

RECEIVED

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCT 15 2012

APPLICATION FOR PERMIT TO DRILL OR REENTER

Farmington Field Office
Bureau of Land Management

5. Lease Serial No.
NMNM 089021 & V-1399
6. If Indian, Allottee or Tribe Name
N/A

1a. Type of work: ☒ DRILL ☐ REENTER		7. If Unit or CA Agreement, Name and No. Pending	
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		8. Lease Name and Well No. Lybrook H32-2306 01H	
2. Name of Operator Encana Oil & Gas (USA) Inc.		9. API Well No. 30-043-21126	
3a. Address 370 17th Street, Suite 1700 Denver, CO 80202	3b. Phone No. (include area code) 720-876-5331	10. Field and Pool, or Exploratory Lybrook Gallup	
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface 1785' FNL and 250' FEL Section 32, T23N, R6W At proposed prod. zone 1785' FNL and 2285' FEL Section 31, T23N, R6W		11. Sec., T. R. M. or Blk. and Survey or Area Section 32, T23N, R6W NMPM	
14. Distance in miles and direction from nearest town or post office* +/- 54.6 miles south of intersection of Hwy US 550 & US Hwy 64 in Bloomfield, NM		12. County or Parish Sandoval	13. State NM
15. Distance from proposed* location to nearest property or lease line, ft. line (Also to nearest drig. unit line, if any) BHL is +/- 339' from west lease	16. No. of acres in lease NMNM 089021 - 480.98 V-1399- 640.00	17. Spacing Unit dedicated to this well 240 acres (S2N2 Section 32 & S2NE Section 31 T23N R6W)	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. Quinella 2 is +/- 1074' south of BHL	19. Proposed Depth 5538'/12607'	20. BLM/BIA Bond No. on file COB-000235 RCVD DEC 28 '12 OIL CONS. DIV.	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 7196' KB, 7209' GL	22. Approximate date work will start* 01/22/2013	23. Estimated duration 25 days DIST. 3	

24. Attachments

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

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

25. Signature <i>Holly Hill</i>	Name (Printed/Typed) Holly Hill	Date 10/12/12
Title Regulatory Analyst		
Approved by (Signature) <i>[Signature]</i>	Name (Printed/Typed) AFM	Date 12/19/12
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)

*(Instructions on page 2)

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

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

Hold C104

for Directional Survey
and "As Drilled" plat

CONFIDENTIAL

NMOC
V/V

NOTIFY AZTEC OCD 24 HRS.
PRIOR TO CASING & CEMENT

JAN 08 2013 ea

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) 476-3450 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 15 2012

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30.043-211210		*Pool Code 42289	*Pool Name LYBROOK GALLUP
*Property Code 39271	*Property Name LYBROOK H32-2305		*Well Number 01H
*GRID No. 282327	*Operator Name ENCANA OIL & GAS (USA) INC.		*Elevation 7195'

¹⁰ Surface Location

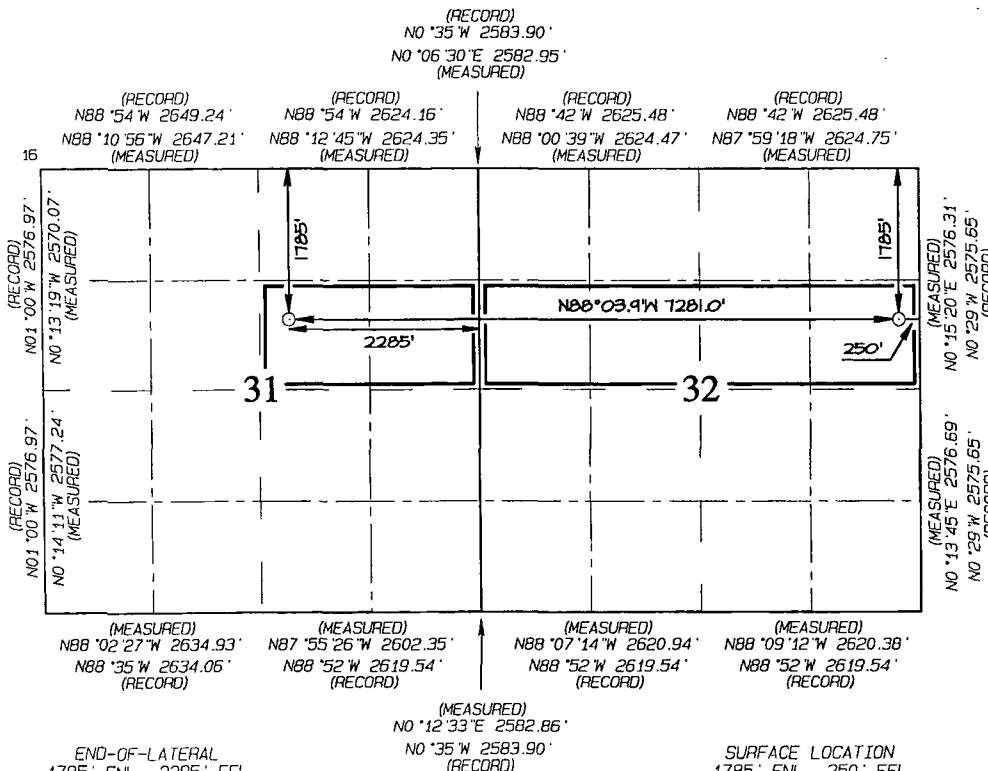
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	32	23N	6W		1785	NORTH	250	EAST	SANDOVAL

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
G	31	23N	6W		1785	NORTH	2285	EAST	SANDOVAL

¹² Dedicated Acres 240 Acres	S/2 N/2 - Section 32 S/2 NE/4 - Section 31	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



END-OF-LATERAL
1785' FNL 2285' FEL
SECTION 31, T23N, R6W
LAT: 36.18484°N
LONG: 107.50708°W
DATUM: NAD1927

LAT: 36.18485°N
LONG: 107.50769°W
DATUM: NAD1983

SURFACE LOCATION
1785' FNL 250' FEL
SECTION 32, T23N, R6W
LAT: 36.18442°N
LONG: 107.48242°W
DATUM: NAD1927

LAT: 36.18443°N
LONG: 107.48303°W
DATUM: NAD1983

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.

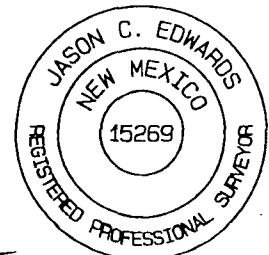
Signature **Brenda R. Linster** Date **10-12-12**
Printed Name
brenda.linster@encana.com
E-mail Address

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.

Survey Date: **DECEMBER 31, 2011**

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 H32-2306 01H
1785' FNL & 250' FEL, Section 32, T23N, R6W, N.M.P.M., Sandoval County, NM

Latitude: 36.18443°N Longitude: 107.48303°W Datum: NAD1983

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

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

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

Go right (South-easterly) for 0.8 miles to fork in road;

Go left (South-easterly) for 0.3 miles to fork in road;

Go right (Southerly) for 0.3 miles to fork in road;

Go left (Easterly) for 0.3 miles to an existing wellpad from which new access to Encana Lybrook A32-2306 01H location continues for 1500' to new access on right-hand side which continues for an additional 900' to Encana Lybrook H32-2306 01H location.

Lybrook H32-2306 01H
SHL: SENE Section 32, T23N, R6W
1785 FNL and 250 FEL
BHL: SWNE Section 31, T23N, R6W
1785 FNL and 2285 FEL
Sandoval County, New Mexico
Lease Number: NMNM 089021 & V-1399

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 Ss.	1476'
Kirtland	1675'
Fruitland Coal	1845'
Pictured Cliffs	2073'
Lewis	2199'
Cliffhouse	2912'
Menefee	3572'
Point Lookout	4329'
Mancos Shale	4519'
Mancos Silt	5072'
Gallup	5336'

The referenced surface elevation is 7196', KB 7209'

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

<u>Substance</u>	<u>Formation</u>	<u>Depth (TVD)</u>
Gas	Fruitland Coal	1845'
Gas	Pictured Cliffs	2073'
Gas	Cliffhouse	2912'
Gas	Point Lookout	4329'
Oil/Gas	Mancos	4519'

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

3. PRESSURE CONTROL

- Pressure control equipment and configuration will be designed to meet 2M standards.
- Working pressure on rams and BOPE will be 3,000 psi
- Function test and visual inspection of the BOP will be conducted daily and noted in the IADC Daily Drilling Report.
- The Annular BOP will be pressure tested to a minimum of 50 percent of its rated working pressure.
- Blind and Pipe Rams/BOP will be tested against a test plug to 100 percent of rated working pressure.
- Pressure tests are required before drilling out from under all casing strings set and cemented in place.
- BOP controls must be installed prior to drilling the surface casing plug and will remain in use until the well is completed or abandoned.
- BOP testing procedures and testing frequency will conform to Onshore Order No. 2.

Lybrook H32-2306 01H

SHL: SENE Section 32, T23N, R6W
1785 FNL and 250 FEL

BHL: SWNE Section 31, T23N, R6W
1785 FNL and 2285 FEL

Sandoval County, New Mexico

Lease Number: NMNM 089021 & V-1399

- 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'-5720'MD	8 1/2"	7"	26#	J55, LTC New
Production Liner	5520'-12607'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 H32-2306 01H

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1785 FNL and 250 FEL

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Sandoval County, New Mexico

Lease Number: NMNM 089021 & V-1399

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	5720'MD	30% open hole excess Lead: 116sk Tail: 448sk	Lead: PremLite + 3% CaCl + 0.25lb/sk CelloFlake + 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*	5520'-12607'	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 5000'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5538'/12607'	Gallup

Lybrook H32-2306 01H

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Sandoval County, New Mexico

Lease Number: NMNM 089021 & V-1399

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 1/2"	500'TVD- 5544'TVD/5720'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"	5720'-12607'	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 +/- 2608 psi based on a 9.0 ppg at 5573' TVD of the landing point of the horizontal lateral. 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.

Lybrook H32-2306 01H

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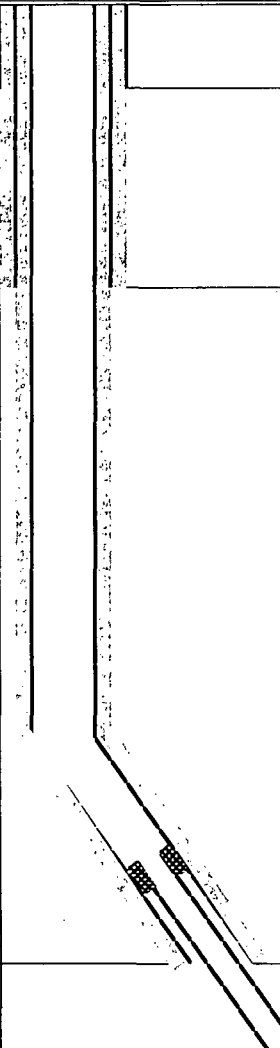
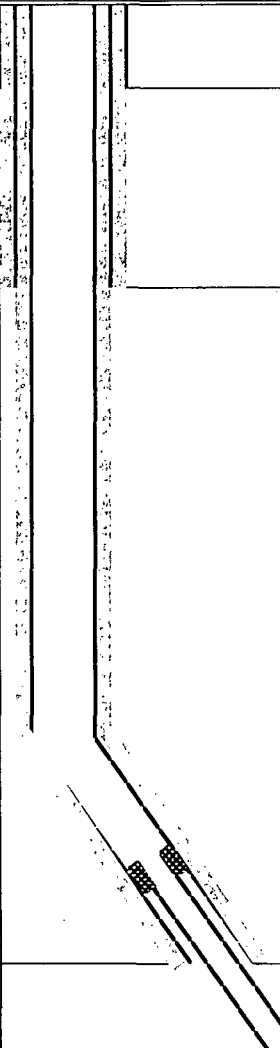
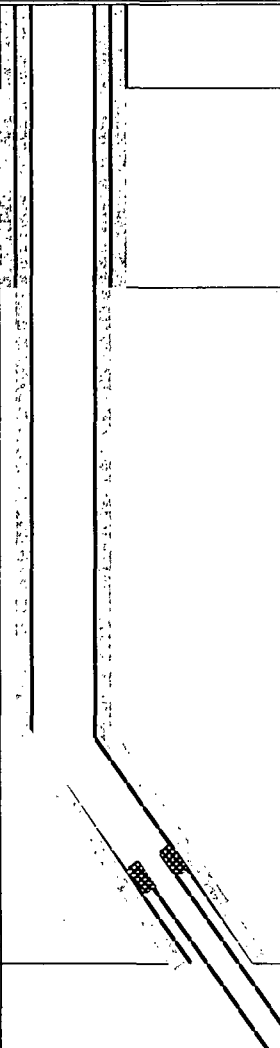
Sandoval County, New Mexico

Lease Number: NMNM 089021 & V-1399

9. ANTICIPATED START DATE AND DURATION OF OPERATIONS

Drilling is estimated to commence on January 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.

LOC: Sec 32-T23N-R6W County: Sandoval WELL: Lybrook H32-2306 01H			Encana Natural Gas WELL SUMMARY			encana™ natural gas		ENG: J. Fox/ A. 9/26/12 RIG: GLE: 7196 RKBE: 7209	
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 48.8ppg cmt	Fresh wtr 8.3-9.2	
Surveys After csg is run	None	Nacimiento	20			12 1/4	9 5/8" 36ppf J55 STC TOC @ surface 178 sks Type III Cmt	Fresh wtr 8.4-8.6	Vertical <1°
			500	500					
Surveys every 500'	No OH logs	Ojo Alamo Kirtland	1476 1675	5720		8 1/2	7" 26ppf J55 LTC TOC @ surface 30% OH excess; 560 sks Lead 116 sks Tail 444sks	Fresh Wtr 8.5-8.8	Vertical <1°
		Fruitland Coal	1845						
	Pictured Cliffs Ss Lewis Shale	2073 2199							
	Cliffhouse Ss Menefee Fn	2912 3572							
	Point Lookout Ss Mancos Sh	4329 4519							
	KICK OFF PT	5000							
	Mancos Silt	5072							
	Gallup Top	5336							
			5544						KOP 5000 10 deg/100'
Surveys every 500' Gyro at CP MWD Gamma Directional	No OH Logs	horz target	5573	5903		6 1/8	200' overlap at liner top		.25deg updip 5538'TVD TD = 12607' MD
		Base Gallup	5632			6700' Lateral		8.6-9.0 OBM	
							4 1/2" 11.6ppf SB80 LTC Running external swellable csg packers for isolation of prod string	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 5000', 8 1/2" hole size,
- 5) PU directional tools and start curve at 10deg/100' build rate
- 6) Drill to casing point of 5720' MD (72deg)
- 7) R&C 7" casing, circ cmt to surface, switch to OBM
- 8) Land at 90deg, drill 6700' lateral to 12607', 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

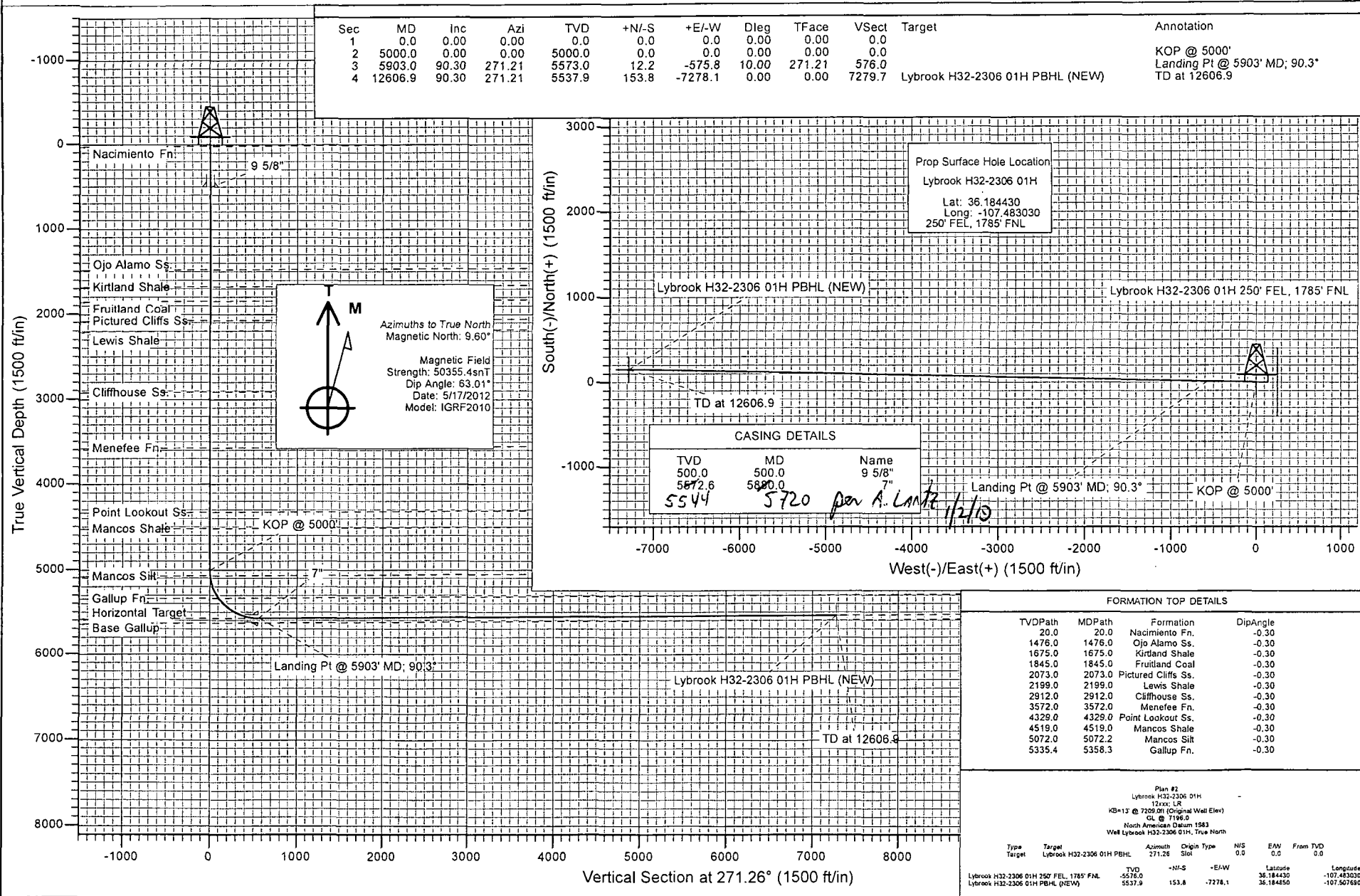
Drilling Mud Weight (ppg)	_____	9.625
Tension Safety Factor	_____	1.80
Maximum Tension Length (ft)	_____	9,630
Internal Yield Safety Factor	_____	1.10
Maximum Depth for Internal Yield (ft)	_____	14,150
Collapse Safety Factor	_____	1.125
Maximum Collapse Depth (ft)	_____	11,290

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



Project: Sandoval County, NM
 Site: Lybrook
 Well: Lybrook H32-2306 01H
 Wellbore: Hz
 Design: Plan #2



Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook H32-2306 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB=13' @ 7209.0ft (Original Well Elev)
Project:	Sandoval County, NM	MD Reference:	KB=13' @ 7209.0ft (Original Well Elev)
Site:	Lybrook	North Reference:	True
Well:	Lybrook H32-2306 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #2		

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 H32-2306 01H					
Well Position	+N-S	0.0 ft	Northing:	1,888,713.73 ft	Latitude:	36.184430
	+E-W	0.0 ft	Easting:	1,276,553.08 ft	Longitude:	-107.483030
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level:	7,196.0 ft	

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2010	5/17/2012	(°)	(°)	(nT)
			9.60	63.01	50,355

Design	Plan #2			
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	271.26

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N-S	+E-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(ft)	(ft)	Rate	Rate	Rate	(°)	
(ft)			(ft)			(°/100ft)	(°/100ft)	(°/100ft)		
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
5,903.0	90.30	271.21	5,573.0	12.2	-575.8	10.00	10.00	0.00	271.21	
12,606.9	90.30	271.21	5,537.9	153.8	-7,278.1	0.00	0.00	0.00	0.00	Lybrook H32-2306 01

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: Lybrook
 Well: Lybrook H32-2306 01H
 Wellbore: Hz
 Design: Plan #2

Local Co-ordinate Reference: Well Lybrook H32-2306 01H
 TVD Reference: KB=13' @ 7209.0ft (Original Well Elev)
 MD Reference: KB=13' @ 7209.0ft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	Lybrook H32-2306 01H 250' FEL, 1785' FNL
20.0	0.00	0.00	20.0	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	
1,300.0	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	
1,476.0	0.00	0.00	1,476.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo Ss.
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	
1,675.0	0.00	0.00	1,675.0	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	
1,845.0	0.00	0.00	1,845.0	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	
2,073.0	0.00	0.00	2,073.0	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	
2,199.0	0.00	0.00	2,199.0	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	
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	
2,912.0	0.00	0.00	2,912.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss.
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	
3,572.0	0.00	0.00	3,572.0	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	

Planning Report

Database: USA EDM 5000 Multi Users DB
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 Project: Sandoval County, NM
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 Wellbore: Hz
 Design: Plan #2

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 TVD Reference: KB=13' @ 7209.0ft (Original Well Elev)
 MD Reference: KB=13' @ 7209.0ft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
4,329.0	0.00	0.00	4,329.0	0.0	0.0	0.0	0.00	0.00	Point Lookout Ss.
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	
4,519.0	0.00	0.00	4,519.0	0.0	0.0	0.0	0.00	0.00	Mancos Shale
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	KOP @ 5000'
5,072.2	7.21	271.21	5,072.0	0.1	-4.5	4.5	10.00	10.00	Mancos Silt
5,100.0	10.00	271.21	5,099.5	0.2	-8.7	8.7	10.00	10.00	
5,200.0	20.00	271.21	5,196.0	0.7	-34.5	34.5	10.00	10.00	
5,300.0	30.00	271.21	5,286.5	1.6	-76.7	76.7	10.00	10.00	
5,358.3	35.83	271.21	5,335.4	2.3	-108.4	108.4	10.00	10.00	Gallup Fn.
5,400.0	40.00	271.21	5,368.3	2.8	-134.0	134.0	10.00	10.00	
5,500.0	50.00	271.21	5,438.9	4.3	-204.6	204.6	10.00	10.00	
5,600.0	60.00	271.21	5,496.2	6.1	-286.4	286.5	10.00	10.00	
5,700.0	70.00	271.21	5,538.4	8.0	-376.9	377.0	10.00	10.00	7" at 72 degrees
5,800.0	80.00	271.21	5,564.3	10.0	-473.3	473.4	10.00	10.00	
5,880.0	88.00	271.21	5,572.6	11.7	-552.8	552.9	10.00	10.00	
5,900.0	90.00	271.21	5,573.0	12.1	-572.8	572.9	10.00	10.00	
5,903.0	90.30	271.21	5,573.0	12.2	-575.8	576.0	10.00	10.00	Landing Pt @ 5903' MD; 90.3°
6,000.0	90.30	271.21	5,572.5	14.2	-672.8	672.9	0.00	0.00	
6,100.0	90.30	271.21	5,571.9	16.3	-772.8	772.9	0.00	0.00	
6,200.0	90.30	271.21	5,571.4	18.4	-872.7	872.9	0.00	0.00	
6,300.0	90.30	271.21	5,570.9	20.6	-972.7	972.9	0.00	0.00	
6,400.0	90.30	271.21	5,570.4	22.7	-1,072.7	1,072.9	0.00	0.00	
6,500.0	90.30	271.21	5,569.9	24.8	-1,172.7	1,172.9	0.00	0.00	
6,600.0	90.30	271.21	5,569.3	26.9	-1,272.6	1,272.9	0.00	0.00	
6,700.0	90.30	271.21	5,568.8	29.0	-1,372.6	1,372.9	0.00	0.00	
6,800.0	90.30	271.21	5,568.3	31.1	-1,472.6	1,472.9	0.00	0.00	
6,900.0	90.30	271.21	5,567.8	33.2	-1,572.6	1,572.9	0.00	0.00	
7,000.0	90.30	271.21	5,567.2	35.4	-1,672.5	1,672.9	0.00	0.00	
7,100.0	90.30	271.21	5,566.7	37.5	-1,772.5	1,772.9	0.00	0.00	
7,200.0	90.30	271.21	5,566.2	39.6	-1,872.5	1,872.9	0.00	0.00	
7,300.0	90.30	271.21	5,565.7	41.7	-1,972.5	1,972.9	0.00	0.00	
7,400.0	90.30	271.21	5,565.1	43.8	-2,072.4	2,072.9	0.00	0.00	
7,500.0	90.30	271.21	5,564.6	45.9	-2,172.4	2,172.9	0.00	0.00	
7,600.0	90.30	271.21	5,564.1	48.0	-2,272.4	2,272.9	0.00	0.00	
7,700.0	90.30	271.21	5,563.6	50.1	-2,372.4	2,372.9	0.00	0.00	
7,800.0	90.30	271.21	5,563.0	52.3	-2,472.3	2,472.9	0.00	0.00	
7,900.0	90.30	271.21	5,562.5	54.4	-2,572.3	2,572.9	0.00	0.00	
8,000.0	90.30	271.21	5,562.0	56.5	-2,672.3	2,672.9	0.00	0.00	
8,100.0	90.30	271.21	5,561.5	58.6	-2,772.3	2,772.9	0.00	0.00	
8,200.0	90.30	271.21	5,561.0	60.7	-2,872.3	2,872.9	0.00	0.00	
8,300.0	90.30	271.21	5,560.4	62.8	-2,972.2	2,972.9	0.00	0.00	
8,400.0	90.30	271.21	5,559.9	64.9	-3,072.2	3,072.9	0.00	0.00	
8,500.0	90.30	271.21	5,559.4	67.0	-3,172.2	3,172.9	0.00	0.00	
8,600.0	90.30	271.21	5,558.9	69.2	-3,272.2	3,272.9	0.00	0.00	
8,700.0	90.30	271.21	5,558.3	71.3	-3,372.1	3,372.9	0.00	0.00	
8,800.0	90.30	271.21	5,557.8	73.4	-3,472.1	3,472.9	0.00	0.00	
8,900.0	90.30	271.21	5,557.3	75.5	-3,572.1	3,572.9	0.00	0.00	

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
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 Well: Lybrook H32-2306 01H
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 Design: Plan #2

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 TVD Reference: KB=13' @ 7209.0ft (Original Well Elev)
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 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
9,000.0	90.30	271.21	5,556.8	77.6	-3,672.1	3,672.9	0.00	0.00	
9,100.0	90.30	271.21	5,556.2	79.7	-3,772.0	3,772.9	0.00	0.00	
9,200.0	90.30	271.21	5,555.7	81.8	-3,872.0	3,872.9	0.00	0.00	
9,300.0	90.30	271.21	5,555.2	84.0	-3,972.0	3,972.9	0.00	0.00	
9,400.0	90.30	271.21	5,554.7	86.1	-4,072.0	4,072.9	0.00	0.00	
9,500.0	90.30	271.21	5,554.1	88.2	-4,171.9	4,172.9	0.00	0.00	
9,600.0	90.30	271.21	5,553.6	90.3	-4,271.9	4,272.9	0.00	0.00	
9,700.0	90.30	271.21	5,553.1	92.4	-4,371.9	4,372.9	0.00	0.00	
9,800.0	90.30	271.21	5,552.6	94.5	-4,471.9	4,472.9	0.00	0.00	
9,900.0	90.30	271.21	5,552.1	96.6	-4,571.9	4,572.9	0.00	0.00	
10,000.0	90.30	271.21	5,551.5	98.7	-4,671.8	4,672.9	0.00	0.00	
10,100.0	90.30	271.21	5,551.0	100.9	-4,771.8	4,772.9	0.00	0.00	
10,200.0	90.30	271.21	5,550.5	103.0	-4,871.8	4,872.9	0.00	0.00	
10,300.0	90.30	271.21	5,550.0	105.1	-4,971.8	4,972.9	0.00	0.00	
10,400.0	90.30	271.21	5,549.4	107.2	-5,071.7	5,072.9	0.00	0.00	
10,500.0	90.30	271.21	5,548.9	109.3	-5,171.7	5,172.9	0.00	0.00	
10,600.0	90.30	271.21	5,548.4	111.4	-5,271.7	5,272.9	0.00	0.00	
10,700.0	90.30	271.21	5,547.9	113.5	-5,371.7	5,372.9	0.00	0.00	
10,800.0	90.30	271.21	5,547.3	115.6	-5,471.6	5,472.9	0.00	0.00	
10,900.0	90.30	271.21	5,546.8	117.8	-5,571.6	5,572.9	0.00	0.00	
11,000.0	90.30	271.21	5,546.3	119.9	-5,671.6	5,672.9	0.00	0.00	
11,100.0	90.30	271.21	5,545.8	122.0	-5,771.6	5,772.9	0.00	0.00	
11,200.0	90.30	271.21	5,545.2	124.1	-5,871.5	5,872.9	0.00	0.00	
11,300.0	90.30	271.21	5,544.7	126.2	-5,971.5	5,972.9	0.00	0.00	
11,400.0	90.30	271.21	5,544.2	128.3	-6,071.5	6,072.8	0.00	0.00	
11,500.0	90.30	271.21	5,543.7	130.4	-6,171.5	6,172.8	0.00	0.00	
11,600.0	90.30	271.21	5,543.2	132.6	-6,271.4	6,272.8	0.00	0.00	
11,700.0	90.30	271.21	5,542.6	134.7	-6,371.4	6,372.8	0.00	0.00	
11,800.0	90.30	271.21	5,542.1	136.8	-6,471.4	6,472.8	0.00	0.00	
11,900.0	90.30	271.21	5,541.6	138.9	-6,571.4	6,572.8	0.00	0.00	
12,000.0	90.30	271.21	5,541.1	141.0	-6,671.4	6,672.8	0.00	0.00	
12,100.0	90.30	271.21	5,540.5	143.1	-6,771.3	6,772.8	0.00	0.00	
12,200.0	90.30	271.21	5,540.0	145.2	-6,871.3	6,872.8	0.00	0.00	
12,300.0	90.30	271.21	5,539.5	147.3	-6,971.3	6,972.8	0.00	0.00	
12,400.0	90.30	271.21	5,539.0	149.5	-7,071.3	7,072.8	0.00	0.00	
12,500.0	90.30	271.21	5,538.4	151.6	-7,171.2	7,172.8	0.00	0.00	
12,600.0	90.30	271.21	5,537.9	153.7	-7,271.2	7,272.8	0.00	0.00	
12,606.9	90.30	271.21	5,537.9	153.8	-7,278.1	7,279.7	0.00	0.00	TD at 12606.9 - Lybrook H32-2306 01H PBHL (

Planning Report

Database: USA EDM 5000 Multi Users DB
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 Project: Sandoval County, NM
 Site: Lybrook
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 Wellbore: Hz
 Design: Plan #2

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 MD Reference: KB=13' @ 7209.0ft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Targets									
Target Name	hit/miss target	Dip Angle	Dip Dir	TVD	+N/-S	+E/-W	Northing	Easting	
Shape		(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)	
Lybrook H32-2306 01H I		0.00	0.00	5,537.9	153.8	-7,278.1	1,888,960.03	1,269,277.55	
- plan hits target center									
- Point									
Lybrook H32-2306 01H I		0.00	0.00	-5,576.0	0.0	0.0	1,888,713.73	1,276,553.08	
- plan misses target center by 5576.0ft at 0.0ft MD (0.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1				-5,576.0	400.0	250.0	1,889,110.52	1,276,808.14	
Point 2				-5,576.0	-400.0	250.0	1,888,310.59	1,276,797.98	

Casing Points				
Measured Depth	Vertical Depth		Casing Diameter	Hole Diameter
(ft)	(ft)	Name	(in)	(in)
500.0	500.0	9 5/8"	9.625	12.250
5,880.0	5,572.6	7"	7.000	7.500

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(ft)	(ft)			(°)	(°)	
20.0	20.0	Nacimiento Fn.		-0.30	271.26	
1,476.0	1,476.0	Ojo Alamo Ss.		-0.30	271.26	
1,675.0	1,675.0	Kirtland Shale		-0.30	271.26	
1,845.0	1,845.0	Fruitland Coal		-0.30	271.26	
2,073.0	2,073.0	Pictured Cliffs Ss.		-0.30	271.26	
2,199.0	2,199.0	Lewis Shale		-0.30	271.26	
2,912.0	2,912.0	Cliffhouse Ss.		-0.30	271.26	
3,572.0	3,572.0	Menefee Fn.		-0.30	271.26	
4,329.0	4,329.0	Point Lookout Ss.		-0.30	271.26	
4,519.0	4,519.0	Mancos Shale		-0.30	271.26	
5,072.2	5,072.0	Mancos Silt		-0.30	271.26	
5,358.3	5,336.0	Gallup Fn.		-0.30	271.26	

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W	Comment	
(ft)	(ft)	(ft)	(ft)		
5,000.0	5,000.0	0.0	0.0	KOP @ 5000'	
5,903.0	5,573.0	12.2	-575.8	Landing Pt @ 5903' MD; 90.3°	
12,606.9	5,537.9	153.8	-7,278.1	TD at 12606.9	

WELLHEAD BLOWOUT CONTROL SYSTEM



Well name and number:

Lybrook H32-2306 01H

