

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary-Designate

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

Jami Bailey, Division Director
Oil Conservation Division



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

Operator Signature Date: 10/16/13

Well information;

Operator Encana, Well Name and Number Lybrook I 30-2306 1H

API# 30-043-21180, Section 30, 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
- ☐ 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

Charles Herr
NMOCD Approved by Signature

1-6-2014 ca
Date

CONFIDENTIAL

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCT 18 2013

APPLICATION FOR PERMIT TO DRILL OR REENTER

Farmington Field Office

Bureau of Land Management

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMNM 117564
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name N/A
2. Name of Operator Encana Oil & Gas (USA) Inc.		7. If Unit or CA Agreement, Name and No. PENDING
3a. Address 370 17th Street, Suite 1700 Denver, CO 80202	3b. Phone No. (include area code) 720-876-3989	8. Lease Name and Well No. Lybrook I30-2306 01H
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface 1867' FSL and 635' FEL Section 30, T23N, R6W At proposed prod. zone 2000' FSL and 330' FWL Section 30, T23N, R6W		9. API Well No. 3004321180
14. Distance in miles and direction from nearest town or post office* +/- 53.4 miles southeast of the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM		10. Field and Pool, or Exploratory Lybrook Gallup
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) BHL is 330' from west lease line Section 30, T23N, R6W	16. No. of acres in lease NMNM 117564-1,200.97 ac 1323.52	11. Sec., T. R. M. or Blk. and Survey or Area Section 30, T23N, R6W NMMP
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. Lu-Lu 2 is +/- 1,500' east of the wellbore	19. Proposed Depth 5,488' TVD/9,592' MD	12. County or Parish Sandoval
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 7,150' GL, 7,166' KB	22. Approximate date work will start* 06/26/2014	13. State NM
17. Spacing Unit dedicated to this well 160.85 acres - N/2 S/2 Section 30, T23N, R6W		20. BLM/BIA Bond No. on file COB-000235
23. Estimated duration 25 days		RCVD DEC 24 '13

24. Attachments

OIL CONS. DIV.

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

DIST. 3

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

25. Signature <i>Brenda R. Linster</i>	Name (Printed/Typed) Brenda R. Linster	Date 10/16/13
Title Regulatory Lead		

Approved by (Signature) <i>[Signature]</i>	Name (Printed/Typed) AFN	Date 12/16/13
Title FEO		

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

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

(Continued on page 2)

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

*(Instructions on page 2)

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

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

NMOC
Av

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

AMENDED REPORT
RECEIVED

OCT 18 2013

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30-043-21180	*Pool Code 42289	*Pool Name LYBROOK GALL	Farmington Field Office Bureau of Land Management
*Property Code 40310	*Property Name LYBROOK I30-2306	*Well Number 01H	
*OGRID No. 282327	*Operator Name ENCANA OIL & GAS (USA) INC.	*Elevation 7150'	

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
I	30	23N	6W		1867	SOUTH	635	EAST	SANDOVAL

¹¹ Bottom Hole Location If Different From Surface

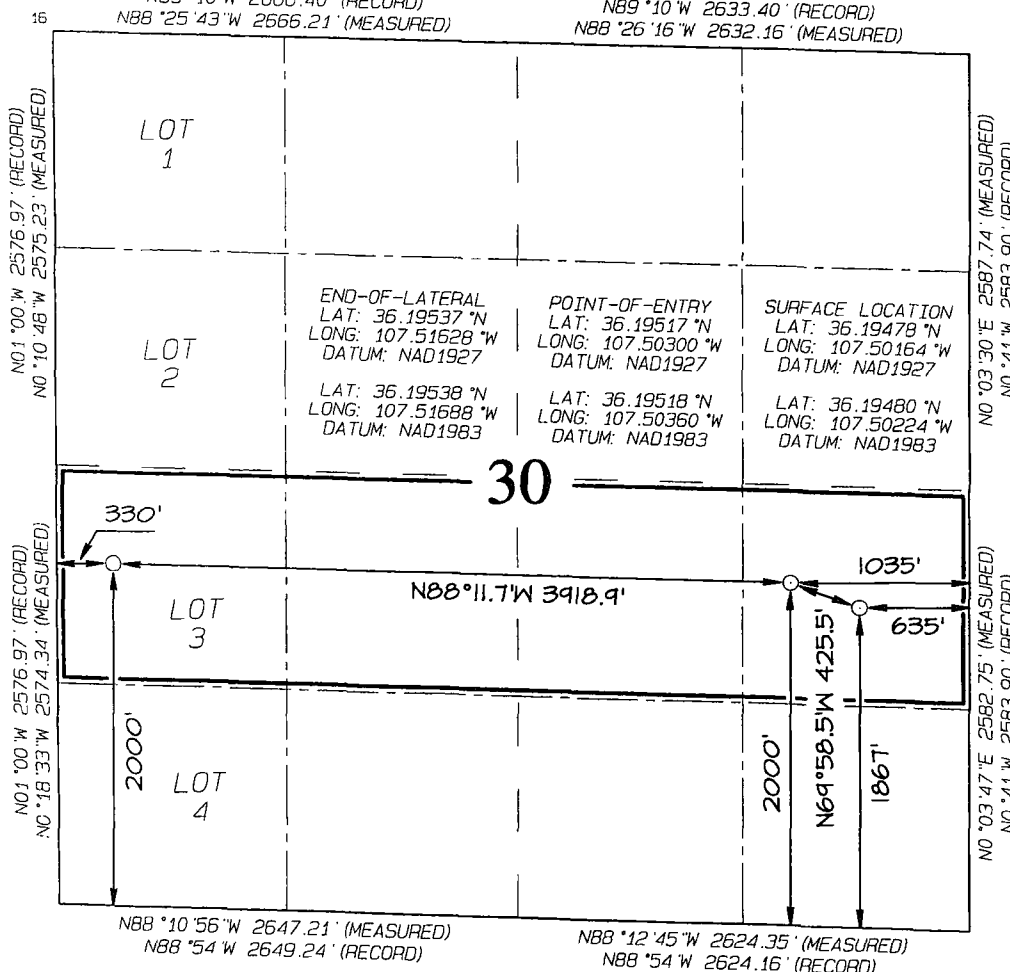
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	30	23N	6W	3	2000	SOUTH	330	WEST	SANDOVAL

¹² Dedicated Acres 160.85 Acres - N/2 S/2	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

N89°10'W 2666.40' (RECORD)
N88°25'43"W 2666.21' (MEASURED)

N89°10'W 2633.40' (RECORD)
N88°26'16"W 2632.16' (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 order 10/16/11

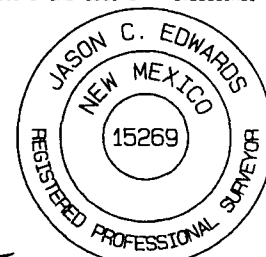
Signature
Brenda R. Linster
Printed Name
brenda.linster@encana.com
E-mail Address

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 Revised: OCTOBER 2, 2013
Date of Survey: JULY 8, 2013

Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number 15269

Directions from the Intersection of US Hwy 550 & US Hwy 64
in Bloomfield, NM to Encana Oil & Gas (USA) Inc. Lybrook I30-2306 01H
1867' FSL & 635' FEL, Section 30, T23N, R6W, N.M.P.M., Sandoval County, NM

Latitude: 36.19480°N Longitude: 107.50224°W Datum: NAD1983

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

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

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

Go right (South-easterly) for 0.2 miles to fork in road;

Go right (Westerly) for 0.1 miles to fork in road;

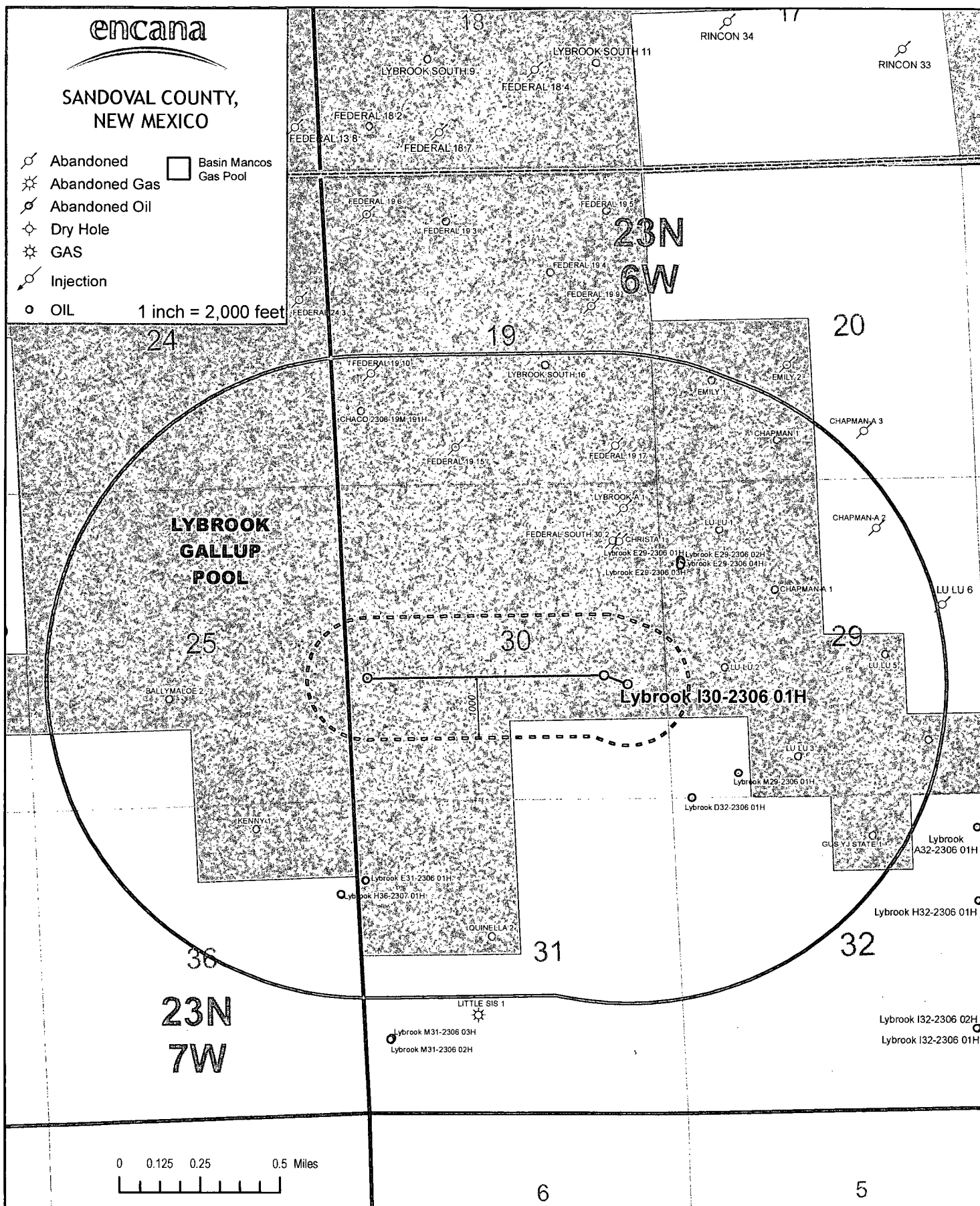
Go right (South-westerly) for 0.2 miles to new access on right-hand side of existing roadway which continues for 2490' to staked Encana Lybrook I30-2306 01H location.

encana

SANDOVAL COUNTY,
NEW MEXICO

-  Abandoned
 -  Abandoned Gas
 -  Abandoned Oil
 -  Dry Hole
 -  GAS
 -  Injection
 -  OIL
- Basin Mancos
Gas Pool

1 inch = 2,000 feet



Lybrook I30-2306 01H
SHL: NESE Section 30, T23N, R6W
1867 FSL and 635 FEL
BHL: NWSW Section 30, T23N, R6W
2000 FSL and 330 FWL
Sandoval County, New Mexico
Lease Number: NMNM 117546

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

1. ESTIMATED TOPS OF GEOLOGICAL MARKERS (TVD)

The estimated tops of important geologic markers are as follows:

Formation	Depth (TVD) units = feet
Ojo Alamo Ss.	1,428
Kirtland Sh.	1,670
Fruitland Coal	1,856
Pictured Cliffs Ss.	2,024
Lewis Sh.	2,131
Cliffhouse Ss.	2,878
Menefee Fn.	3,560
Point Lookout Ss.	4,321
Mancos Sh.	4,499
Mancos Silt	5,052
Gallup Fn.	5,346

The referenced surface elevation is 7,150', KB 7,166'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,856
Oil/Gas	Pictured Cliffs Ss.	2,024
Oil/Gas	Cliffhouse Ss.	2,878
Gas	Menefee Fn.	3,560
Oil/Gas	Point Lookout Ss.	4,321
Oil/Gas	Mancos Sh.	4,499
Oil/Gas	Mancos Silt	5,052
Oil/Gas	Gallup Fn.	5,346

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

3. PRESSURE CONTROL

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

Lybrook I30-2306 01H**SHL: NESE Section 30, T23N, R6W****1867 FSL and 635 FEL****BHL: NWSW Section 30, T23N, R6W****2000 FSL and 330 FWL****Sandoval County, New Mexico****Lease Number: NMNM 117546**

- 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'-5657'MD	8 3/4"	7"	26#	J55, LTC New
Production Liner	5457'-9592'MD	6 1/8"	4 1/2"	11.6#	B80*, LTC New

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

*B80 pipe specifications are attached

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

Lybrook I30-2306 01H**SHL: NESE Section 30, T23N, R6W****1867 FSL and 635 FEL****BHL: NWSW Section 30, T23N, R6W****2000 FSL and 330 FWL****Sandoval County, New Mexico****Lease Number: NMNM 117546**

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

b) The proposed cementing program is as follows:

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

Casing	Depth	Cement Volume (sacks)	Cement Type&Yield	Designed TOC	Centralizers
Conductor	60'	100sk	Type I Neat 16 ppg	Surface	None
Surface	500'	178sk	Type III Cement + 1% CaCl + 0.25lb/sk Cello Flake + 0.2% FL, 16ppg, 1.38cuf/sk	Surface	1 per joint on bottom 3 joints
Intermediate	5657'MD	30% open hole excess Stage 1 Lead: 230sks Stage 1 Tail: 158sks Stage 2 Lead: 184sks	Lead (Stages 1 and 2): PremLite + 3% CaCl + 0.25lb/sk CelloFlake + 5lb/sk LCM, 12.1ppg 2.13cuf/sk Tail (Stage 1): Type III Cmt + 1% CaCl + 0.25lb/sk Cello Flake 14.5ppg 1.38cuf/sk	Surface	1 per joint for bottom 3 joints, 1 every 3 joints for remaining joints
Production Liner*	5457'- 9592'	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 4823'. Directional plans are attached.

Lybrook I30-2306 01H

SHL: NESE Section 30, T23N, R6W
1867 FSL and 635 FEL

BHL: NWSW Section 30, T23N, R6W
2000 FSL and 330 FWL

Sandoval County, New Mexico

Lease Number: NMNM 117546

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5488'/9592'	Gallup

6. DRILLING FLUIDS PROGRAM

a) Surface through Intermediate Casing Point:

Hole Size (in)	Depth (ft)	Mud Type	Density (lb/gal)	Viscosity (sec/qt)	Fluid Loss (cc)
30"	0-60' TVD	Fresh Water	8.3-9.2	38-100	4-28
12 1/4"	0-500' TVD	Fresh Water	8.4-8.6	60-70	NC
8 3/4"	500'TVD- 5472'TVD/5657'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"	5657'-9592'	Synthetic Oil Based Mud	8.6-9.0	15-25	<15

c) There will be sufficient mud on location to control a blowout should one occur. Mud flow and volume will be monitored both visually and with electronic pit volume totalizers. Mud tests shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH.

√d) A closed-loop system will be used to recover drilling fluid and dry cuttings in both phases of the well and on all hole intervals, including fresh water and oil-based operations. Above-ground tanks will be utilized to hold cuttings and fluids for rig operations. A frac tank will be on location to store fresh water. Waste will be disposed of properly at an EPA-approved hazardous waste facility. Fresh water cuttings will be disposed of at Basin Disposal, Inc. and/or Industrial Ecosystems, Inc. The location will be lined in accordance with the Surface Use Plan of Operations.

7. TESTING, CORING and LOGGING

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

Cased Hole:

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

8. ABNORMAL PRESSURES & HYDROGEN SULFIDE

The anticipated bottom hole pressure is +/- 2574 psi based on a 9.0 ppg at 5501' TVD of the landing point of the horizontal lateral. No abnormal pressure or temperatures are anticipated.

Lybrook I30-2306 01H

SHL: NESE Section 30, T23N, R6W

1867 FSL and 635 FEL

BHL: NWSW Section 30, T23N, R6W

2000 FSL and 330 FWL

Sandoval County, New Mexico

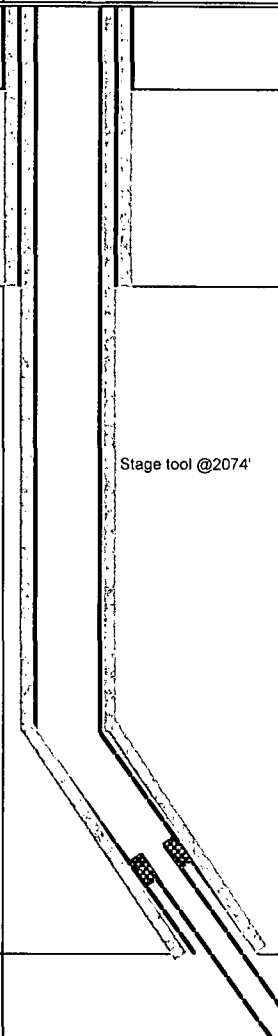
Lease Number: NMNM 117546

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 June 16, 2014. It is anticipated that completion operations will begin within 30 days after the well has been drilled depending on fracture treatment schedules with various pumping service companies.

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

LOC: Sec 30-T23N-R6W County: Sandoval WELL: Lybrook I30-2306 01H			Encana Natural Gas WELL SUMMARY					ENG: 10/8/13 RIG: GLE: 7150 RKBE: 7166	
MWD LWD	OPEN HOLE LOGGING	FORM	DEPTH			HOLE SIZE	CASING SPECS	MW MUD TYPE	DEVIATION INFORMATION
			TVD	MD					
			60	60'		30	20" 94# 100sx Type I Neat 16ppg cmt	Fresh wtr 8.3-9.2	
Surveys After csg is run	None					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	1428 1,670 1856 2024 2131 2878 3560			8 3/4	7" 26ppf J55 LTC TOC @ surface 30% OH excess: 572 sksTotal. Stage 1 Lead: 230sks Stage 1 Tail: 158sks. Stage 2 Lead: 184sks	Fresh Wtr 8.5-8.8	Vertical <1°
	Mud logger onsite	Point Lookout Ss Mancos Sh KICK OFF PT Mancos Silt Gallup Top 7" csg	4321 4499 4823 5052 5346 5472	5657					KOP 4823 10 deg/100'
Surveys every 500' Gyro at CP MWD Gamma Directional	No OH Logs	horz target Base Gallup	5501 5626	5843		6 1/8	200' overlap at liner top 3749' Lateral	8.6-9.0 OBM	.25deg updip 5488'TVD TD = 9592' MD
							4 1/2" 11.6ppf SB80 LTC Running external swellable csg packers for isolation of prod string Plan on setting top packer within 100' of intermediate casing shoe	Switch to OBM 8.6-9.0	

NOTES:

- 1) Drill with 30" bit to 60', set 20" 94# conductor pipe
- 2) Drill surface to 500', R&C 9 5/8" casing
- 3) N/U BOP and surface equipment
- 4) Drill to KOP of 4823' , 8 3/4" hole size,
- 5) PU directional tools and start curve at 10deg/100' build rate
- 6) Drill to casing point of 5657' MD
- 7) R&C 7" casing, circ cmt to surface, switch to OBM
- 8) Land at 90deg, drill 3749' lateral to 9592', run 4 1/2" liner with external swellable csg packers



Boomerang Tube LLC

CASING (OR) TUBING DESCRIPTION AND PERFORMANCE PROPERTIES

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

MAXIMUM DEPTH/LENGTH BASED ON MUD WTS & SAFETY FACTORS

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

API RELATED VALUES and INTERMEDIATE CALCULATION RESULTS

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



Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: Lybrook
Well: Lybrook I30-2306 01H
Wellbore: Hz
Design: Plan #1

Local Co-ordinate Reference: Well Lybrook I30-2306 01H
TVD Reference: WELL @ 7166.0ft (Aztec)
MD Reference: WELL @ 7166.0ft (Aztec)
North Reference: True
Survey Calculation Method: Minimum Curvature

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

Site	Lybrook				
Site Position:		Northing:	1,882,676.45 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 I30-2306 01H					
Well Position	+N/-S	0.0 ft	Northing:	1,892,561.43 ft	Latitude:	36.194800
	+E/-W	0.0 ft	Easting:	1,270,932.66 ft	Longitude:	-107.502240
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level:	7,150.0 ft	

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/4/2013	9.44	62.99	50,223

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	271.07

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	
4,823.0	0.00	0.00	4,823.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,942.1	11.91	0.64	4,941.3	12.3	0.1	10.00	10.00	0.00	0.64	
5,843.1	90.20	271.07	5,500.9	141.5	-572.4	10.00	8.69	-9.94	-89.54	
9,591.6	90.20	271.07	5,487.9	211.5	-4,320.2	0.00	0.00	0.00	0.00	Lybrook I30-2306 01H

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: Lybrook
 Well: Lybrook I30-2306 01H
 Wellbore: Hz
 Design: Plan #1

Local Co-ordinate Reference: Well Lybrook I30-2306 01H
 TVD Reference: WELL @ 7166.0ft (Aztec)
 MD Reference: WELL @ 7166.0ft (Aztec)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	9 5/8"
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	
1,428.0	0.00	0.00	1,428.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo
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	
1,670.0	0.00	0.00	1,670.0	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	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	
1,856.0	0.00	0.00	1,856.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
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	
2,024.0	0.00	0.00	2,024.0	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	
2,131.0	0.00	0.00	2,131.0	0.0	0.0	0.0	0.00	0.00	Lewis Shale
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	
2,878.0	0.00	0.00	2,878.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss.
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	
3,400.0	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	
3,560.0	0.00	0.00	3,560.0	0.0	0.0	0.0	0.00	0.00	Menefee Fn.
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	
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	
4,321.0	0.00	0.00	4,321.0	0.0	0.0	0.0	0.00	0.00	Point Lookout Ss.

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: Lybrook
 Well: Lybrook I30-2306 01H
 Wellbore: Hz
 Design: Plan #1

Local Co-ordinate Reference: Well Lybrook I30-2306 01H
 TVD Reference: WELL @ 7166.0ft (Aztec)
 MD Reference: WELL @ 7166.0ft (Aztec)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	
4,499.0	0.00	0.00	4,499.0	0.0	0.0	0.0	0.00	0.00	Mancos Shale
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	
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	
4,823.0	0.00	0.00	4,823.0	0.0	0.0	0.0	0.00	0.00	KOP @ 4823'
4,900.0	7.70	0.64	4,899.8	5.2	0.1	0.0	10.00	10.00	
4,942.1	11.91	0.64	4,941.3	12.3	0.1	0.1	10.00	10.00	Start build/turn @ 4942' MD
5,000.0	13.27	334.58	4,997.8	24.3	-2.6	3.1	10.00	2.34	
5,056.0	16.49	316.56	5,052.0	35.9	-10.9	11.5	10.00	5.75	Mancos Silt
5,100.0	19.76	307.07	5,093.8	44.9	-21.1	21.9	10.00	7.44	
5,200.0	28.32	294.16	5,185.1	64.9	-56.3	57.5	10.00	8.56	
5,300.0	37.56	287.04	5,268.9	83.6	-107.2	108.8	10.00	9.24	
5,400.0	47.07	282.43	5,342.8	100.4	-172.3	174.2	10.00	9.51	
5,403.8	47.44	282.28	5,345.4	101.0	-175.0	176.9	10.00	9.60	Gallup Fn.
5,500.0	56.72	279.07	5,404.5	114.9	-249.5	251.6	10.00	9.65	
5,600.0	66.44	276.39	5,452.0	126.6	-336.6	338.9	10.00	9.72	
5,657.0	72.00	275.04	5,472.2	131.9	-389.6	392.0	10.00	9.75	7" Casing Setting Depth
5,700.0	76.20	274.08	5,484.0	135.2	-430.8	433.2	10.00	9.77	
5,800.0	85.98	271.96	5,499.5	140.4	-529.3	531.9	10.00	9.78	
5,843.1	90.20	271.07	5,500.9	141.5	-572.4	575.0	10.00	9.78	LP @ 5500' TVD; 90.2°
5,900.0	90.20	271.07	5,500.7	142.6	-629.3	631.8	0.00	0.00	
6,000.0	90.20	271.07	5,500.4	144.5	-729.2	731.8	0.00	0.00	
6,100.0	90.20	271.07	5,500.0	146.3	-829.2	831.8	0.00	0.00	
6,200.0	90.20	271.07	5,499.7	148.2	-929.2	931.8	0.00	0.00	
6,300.0	90.20	271.07	5,499.3	150.1	-1,029.2	1,031.8	0.00	0.00	
6,400.0	90.20	271.07	5,499.0	151.9	-1,129.2	1,131.8	0.00	0.00	
6,500.0	90.20	271.07	5,498.6	153.8	-1,229.2	1,231.8	0.00	0.00	
6,600.0	90.20	271.07	5,498.3	155.7	-1,329.1	1,331.8	0.00	0.00	
6,700.0	90.20	271.07	5,497.9	157.5	-1,429.1	1,431.8	0.00	0.00	
6,800.0	90.20	271.07	5,497.6	159.4	-1,529.1	1,531.8	0.00	0.00	
6,900.0	90.20	271.07	5,497.2	161.3	-1,629.1	1,631.8	0.00	0.00	
7,000.0	90.20	271.07	5,496.9	163.1	-1,729.1	1,731.8	0.00	0.00	
7,100.0	90.20	271.07	5,496.5	165.0	-1,829.0	1,831.8	0.00	0.00	
7,200.0	90.20	271.07	5,496.2	166.9	-1,929.0	1,931.8	0.00	0.00	
7,300.0	90.20	271.07	5,495.9	168.7	-2,029.0	2,031.8	0.00	0.00	
7,400.0	90.20	271.07	5,495.5	170.6	-2,129.0	2,131.8	0.00	0.00	
7,500.0	90.20	271.07	5,495.2	172.5	-2,229.0	2,231.8	0.00	0.00	
7,600.0	90.20	271.07	5,494.8	174.3	-2,329.0	2,331.8	0.00	0.00	
7,700.0	90.20	271.07	5,494.5	176.2	-2,428.9	2,431.8	0.00	0.00	
7,800.0	90.20	271.07	5,494.1	178.1	-2,528.9	2,531.8	0.00	0.00	
7,900.0	90.20	271.07	5,493.8	179.9	-2,628.9	2,631.8	0.00	0.00	
8,000.0	90.20	271.07	5,493.4	181.8	-2,728.9	2,731.8	0.00	0.00	
8,100.0	90.20	271.07	5,493.1	183.7	-2,828.9	2,831.8	0.00	0.00	
8,200.0	90.20	271.07	5,492.7	185.5	-2,928.9	2,931.8	0.00	0.00	
8,300.0	90.20	271.07	5,492.4	187.4	-3,028.8	3,031.8	0.00	0.00	
8,400.0	90.20	271.07	5,492.0	189.2	-3,128.8	3,131.8	0.00	0.00	
8,500.0	90.20	271.07	5,491.7	191.1	-3,228.8	3,231.8	0.00	0.00	
8,600.0	90.20	271.07	5,491.3	193.0	-3,328.8	3,331.8	0.00	0.00	
8,700.0	90.20	271.07	5,491.0	194.8	-3,428.8	3,431.8	0.00	0.00	
8,800.0	90.20	271.07	5,490.6	196.7	-3,528.7	3,531.8	0.00	0.00	

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: Lybrook
Well: Lybrook I30-2306 01H
Wellbore: Hz
Design: Plan #1

Local Co-ordinate Reference: Well Lybrook I30-2306 01H
TVD Reference: WELL @ 7166.0ft (Aztec)
MD Reference: WELL @ 7166.0ft (Aztec)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
8,900.0	90.20	271.07	5,490.3	198.6	-3,628.7	3,631.8	0.00	0.00	
9,000.0	90.20	271.07	5,490.0	200.4	-3,728.7	3,731.8	0.00	0.00	
9,100.0	90.20	271.07	5,489.6	202.3	-3,828.7	3,831.8	0.00	0.00	
9,200.0	90.20	271.07	5,489.3	204.2	-3,928.7	3,931.8	0.00	0.00	
9,300.0	90.20	271.07	5,488.9	206.0	-4,028.7	4,031.8	0.00	0.00	
9,400.0	90.20	271.07	5,488.6	207.9	-4,128.6	4,131.8	0.00	0.00	
9,500.0	90.20	271.07	5,488.2	209.8	-4,228.6	4,231.8	0.00	0.00	
9,591.6	90.20	271.07	5,487.9	211.5	-4,320.2	4,323.4	0.00	0.00	TD at 9591.6

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 I30-2306 01H P - plan hits target center - Point	0.00	0.00	5,487.9	211.5	-4,320.2	1,892,828.67	1,266,615.51	36.195380	-107.516880

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
5,657.0	5,472.2	7" Casing Setting Depth	0.000	0.000

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,428.0	1,428.0	Ojo Alamo		-0.20	271.07
1,670.0	1,670.0	Kirtland Shale		-0.20	271.07
1,856.0	1,856.0	Fruitland Coal		-0.20	271.07
2,024.0	2,024.0	Pictured Cliffs Ss.		-0.20	271.07
2,131.0	2,131.0	Lewis Shale		-0.20	271.07
2,878.0	2,878.0	Cliffhouse Ss.		-0.20	271.07
3,560.0	3,560.0	Menefee Fn.		-0.20	271.07
4,321.0	4,321.0	Point Lookout Ss.		-0.20	271.07
4,499.0	4,499.0	Mancos Shale		-0.20	271.07
5,056.0	5,052.0	Mancos Silt		-0.20	271.07
5,403.8	5,346.0	Gallup Fn.		-0.20	271.07

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: Lybrook
Well: Lybrook I30-2306 01H
Wellbore: Hz
Design: Plan #1

Local Co-ordinate Reference: Well Lybrook I30-2306 01H
TVD Reference: WELL @ 7166.0ft (Aztec)
MD Reference: WELL @ 7166.0ft (Aztec)
North Reference: True
Survey Calculation Method: Minimum Curvature

Plan Annotations:

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,823.0	4,823.0	0.0	0.0	KOP @ 4823'
4,942.1	4,941.3	12.3	0.1	Start build/turn @ 4942' MD
5,843.1	5,500.9	141.5	-572.4	LP @ 5500' TVD; 90.2°
9,591.6	5,487.9	211.5	-4,320.2	TD at 9591.6

WELLHEAD BLOWOUT CONTROL SYSTEM

encana

Well name and number:

Lybrook I30-2306 01H

