

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: April 15, 2013

Well information: 30-043-21124, Encana, Lybrook P24-2206 01H, SE 24-T22N, R6W

Conditions of Approval:

Hold C104 for Directional Survey and As Drilled Plat

NMOCD Approved by Signature

JUN 21 2013

Date

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.

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other2. Name of Operator
Encana Oil & Gas (USA) Inc.3a. Address
370 17th Street, Suite 1700
Denver, CO 802023b. Phone No. (include area code)
720-876-53534. Location of Well (Footage, Sec., T., R., M., or Survey Description)
SHL: 1059' FSL and 449' FEL Sec 24, T22N, R6W
BHL: 800' FSL and 330' FWL Sec 24, T22N, R6W5. Lease Serial No.
NMNM 1093906. If Indian, Allottee or Tribe Name
N/A7. If Unit of CA/Agreement, Name and/or No.
N/A8. Well Name and No.
Lybrook P24-2206 01H9. API Well No.
30-043-3112410. Field and Pool or Exploratory Area
Wildcat (Gallup)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			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input type="checkbox"/> Other _____
	<input checked="" type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> 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 recompleat 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 recompleat 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 pilot hole TVD, KOP, and intermediate hole size for the Lybrook P24-2206 01H well. Encana would like to change: pilot hole TVD from 6574' to 5621', KOP from 4500' to 4600', intermediate hole size from 8 1/2" to 8 3/4", and intermediate cementing plans to accomodate the larger hole. Please see attached 10 point drilling plan, wellbore diagram, directional plans, and C-102. The attached directional plans and C-102 also show skewed section lines.

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

PLAYS APPROVAL OR ACCEPTANCE OF THIS
ACTION DOES NOT BELIEVE THE LESSEE AND
OPERATOR FROM OBTAINING ANY OTHER
AUTORIZATION REQUIRED FOR OPERATIONS
ON FEDERAL AND INDIAN LANDS

CONDITIONS OF APPROVAL
Adhere to previously issued stipulations.

14. I hereby certify that the foregoing is true and correct.

Name (Printed/Typed)
Amie Weis

Title Operations Engineer

Signature

Date 4/15/2013

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

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

FFC

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

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

Submit one copy to
Appropriate District Office

OIL CONSERVATION DIVISION
1220 South St. Francis Drive
Santa Fe, NM 87505

RECEIVED
RECOMMENDED RECORD

APR 16 2013

WELL LOCATION AND ACREAGE DEDICATION PLAT Farmington Field Office
Bureau of Land Management

*API Number 30-043-21124	*Pool Code 98032	*Pool Name WC 22N 6W 24; Gully 260
*Property Code 39970	*Property Name LYBROOK P24-2206	*Well Number 01H
*GRID No. 282327	*Operator Name ENCANA OIL & GAS (USA) INC.	*Elevation 7178'

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
P	24	22N	6W		1059	SOUTH	449	EAST	SANDOVAL

11 Bottom Hole Location If Different From Surface

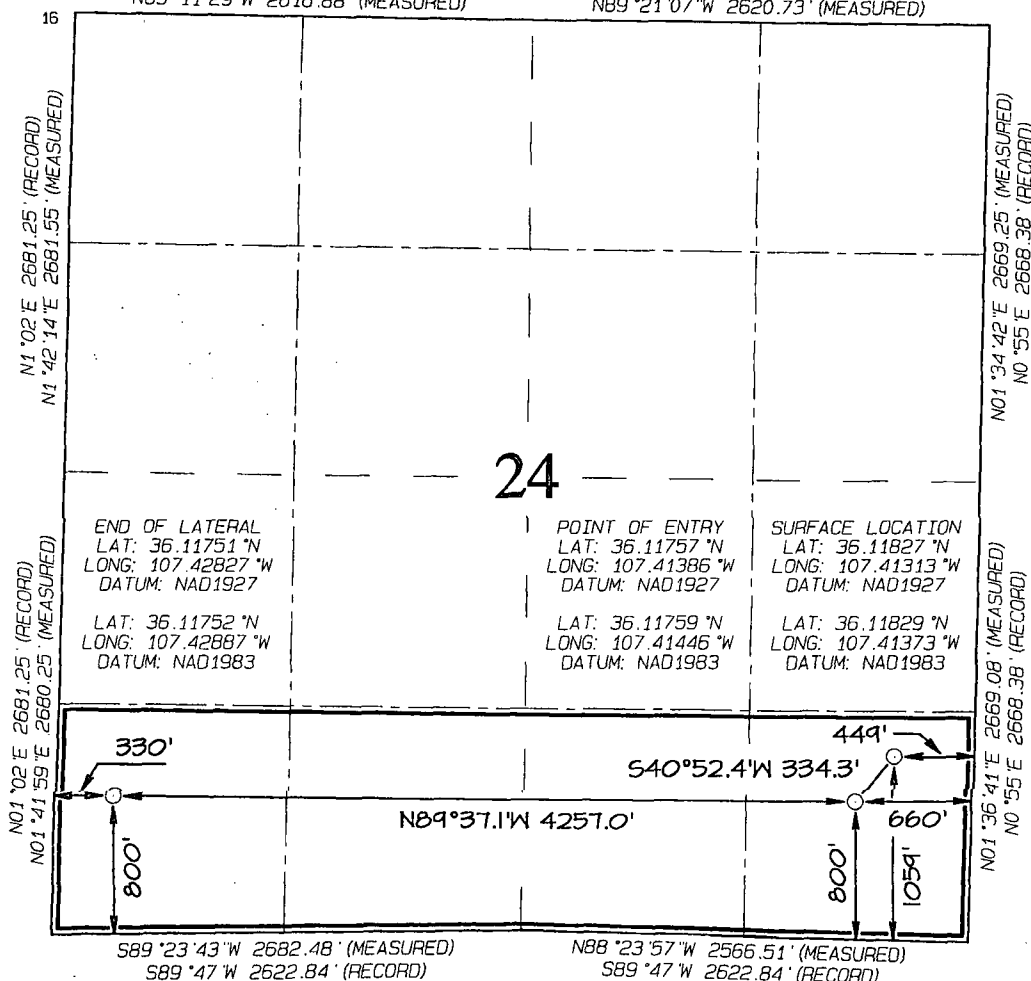
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	24	22N	6W		800	SOUTH	330	WEST	SANDOVAL

12 Dedicated Acres 160.0 Acres - (S/2 S/2)	13 Joint or Infill	14 Consolidation Code	15 Order No.
--	--------------------	-----------------------	--------------

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

N89°52'W 2620.86' (RECORD)
N89°11'29"W 2616.88' (MEASURED)

N89°52'W 2620.86' (RECORD)
N89°21'07"W 2620.73' (MEASURED)



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 _____ Date _____

Printed Name _____

E-mail Address _____

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.

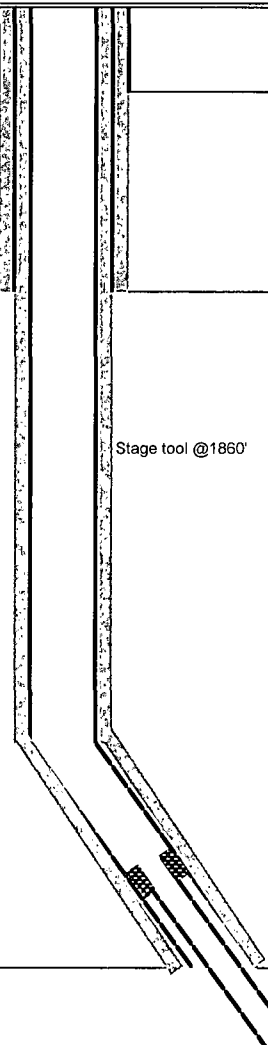
Date of Survey: AUGUST 24, 2012

Signature and Seal of Professional Surveyor



JASON C. EDWARDS

Certificate Number 15269

LOC: Sec 24-T22N-R6W County: Sandoval WELL: Lybrook P24-2206 01H			Encana Natural Gas WELL SUMMARY			encana™ natural gas		ENG: J. Fox/ A. 4/15/13 RIG: GLE: 7178 RKBE: 7191	
MWD LWD	OPEN HOLE LOGGING	FORM	DEPTH TVDMD			HOLE SIZE	CASING SPECS	MW MUD TYPE	DEVIATION INFORMATION
			60	60'		30	20" 94# 100sx Type I Neat 48.8ppg cmt	Fresh wtr 8.3-9.2	
Surveys After csg is run	None	Nacimiento	51			12 1/4	9 5/8" 36ppf J55 STC TOC @ surface 178 sks Type III Cmt	Fresh wtr 8.4-8.6	Vertical <1°
Surveys every 500'	No OH logs Mud logger onsite	Ojo Alamo Kirtland	1228 1344	5526		8 3/4	7" 26ppf J55 LTC TOC @ surface 30% OH excess: 561 sks Total Stage 1 Lead: 235 sks Stage 1 Tail: 162 sks Stage 2 Lead: 164 sks	Fresh Wtr 8.5-8.8	Vertical <1°
		Fruitland Coal	1426						
		Pictured Cliffs Ss Lewis Shale	1812 1921						
		Cliffhouse Ss Menefee Fn Point Lookout Ss Mancos Sh	2573 3321 4103 4287						
		KICK OFF PT	4600						
Mancos Silt	4851								
Gallup Top	5151							KOP 4600 10 deg/100'	
5314									
Surveys every 500' Gyro at CP MWD Gamma Directional	No OH Logs	horz target	5344	5719	6 1/8	200' overlap at liner top			.25deg updip 5330'TVD TD = 9618' MD
		Base Gallup Pilot Hole TD	5421 5621			3899' Lateral	8.6-9.0 OBM		
						4 1/2" 11.6ppf SB80 LTC Running external swellable csg packers for isolation of prod string Plan on setting top packer within 100' of intermediate casing shoe	Switch to OBM 8.6-9.0		

NOTES:

- 1) Drill with 30" bit to 60', set 20" 94# conductor pipe
- 2) Drill surface to 500', R&C 9 5/8" casing
- 3) N/U BOP and surface equipment
- 4) Drill to pilot hole TD of 5621' and run OH logs.
- 5) Spot cement kick plug
- 6) Kick off at 4600' and start curve at 10deg/100' build rate
- 7) Drill to casing point of 5526' MD
- 8) R&C 7" casing, circ cmt to surface, switch to OBM
- 9) Land at 90deg, drill 3899' lateral to 9618', run 4 1/2" liner with external swellable csg packers

Lybrook P24-2206 01H

**SHL: SESE Section 24, T22N, R6W
1059 FSL and 449 FEL**

**BHL: SWSW Section 24, T22N, R6W
800 FSL and 330 FWL**

Sandoval County, New Mexico

Lease Number: NMNM 109390

**Encana Oil & Gas (USA) Inc.
Drilling Plan**

1. ESTIMATED TOPS OF GEOLOGICAL MARKERS (TVD)

The estimated tops of important geologic markers are as follows:

<u>Formation</u>	<u>Depth (TVD)</u>
Ojo Alamo	1228'
Kirtland	1344'
Fruitland Coal	1426'
Pictured Cliffs	1812'
Lewis	1921'
Cliffhouse	2573'
Menefee	3321'
Point Lookout	4103'
Mancos	4287'
Gallup	5151'

The referenced surface elevation is 7178', KB 7191'

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

<u>Substance</u>	<u>Formation</u>	<u>Depth (TVD)</u>
Water	Ojo Alamo	1228'
Gas	Fruitland Coal	1426'
Gas	Pictured Cliffs	1812'
Gas	Cliffhouse	2573'
Gas	Point Lookout	4103'
Oil/Gas	Mancos	4287'

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.

Lybrook P24-2206 01H**SHL: SESE Section 24, T22N, R6W
1059 FSL and 449 FEL****BHL: SWSW Section 24, T22N, R6W
800 FSL and 330 FWL****Sandoval County, New Mexico****Lease Number: NMNM 109390**

- 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'	26"	20"	94#	H40, STC New
Surface	0'-500'	12 1/4"	9 5/8"	36#	J55, STC New
Intermediate	0'-5526'MD	8 3/4"	7"	26#	J55, LTC New
Production Liner	5326'-9618'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 P24-2206 01H**SHL: SESE Section 24, T22N, R6W
1059 FSL and 449 FEL****BHL: SWSW Section 24, T22N, R6W
800 FSL and 330 FWL****Sandoval County, New Mexico****Lease Number: NMNM 109390**

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 turbolizer per joint on bottom 3 joints
Intermediate	5526'	30% open hole excess Stg 1 Lead: 235sk Stg 1 Tail: 162sk Stg 2 Lead: 164sk	Lead: PremLite + 3% CaCl + 0.25lb/sk Cello Flake + 5lb/sk LCM, 12.1ppg 2.13cuf/sk Tail: Type III Cmt + 1% CaCl + 0.25lb/sk Cello Flake 14.5ppg 1.38cuf/sk	Surface	1 per joint for bottom 3 joints, 1 every 3 joints for remaining joints
Production Liner*	5326'-9618'	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 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 well will be drilled in two phases. A pilot hole will be drilled in the first phase, followed by kicking off a horizontal lateral in the existing wellbore in the second phase. The intent of drilling a pilot hole is to obtain open hole log and core data. The intent of the second phase of the well is to plug back the pilot hole with cement to the kick off point. After plugging back, the plan is to drill a horizontal lateral from the kick off point in the existing wellbore to the proposed bottom hole location.

Directional plans are attached.

Well Phase	Description	Proposed Depth (TVD/MD)	Formation
1	Vertical Pilot Hole	5621'/5621'	Morrison
2	Horizontal Lateral	5330'/9618'	Gallup

Lybrook P24-2206 01H**SHL: SESE Section 24, T22N, R6W
1059 FSL and 449 FEL****BHL: SWSW Section 24, T22N, R6W
800 FSL and 330 FWL****Sandoval County, New Mexico****Lease Number: NMNM 109390****Proposed Plug Back Procedure:****KOP 4600'**

Set kick plug at KOP

1. Spot 400' kick plug from 4400' – 4800'
 - a. 167sx of Class G cement with salt (0.94ft³/sk yield, 17.5ppg)
 - b. Spot tuned spacer
2. Pull uphole and reverse out
3. Pump bottoms up 2 times, pull uphole
4. Tag plug, drill ahead to KOP when cement is solid

6. DRILLING FLUIDS PROGRAM

a) Vertical Pilot Hole:

Hole Size (in)	TVD (ft)	Mud Type	Density (lb/gal)	Viscosity (sec/qt)	Fluid Loss (cc)
30"	0-60'	Fresh Water	8.3-9.2	38-100	4-28
12 1/4"	0-500'	Fresh Water	8.4-8.6	60-70	NC
8 3/4"	500-5621'	Fresh Water LSND	8.5-8.8	40-50	8-10

Kick off to Intermediate Casing:

Hole Size (in)	Depth (ft)	Mud Type	Density (lb/gal)	Viscosity (sec/qt)	Fluid Loss (cc)
8 3/4"	4600- 5526'MD/5314'TVD	Fresh Water LSND	8.5-8.8	40-50	8-10

b) Intermediate Casing to TD of Horizontal Lateral

Hole Size (in)	Measured Depth (ft)	Mud Type	Density (lb/gal)	Viscosity (sec/qt)	Fluid Loss (cc)
6 1/8"	5526'-9618'	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.

Lybrook P24-2206 01H

**SHL: SESE Section 24, T22N, R6W
1059 FSL and 449 FEL**

**BHL: SWSW Section 24, T22N, R6W
800 FSL and 330 FWL**

Sandoval County, New Mexico

Lease Number: NMNM 109390

7. TESTING, CORING and LOGGING

- a) Drill Stem Testing – None anticipated
- b) Coring – Obtain core starting in the Mancos formation. Specific cored intervals will be determined real time by onsite geologists.
- c) Mud Logging – Mud loggers will be on location from Intermediate Casing to TD.
- d) Logging – See Below

Open Hole:

Triple combo with Spectral Gamma TD to surface casing
Specialty logs will be decided real time by onsite geologists

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 +/- 2631 psi based on a 9.0 ppg at 5621' TVD of the vertical pilot hole. 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.

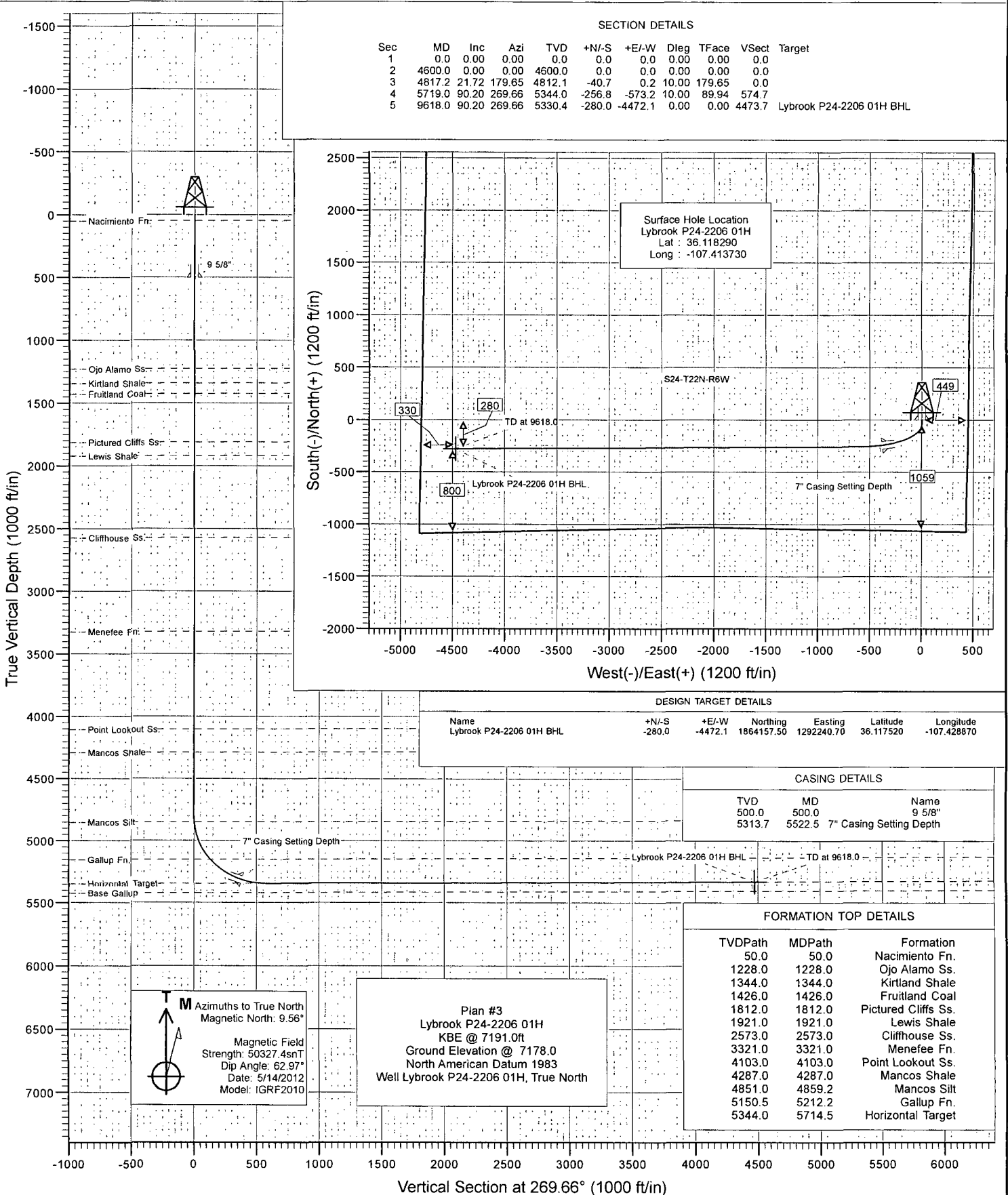
9. ANTICIPATED START DATE AND DURATION OF OPERATIONS

Drilling is estimated to commence on August 2, 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

Project: Sandoval County, NM
Site: Lybrook
Well: Lybrook P24-2206 01H
Wellbore: HZ
Design: Plan #3



Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook P24-2206 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 7191.0ft
Project:	Sandoval County, NM	MD Reference:	KBE @ 7191.0ft
Site:	Lybrook	North Reference:	True
Well:	Lybrook P24-2206 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

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 P24-2206 01H					
Well Position	+N/-S	0.0 ft	Northing:	1,864,383.89 ft	Latitude:	36.118290
	+E/-W	0.0 ft	Easting:	1,296,715.85 ft	Longitude:	-107.413730
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	7,178.0 ft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/14/2012	9.56	62.97	50,327

Design	Plan #3			
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	269.66

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	
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,817.2	21.72	179.65	4,812.1	-40.7	0.2	10.00	10.00	0.00	179.65	
5,719.0	90.20	269.66	5,344.0	-256.8	-573.2	10.00	7.59	9.98	89.94	
9,618.0	90.20	269.66	5,330.4	-280.0	-4,472.1	0.00	0.00	0.00	0.00	Lybrook P24-2206 01

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: Lybrook
 Well: Lybrook P24-2206 01H
 Wellbore: HZ
 Design: Plan #3

Local Co-ordinate Reference: Well Lybrook P24-2206 01H
 TVD Reference: KBE @ 7191.0ft
 MD Reference: KBE @ 7191.0ft
 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
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
50.0	0.00	0.00	50.0	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	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	
1,228.0	0.00	0.00	1,228.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo Ss.
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	
1,344.0	0.00	0.00	1,344.0	0.0	0.0	0.0	0.00	0.00	Kirtland Shale
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	
1,426.0	0.00	0.00	1,426.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	
1,700.0	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	
1,812.0	0.00	0.00	1,812.0	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	
1,921.0	0.00	0.00	1,921.0	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	
2,573.0	0.00	0.00	2,573.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss.
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	
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	
3,321.0	0.00	0.00	3,321.0	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	
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	
4,103.0	0.00	0.00	4,103.0	0.0	0.0	0.0	0.00	0.00	Point Lookout Ss.
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: Lybrook
 Well: Lybrook P24-2206 01H
 Wellbore: HZ
 Design: Plan #3

Local Co-ordinate Reference: Well Lybrook P24-2206 01H
 TVD Reference: KBE @ 7191.0ft
 MD Reference: KBE @ 7191.0ft
 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
4,287.0	0.00	0.00	4,287.0	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	KOP @ 4600'
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	
4,700.0	10.00	179.65	4,699.5	-8.7	0.1	0.0	10.00	10.00	
4,800.0	20.00	179.65	4,796.0	-34.6	0.2	0.0	10.00	10.00	Start build/turn @ 4817' MD
4,817.2	21.72	179.65	4,812.1	-40.7	0.2	0.0	10.00	10.00	
4,859.2	22.11	190.86	4,851.0	-56.2	-1.2	1.5	10.00	0.92	
4,900.0	23.18	201.10	4,888.7	-71.3	-5.5	6.0	10.00	2.63	Mancos Silt
5,000.0	28.12	221.37	4,979.0	-107.4	-28.3	28.9	10.00	4.93	
5,100.0	35.13	235.08	5,064.2	-141.6	-67.5	68.4	10.00	7.01	
5,200.0	43.20	244.48	5,141.7	-172.9	-122.1	123.2	10.00	8.08	Gallup Fn.
5,212.2	44.23	245.42	5,150.5	-176.5	-129.8	130.8	10.00	8.45	
5,300.0	51.84	251.34	5,209.2	-200.3	-190.4	191.6	10.00	8.67	
5,400.0	60.79	256.71	5,264.7	-223.0	-270.4	271.7	10.00	8.95	Lybrook P24-2206 01H POE
5,500.0	69.92	261.21	5,306.3	-240.3	-359.5	360.9	10.00	9.13	
5,522.5	71.99	262.14	5,313.7	-243.3	-380.5	382.0	10.00	9.20	
5,600.0	79.15	265.20	5,333.0	-251.6	-455.1	456.5	10.00	9.24	7" Casing Setting Depth
5,700.0	88.44	268.96	5,343.8	-256.6	-554.2	555.7	10.00	9.28	
5,714.5	89.78	269.49	5,344.0	-256.8	-568.7	570.3	10.00	9.29	
5,719.0	90.20	269.66	5,344.0	-256.8	-573.2	574.7	10.00	9.29	Horizontal Target LP @ 5344' TVD; 90.2°
5,800.0	90.20	269.66	5,343.7	-257.3	-654.2	655.7	0.00	0.00	
5,900.0	90.20	269.66	5,343.4	-257.9	-754.2	755.7	0.00	0.00	
6,000.0	90.20	269.66	5,343.0	-258.5	-854.2	855.7	0.00	0.00	
6,100.0	90.20	269.66	5,342.7	-259.1	-954.2	955.7	0.00	0.00	
6,200.0	90.20	269.66	5,342.3	-259.7	-1,054.2	1,055.7	0.00	0.00	
6,300.0	90.20	269.66	5,342.0	-260.3	-1,154.2	1,155.7	0.00	0.00	
6,400.0	90.20	269.66	5,341.6	-260.9	-1,254.2	1,255.7	0.00	0.00	
6,500.0	90.20	269.66	5,341.3	-261.5	-1,354.2	1,355.7	0.00	0.00	
6,600.0	90.20	269.66	5,340.9	-262.1	-1,454.2	1,455.7	0.00	0.00	
6,700.0	90.20	269.66	5,340.6	-262.6	-1,554.2	1,555.7	0.00	0.00	
6,800.0	90.20	269.66	5,340.2	-263.2	-1,654.2	1,655.7	0.00	0.00	
6,900.0	90.20	269.66	5,339.9	-263.8	-1,754.2	1,755.7	0.00	0.00	
7,000.0	90.20	269.66	5,339.5	-264.4	-1,854.2	1,855.7	0.00	0.00	
7,100.0	90.20	269.66	5,339.2	-265.0	-1,954.2	1,955.7	0.00	0.00	
7,200.0	90.20	269.66	5,338.8	-265.6	-2,054.2	2,055.7	0.00	0.00	
7,300.0	90.20	269.66	5,338.5	-266.2	-2,154.2	2,155.7	0.00	0.00	
7,400.0	90.20	269.66	5,338.1	-266.8	-2,254.2	2,255.7	0.00	0.00	
7,500.0	90.20	269.66	5,337.8	-267.4	-2,354.2	2,355.7	0.00	0.00	
7,600.0	90.20	269.66	5,337.4	-268.0	-2,454.2	2,455.7	0.00	0.00	
7,700.0	90.20	269.66	5,337.1	-268.6	-2,554.2	2,555.7	0.00	0.00	
7,800.0	90.20	269.66	5,336.7	-269.2	-2,654.2	2,655.7	0.00	0.00	
7,900.0	90.20	269.66	5,336.4	-269.8	-2,754.2	2,755.7	0.00	0.00	
8,000.0	90.20	269.66	5,336.0	-270.4	-2,854.2	2,855.7	0.00	0.00	
8,100.0	90.20	269.66	5,335.7	-271.0	-2,954.2	2,955.7	0.00	0.00	
8,200.0	90.20	269.66	5,335.3	-271.6	-3,054.2	3,055.7	0.00	0.00	
8,300.0	90.20	269.66	5,335.0	-272.1	-3,154.2	3,155.7	0.00	0.00	
8,400.0	90.20	269.66	5,334.7	-272.7	-3,254.2	3,255.7	0.00	0.00	
8,500.0	90.20	269.66	5,334.3	-273.3	-3,354.2	3,355.7	0.00	0.00	
8,600.0	90.20	269.66	5,334.0	-273.9	-3,454.1	3,455.7	0.00	0.00	
8,700.0	90.20	269.66	5,333.6	-274.5	-3,554.1	3,555.7	0.00	0.00	

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: Lybrook
Well: Lybrook P24-2206 01H
Wellbore: HZ
Design: Plan #3

Local Co-ordinate Reference: Well Lybrook P24-2206 01H
TVD Reference: KBE @ 7191.0ft
MD Reference: KBE @ 7191.0ft
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	269.66	5,333.3	-275.1	-3,654.1	3,655.7	0.00	0.00	
8,900.0	90.20	269.66	5,332.9	-275.7	-3,754.1	3,755.7	0.00	0.00	
9,000.0	90.20	269.66	5,332.6	-276.3	-3,854.1	3,855.7	0.00	0.00	
9,100.0	90.20	269.66	5,332.2	-276.9	-3,954.1	3,955.7	0.00	0.00	
9,200.0	90.20	269.66	5,331.9	-277.5	-4,054.1	4,055.7	0.00	0.00	
9,300.0	90.20	269.66	5,331.5	-278.1	-4,154.1	4,155.7	0.00	0.00	
9,400.0	90.20	269.66	5,331.2	-278.7	-4,254.1	4,255.7	0.00	0.00	
9,500.0	90.20	269.66	5,330.8	-279.3	-4,354.1	4,355.7	0.00	0.00	
9,600.0	90.20	269.66	5,330.5	-279.9	-4,454.1	4,455.7	0.00	0.00	
9,618.0	90.20	269.66	5,330.4	-280.0	-4,472.1	4,473.7	0.00	0.00	TD at 9618.0 - Lybrook P24-2206 01H BHL

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Lybrook P24-2206 01H f - hit/miss target - Shape	0.00	0.00	5,345.0	-254.8	-215.6	1,864,131.67	1,296,497.18	36.117590	-107.414460
- plan misses target center by 102.3ft at 5400.0ft MD (5264.7 TVD, -223.0 N, -270.4 E) - Point									
Lybrook P24-2206 01H f - plan hits target center - Circle (radius 340.0)	0.00	0.00	5,330.4	-280.0	-4,472.1	1,864,157.50	1,292,240.70	36.117520	-107.428870

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
5,522.5	5,313.7	7" Casing Setting Depth	0.000	0.000

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook P24-2206 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 7191.0ft
Project:	Sandoval County, NM	MD Reference:	KBE @ 7191.0ft
Site:	Lybrook	North Reference:	True
Well:	Lybrook P24-2206 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
50.0	50.0	Nacimiento Fn.		-0.20	269.66	
1,228.0	1,228.0	Ojo Alamo Ss.		-0.20	269.66	
1,344.0	1,344.0	Kirtland Shale		-0.20	269.66	
1,426.0	1,426.0	Fruitland Coal		-0.20	269.66	
1,812.0	1,812.0	Pictured Cliffs Ss.		-0.20	269.66	
1,921.0	1,921.0	Lewis Shale		-0.20	269.66	
2,573.0	2,573.0	Cliffhouse Ss.		-0.20	269.66	
3,321.0	3,321.0	Menefee Fn.		-0.20	269.66	
4,103.0	4,103.0	Point Lookout Ss.		-0.20	269.66	
4,287.0	4,287.0	Mancos Shale		-0.20	269.66	
4,859.2	4,851.0	Mancos Silt		-0.20	269.66	
5,212.2	5,151.0	Gallup Fn.		-0.20	269.66	
5,714.5	5,346.0	Horizontal Target		-0.20	269.66	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,600.0	4,600.0	0.0	0.0	KOP @ 4600'
4,817.2	4,812.1	-40.7	0.2	Start build/turn @ 4817' MD
5,719.0	5,344.0	-256.8	-573.2	LP @ 5344' TVD; 90.2°
9,618.0	5,330.4	-280.0	-4,472.1	TD at 9618.0