8	10.00	5.93	-9.58	-82.78	
9,622.5	90.40	271.20	5,342.4	557.3	-4,353.9	0.00	0.00	0.00	0.00	Lybrook A01-2206 01I

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Lybrook A01-2206 01H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	13' KB @ 6893.0ft
Project:	Sandoval County, NM	**MD Reference:**	13' KB @ 6893.0ft
Site:	Lybrook	**North Reference:**	True
Well:	Lybrook A01-2206 01H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #5		

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	
93.0	0.00	0.00	93.0	0.0	0.0	0.0	0.00	0.00	Nacimiento Fn.
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	Surface Casing
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	
1,318.0	0.00	0.00	1,318.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo Ss.
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	
1,457.0	0.00	0.00	1,457.0	0.0	0.0	0.0	0.00	0.00	Kirtland Shale
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	
1,558.0	0.00	0.00	1,558.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
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	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	
1,840.0	0.00	0.00	1,840.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs Ss.
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	
1,958.0	0.00	0.00	1,958.0	0.0	0.0	0.0	0.00	0.00	Lewis Shale
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	
2,200.0	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	
2,680.0	0.00	0.00	2,680.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss.
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	
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	
3,391.0	0.00	0.00	3,391.0	0.0	0.0	0.0	0.00	0.00	Menefee Fn.
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	
3,700.0	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	
4,086.0	0.00	0.00	4,086.0	0.0	0.0	0.0	0.00	0.00	Point Lookout Ss.
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	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Lybrook A01-2206 01H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	13' KB @ 6893.0ft
Project:	Sandoval County, NM	**MD Reference:**	13' KB @ 6893.0ft
Site:	Lybrook	**North Reference:**	True
Well:	Lybrook A01-2206 01H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #5		

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
4,293.0	0.00	0.00	4,293.0	0.0	0.0	0.0	0.00	0.00	Mancos Shale
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	
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	
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	
4,605.0	0.00	0.00	4,605.0	0.0	0.0	0.0	0.00	0.00	KOP @ 4605'
4,700.0	9.50	352.10	4,699.6	7.8	-1.1	1.2	10.00	10.00	
4,800.0	19.49	352.10	4,796.3	32.5	-4.5	5.2	10.00	10.00	
4,863.6	25.85	352.10	4,854.9	56.8	-7.9	9.1	10.00	10.00	Mancos Silt
4,900.0	29.49	352.10	4,887.1	73.6	-10.2	11.7	10.00	10.00	
5,000.0	39.49	352.10	4,969.5	129.6	-18.0	20.7	10.00	10.00	
5,007.8	40.27	352.10	4,975.5	134.5	-18.7	21.5	10.00	10.00	Start build/turn 2 5007' MD
5,083.7	41.79	340.77	5,032.8	182.7	-30.4	34.2	10.00	2.00	Mancos Silt Base
5,100.0	42.25	338.44	5,044.9	193.0	-34.2	38.2	10.00	2.87	
5,200.0	46.07	325.15	5,116.8	254.0	-67.2	72.5	10.00	3.81	
5,215.5	46.79	323.26	5,127.4	263.1	-73.8	79.2	10.00	4.65	Gallup Fn.
5,300.0	51.22	313.71	5,183.0	310.6	-116.1	122.5	10.00	5.24	
5,400.0	57.32	303.94	5,241.4	361.2	-179.3	186.8	10.00	6.11	
5,500.0	64.09	295.49	5,290.4	404.1	-255.0	263.4	10.00	6.76	
5,596.3	71.01	288.25	5,327.2	437.1	-337.5	346.6	10.00	7.19	7" @ 72°
5,600.0	71.28	287.98	5,328.4	438.2	-340.9	350.0	10.00	7.35	
5,700.0	78.75	281.10	5,354.2	462.3	-434.3	443.9	10.00	7.47	
5,734.4	81.36	278.83	5,360.2	468.2	-467.6	477.3	10.00	7.59	Lybrook A01-2206 01H POE
5,781.7	84.97	275.75	5,365.8	474.1	-514.2	524.0	10.00	7.63	Lybrook A01-2206 01H POE (12.28)
5,800.0	86.37	274.57	5,367.2	475.8	-532.4	542.2	10.00	7.66	
5,852.5	90.40	271.20	5,368.7	478.4	-584.8	594.7	10.00	7.67	LP @ 5852' MD; 90.4°
5,900.0	90.40	271.20	5,368.3	479.4	-632.3	642.2	0.00	0.00	
6,000.0	90.40	271.20	5,367.6	481.5	-732.2	742.2	0.00	0.00	
6,100.0	90.40	271.20	5,366.9	483.6	-832.2	842.2	0.00	0.00	
6,200.0	90.40	271.20	5,366.2	485.7	-932.2	942.2	0.00	0.00	
6,300.0	90.40	271.20	5,365.5	487.8	-1,032.2	1,042.2	0.00	0.00	
6,400.0	90.40	271.20	5,364.8	489.9	-1,132.1	1,142.2	0.00	0.00	
6,500.0	90.40	271.20	5,364.1	492.0	-1,232.1	1,242.2	0.00	0.00	
6,600.0	90.40	271.20	5,363.5	494.0	-1,332.1	1,342.2	0.00	0.00	
6,700.0	90.40	271.20	5,362.8	496.1	-1,432.1	1,442.2	0.00	0.00	
6,800.0	90.40	271.20	5,362.1	498.2	-1,532.1	1,542.2	0.00	0.00	
6,900.0	90.40	271.20	5,361.4	500.3	-1,632.0	1,642.1	0.00	0.00	
7,000.0	90.40	271.20	5,360.7	502.4	-1,732.0	1,742.1	0.00	0.00	
7,100.0	90.40	271.20	5,360.0	504.5	-1,832.0	1,842.1	0.00	0.00	
7,200.0	90.40	271.20	5,359.3	506.6	-1,932.0	1,942.1	0.00	0.00	
7,300.0	90.40	271.20	5,358.6	508.7	-2,031.9	2,042.1	0.00	0.00	
7,400.0	90.40	271.20	5,357.9	510.8	-2,131.9	2,142.1	0.00	0.00	
7,500.0	90.40	271.20	5,357.2	512.9	-2,231.9	2,242.1	0.00	0.00	
7,600.0	90.40	271.20	5,356.5	515.0	-2,331.9	2,342.1	0.00	0.00	
7,700.0	90.40	271.20	5,355.8	517.1	-2,431.8	2,442.1	0.00	0.00	
7,800.0	90.40	271.20	5,355.1	519.2	-2,531.8	2,542.1	0.00	0.00	
7,900.0	90.40	271.20	5,354.4	521.3	-2,631.8	2,642.1	0.00	0.00	
8,000.0	90.40	271.20	5,353.7	523.4	-2,731.8	2,742.1	0.00	0.00	
8,100.0	90.40	271.20	5,353.0	525.5	-2,831.7	2,842.1	0.00	0.00	
8,200.0	90.40	271.20	5,352.3	527.6	-2,931.7	2,942.1	0.00	0.00	
8,300.0	90.40	271.20	5,351.6	529.6	-3,031.7	3,042.1	0.00	0.00	
8,400.0	90.40	271.20	5,350.9	531.7	-3,131.7	3,142.1	0.00	0.00	

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Lybrook A01-2206 01H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	13' KB @ 6893.0ft
Project:	Sandoval County, NM	**MD Reference:**	13' KB @ 6893.0ft
Site:	Lybrook	**North Reference:**	True
Well:	Lybrook A01-2206 01H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #5		

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
8,500.0	90.40	271.20	5,350.2	533.8	-3,231.6	3,242.1	0.00	0.00	
8,600.0	90.40	271.20	5,349.5	535.9	-3,331.6	3,342.1	0.00	0.00	
8,700.0	90.40	271.20	5,348.8	538.0	-3,431.6	3,442.1	0.00	0.00	
8,800.0	90.40	271.20	5,348.1	540.1	-3,531.6	3,542.1	0.00	0.00	
8,900.0	90.40	271.20	5,347.4	542.2	-3,631.5	3,642.1	0.00	0.00	
9,000.0	90.40	271.20	5,346.7	544.3	-3,731.5	3,742.1	0.00	0.00	
9,100.0	90.40	271.20	5,346.0	546.4	-3,831.5	3,842.1	0.00	0.00	
9,200.0	90.40	271.20	5,345.3	548.5	-3,931.5	3,942.1	0.00	0.00	
9,300.0	90.40	271.20	5,344.6	550.6	-4,031.4	4,042.1	0.00	0.00	
9,400.0	90.40	271.20	5,343.9	552.7	-4,131.4	4,142.1	0.00	0.00	
9,500.0	90.40	271.20	5,343.2	554.8	-4,231.4	4,242.1	0.00	0.00	
9,600.0	90.40	271.20	5,342.5	556.9	-4,331.4	4,342.1	0.00	0.00	
9,622.5	90.40	271.20	5,342.4	557.3	-4,353.9	4,364.6	0.00	0.00	TD at 9622.5 - Lybrook A01-2206 01H PBHL - L

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
Lybrook A01-2206 01H F	0.00	359.30	4,960.5	554.6	-4,356.2	1,884,150.89	1,292,805.77	36.172452	-107.427778
- plan misses target center by 381.8ft at 9622.5ft MD (5342.4 TVD, 557.3 N, -4353.9 E)									
- Polygon									
Point 1			4,960.5	-300.0	-330.0	1,883,850.84	1,292,475.82		
Point 2			4,960.5	660.0	-330.0	1,884,810.84	1,292,475.67		
Point 3			4,960.5	660.0	500.0	1,884,810.96	1,293,305.67		
Point 4			4,960.5	660.0	-330.0	1,884,810.84	1,292,475.67		
Lybrook A01-2206 01H F	0.00	359.30	5,342.4	557.3	-4,353.9	1,884,153.63	1,292,808.13	36.172460	-107.427770
- plan hits target center									
- Point									
Lybrook A01-2206 01H F	0.00	359.30	4,987.3	474.3	-516.0	1,884,024.60	1,296,644.76	36.172233	-107.414768
- plan misses target center by 375.8ft at 5717.9ft MD (5357.5 TVD, 465.5 N, -451.6 E)									
- Point									
Lybrook A01-2206 01H F	0.00	359.30	5,368.1	476.9	-513.6	1,884,027.20	1,296,647.16	36.172240	-107.414760
- plan misses target center by 3.7ft at 5781.7ft MD (5365.8 TVD, 474.1 N, -514.2 E)									
- Point									

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
5,596.3	5,327.2	7" @ 72°	7.000	7.500
500.0	500.0	Surface Casing	0.000	0.000

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Lybrook A01-2206 01H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	13' KB @ 6893.0ft
Project:	Sandoval County, NM	**MD Reference:**	13' KB @ 6893.0ft
Site:	Lybrook	**North Reference:**	True
Well:	Lybrook A01-2206 01H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #5		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
93.0	93.0	Nacimiento Fn.		-0.40	271.20
1,318.0	1,318.0	Ojo Alamo Ss.		-0.40	271.20
1,457.0	1,457.0	Kirtland Shale		-0.40	271.20
1,558.0	1,558.0	Fruitland Coal		-0.40	271.20
1,840.0	1,840.0	Pictured Cliffs Ss.		-0.40	271.20
1,958.0	1,958.0	Lewis Shale		-0.40	271.20
2,680.0	2,680.0	Cliffhouse Ss.		-0.40	271.20
3,391.0	3,391.0	Menefee Fn.		-0.40	271.20
4,086.0	4,086.0	Point Lookout Ss.		-0.40	271.20
4,293.0	4,293.0	Mancos Shale		-0.40	271.20
4,863.6	4,855.0	Mancos Silt		-0.40	271.20
5,083.7	5,033.0	Mancos Silt Base		-0.40	271.20
5,215.5	5,128.0	Gallup Fn.		-0.40	271.20

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
4,605.0	4,605.0	0.0	0.0	KOP @ 4605'
5,007.8	4,975.5	134.5	-18.7	Start build/turn 2 5007' MD
5,852.5	5,368.7	478.4	-584.8	LP @ 5852' MD; 90.4°
9,622.5	5,342.4	557.3	-4,353.9	TD at 9622.5