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District III - (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
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1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

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

Form C-103
Revised July 18, 2013

SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.) 1. Type of Well: Oil Well ☐ Gas Well ☒ Other ☐ 2. Name of Operator Encana Oil and Gas (USA) Inc. 3. Address of Operator 370 17 th Street, Suite 1700, Denver, CO 80202 4. Well Location Unit Letter <u>E</u> <u>1741</u> feet from the <u>North</u> line and <u>549</u> feet from the <u>West</u> line Section 33 Township 23N Range 7W NMPM County: Sandoval County, NM	WELL API NO. 30-043-21195
	5. Indicate Type of Lease STATE ☒ FEE ☐
	6. State Oil & Gas Lease No. V-1697, ST-NM-LG-3924
	7. Lease Name or Unit Agreement Name Lybrook E33-2307
	8. Well Number 01H
9. OGRID Number 282327	
10. Pool name or Wildcat Basin Mancos Gas	
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 6853'	

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐	CHANGE PLANS ☒	COMMENCE DRILLING OPNS. ☐	P AND A ☐
PULL OR ALTER CASING ☐	MULTIPLE COMPL. ☐	CASING/CEMENT JOB ☐	
DOWNHOLE COMMINGLE ☐			
CLOSED-LOOP SYSTEM ☐			
OTHER: ☐		OTHER: ☐	

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Encana Oil & Gas (USA) Inc. (Encana) would like to revise the 10-Point Drilling Plan, Well Summary Diagram, BOP diagram, Pipeline Specifications, and Directional Drilling Plan for the Lybrook E33-2307 01H well. These documents reflect a change in the build rate to accommodate an electronic submersible pump.

OIL CONS. DIV DIST. 3

AUG 08 2014

Spud Date:

August 20, 2014

Rig Release Date:

August 30, 2014

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Jessica Gregg TITLE Regulatory Analyst DATE 8/7/14

Type or print name Jessica Gregg E-mail address: Jessica.Gregg@encana.com PHONE: 720-876-3926

For State Use Only

APPROVED BY: Charles H. [Signature] TITLE SUPERVISOR DISTRICT #3 DATE AUG 15 2014

Conditions of Approval (if any): Av

Hold C104

for Directional Survey
and "As Drilled" plat

HOLD C104 FOR NSL WSP

Lybrook E33-2307-01H
SHL: Sec 33 23N 07W
1741' FNL 549' FWL
BHL: Sec 32 23N 07W
400 FNL 330 FWL
Sandoval, New Mexico

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

1. ESTIMATED TOPS OF GEOLOGICAL MARKERS (TVD)

The estimated tops of important geologic markers are as follows:

Formation	Depth (TVD) units = feet
Ojo Alamo	896
Kirtland Shale	1,083
Fruitland Coal	1,322
Pictured Cliffs Ss.	1,454
Lewis Shale	1,569
Cliffhouse Ss.	2,270
Menefee Fn.	2,956
Point Lookout Ss.	3,841
Mancos Shale	4,020
Mancos Silt	4,566
Gallup Fn.	4,825

The referenced surface elevation is 6853', KB 6869'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,322
Oil/Gas	Pictured Cliffs Ss.	1,454
Oil/Gas	Cliffhouse Ss.	2,270
Gas	Menefee Fn.	2,956
Oil/Gas	Point Lookout Ss.	3,841
Oil/Gas	Mancos Shale	4,020
Oil/Gas	Mancos Silt	4,566
Oil/Gas	Gallup Fn.	4,825

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 E33-2307-01H
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- 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
- o) Inside BOP or float sub shall also be available on the rig floor at all times.

Proposed BOP and choke manifold arrangements are attached.

4. CASING & CEMENTING PROGRAM

The proposed casing and cementing program has been designed to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones, and any prospectively valuable deposits of minerals. Any isolating medium other than cement shall receive approval prior to use. The casing setting depth shall be calculated to position the casing seat opposite a competent formation which will contain the maximum pressure to which it will be exposed during normal drilling operations. All indications of useable water shall be reported.

- a) The proposed casing design is as follows:

Casing	Depth (MD)	Hole Size	Csg Size	Weight	Grade
Conductor	0'-60'	30"	20"	94#	
Surface	0'-500'	12 1/4"	9 5/8"	36#	J55, STC New
Intermediate	0'-5773'	8 3/4"	7"	26#	J55, LTC New
Production Liner	5573'-10440'	6 1/8"	4 1/2"	11.6#	B80*, LTC New

Casing String				Casing Strength Properties			Minimum Design Factors		
Size	Weight (ppf)	Grade	Connection	Collapse (psi)	Burst (psi)	Tensile (1000lbs)	Collapse	Burst	Tension
9 5/8"	36	J55	STC	2020	3520	394	1.125	1.1	1.5
7"	26	J55	LTC	4320	4980	367	1.125	1.1	1.5
4.5"	11.6	B80	LTC	6350	7780	201	1.125	1.1	1.5

*B80 pipe specifications are attached

Casing design is subject to revision based on geologic conditions encountered

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.

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b) The proposed cementing program is as follows

Casing	Depth (MD)	Cement Volume (sacks)	Cement Type & Yield	Designed TOC	Centralizers
Conductor	0'-60'	100 sks	Type I Neat 16 ppg	Surface	None
Surface	0'-500'	247 sks	HALCEM™ SYSTEM + 2% CaCl ₂ + 0.125lbm/sk Poly-E-Flake. 15.8 ppg, 1.174 cuft/sk	Surface	1 per joint on bottom 3 joints
Intermediate	0'-5773'	100% open hole excess Stage 1 Lead: 356 sks Stage 1 Tail: 691 sks	Lead: PremLite + 3% CaCl + 0.25lb/sk CelloFlake + 5lb/sk LCM, 12.1ppg 2.13cuft/sk Tail: Type III Cmt + 1% CaCl + 0.25lb/sk Cello Flake 14.5ppg 1.38cuft/sk	Surface	1 every 3 joints through water bearing zones
Production Liner	5573'-10440'	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 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 2400'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5025'/10440'	Gallup

Lybrook E33-2307-01H
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400 FNL 330 FWL
Sandoval, New Mexico

6. DRILLING FLUIDS PROGRAM

a) Surface through Intermediate Casing Point:

Hole Size (in)	Depth (TVD/MD)	Mud Type	Density (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
30"	0-60'/60'	Fresh Water	8.3-9.2	38-100	4-28
12 1/4"	0'-500'/500'	Fresh Water	8.3-10	60-70	NC
8 3/4"	500'/500'-5062'/5773'	Fresh Water LSND	8.3-10	40-50	8-10

b) Intermediate Casing Point to TD:

Hole Size (in)	Depth (TVD/MD)	Mud Type	Density (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
6 1/8"	5062'/5773'- 5025'/10440'	Fresh Water LSND	8.3-10	15-25	<15

- c) There will be sufficient mud on location to control a blowout should one occur. Mud flow and volume will be monitored both visually and with electronic pit volume totalizers. Mud tests shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH.
- d) A closed-loop system will be used to recover drilling fluid and dry cuttings in both phases of the well and on all hole intervals. Above-ground tanks will be utilized to hold cuttings and fluids for rig operations. A frac tank will be on location to store fresh water. Waste will be disposed of properly at an EPA-approved hazardous waste facility. Fresh water cuttings will be disposed of at Basin Disposal, Inc. and/or Industrial Ecosystems, Inc. The location will be lined in accordance with the Surface Use Plan of Operations.

7. TESTING, CORING, & LOGGING

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

Cased Hole:

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

8. ABNORMAL PRESSURES & HYDROGEN SULFIDE

The anticipated bottom hole pressure is +/- 2378 psi based on a 9.0 ppg at 5082' TVD of the horizontal lateral target. No abnormal pressure or temperatures are anticipated.

No hydrogen sulfide gas is anticipated, however, if H₂S is encountered, the guidelines in Onshore Order No. 6 will be followed.

9. ANTICIPATED START DATE AND DURATION OF OPERATIONS

Drilling is estimated to commence on August 20, 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.

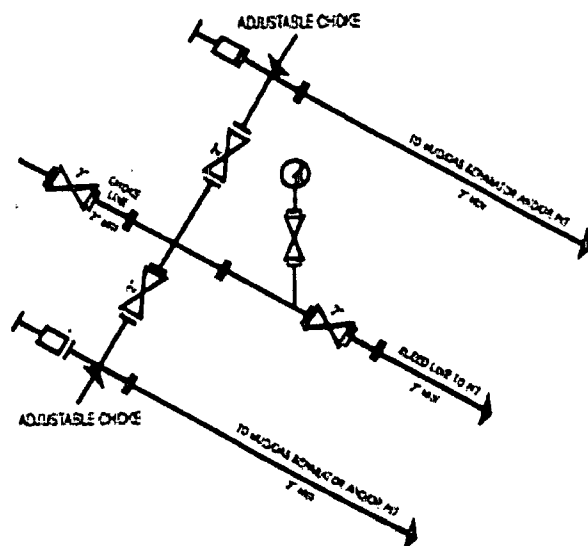
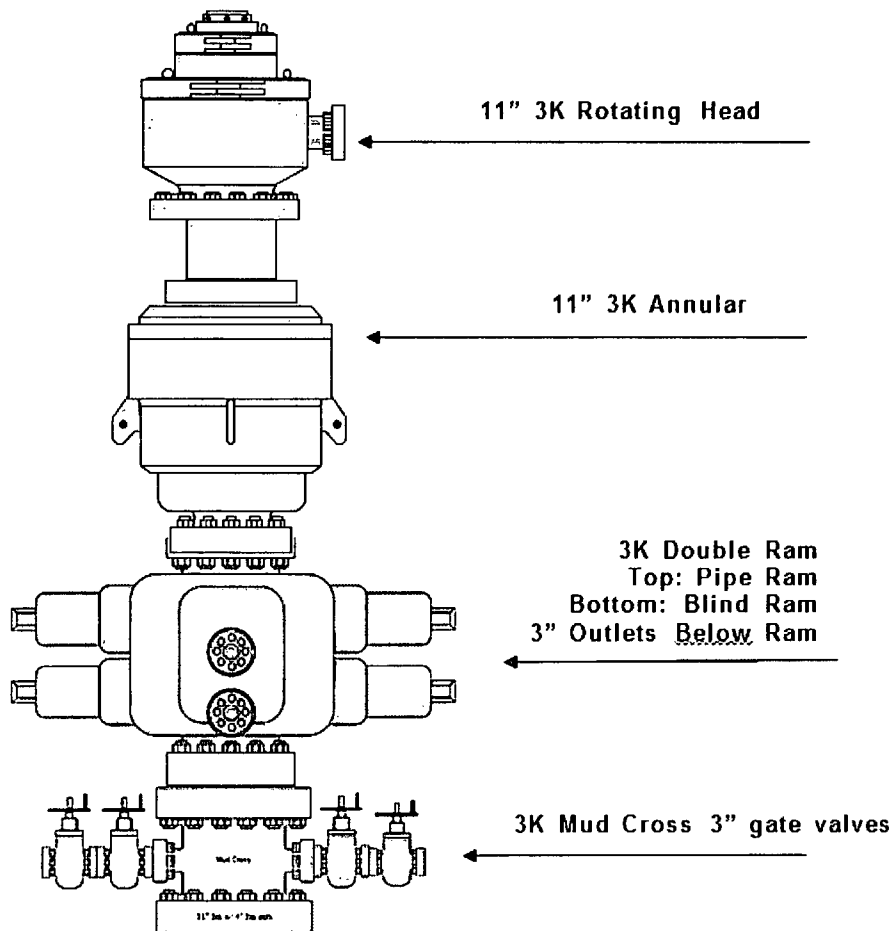
It is anticipated that the drilling of this well will take approximately 20 days.

LOC: 400' FNL, 330' FEL Sec 32 23N 07W County: Sandoval WELL: Lybrook E33-2307 01H			Encana Natural Gas WELL SUMMARY			ENG: M. Sanchez RIG: Aztec 950 GLE: 6853 RKBE: 6869			8/7/14
MWD LWD	OPEN HOLE LOGGING	FORM	DEPTH			HOLE SIZE	CASING SPECS	MW MUD TYPE	DEVIATION INFORMATION
			TVD	MD					
			60	60'		30	16" 42# 100sx Type I Neat 16.0ppg cmt	Fresh wtr 8.3-9.2	
Multi-Well pad take survey every stand and run anti- collision report prior to spud	None	Nacimiento 9 5/8" Csg	0 500	500.00		12 1/4	9 5/8" 36ppf J55 STC TOC Surface - 247 sks of Type III Cement	Fresh wtr 8.3-10	Vertical <1°
Survey Every 60'-120', updating anticollision report after surveys. Stop operations and contact drilling engineer if separation factor approaches 1.5	No OH logs	Ojo Alamo Kirtland Shale Fruitland Coal Pictured Cliffs Ss. Lewis Shale Cliffhouse Ss. Menefee Fn. Point Lookout Ss. Mancos Shale	896 1,083 1,322 1,454 1,569 2,270 2,956 3,841 4,020			8 3/4	7" 26ppf J55 LTC TOC @ surface (100% OH excess) Stage 1 Total: 1047sks Stage 1 Lead: 356 sks Premium Lite FM + 3% CaCl2 + 0.25/sk Cello Flake + 5#/sk LCM-1 + 8% Bentonite + 0.4% FL- 52A + 0.4% Sodium Metasilicate. Mixed at 12.1 ppg. Yield 2.13 cuft/sk. Stage 1 Tail: 691 sks Type III Cement + 1% CaCl2 + 0.25#/sk Cello Flake + 0.2% FL-52A. Mixed at 14.6 ppg. Yield 1.38 cuft/sk.	Fresh Wtr 8.3-10	Vertical <1°
Surveys every 30' through the curve	Mud logger onsite	KOP Mancos Silt Gallup Fn. 7" Csg	2,400 4,566 4,825 5,062	2,400					
Surveys every stand to TD unless directed otherwise by Geologist	No OH Logs	Horizontal Target TD Base Gallup	5,082 5,025 5,160	10,440		6 1/8	200' overlap at liner top 4567' Drilled Lateral		Horz Inc/TVD 90.6°deg/5082ft TD = 10439.6 MD
MWD Gamma Directional							4 1/2" 11.6ppf SB80 LTC Running external swellable csg packers for isolation of prod string	WBM 8.3-10	

WELLHEAD BLOWOUT CONTROL SYSTEM

encana

Well Name and Number:
Lybrook E33-2307 01H





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
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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

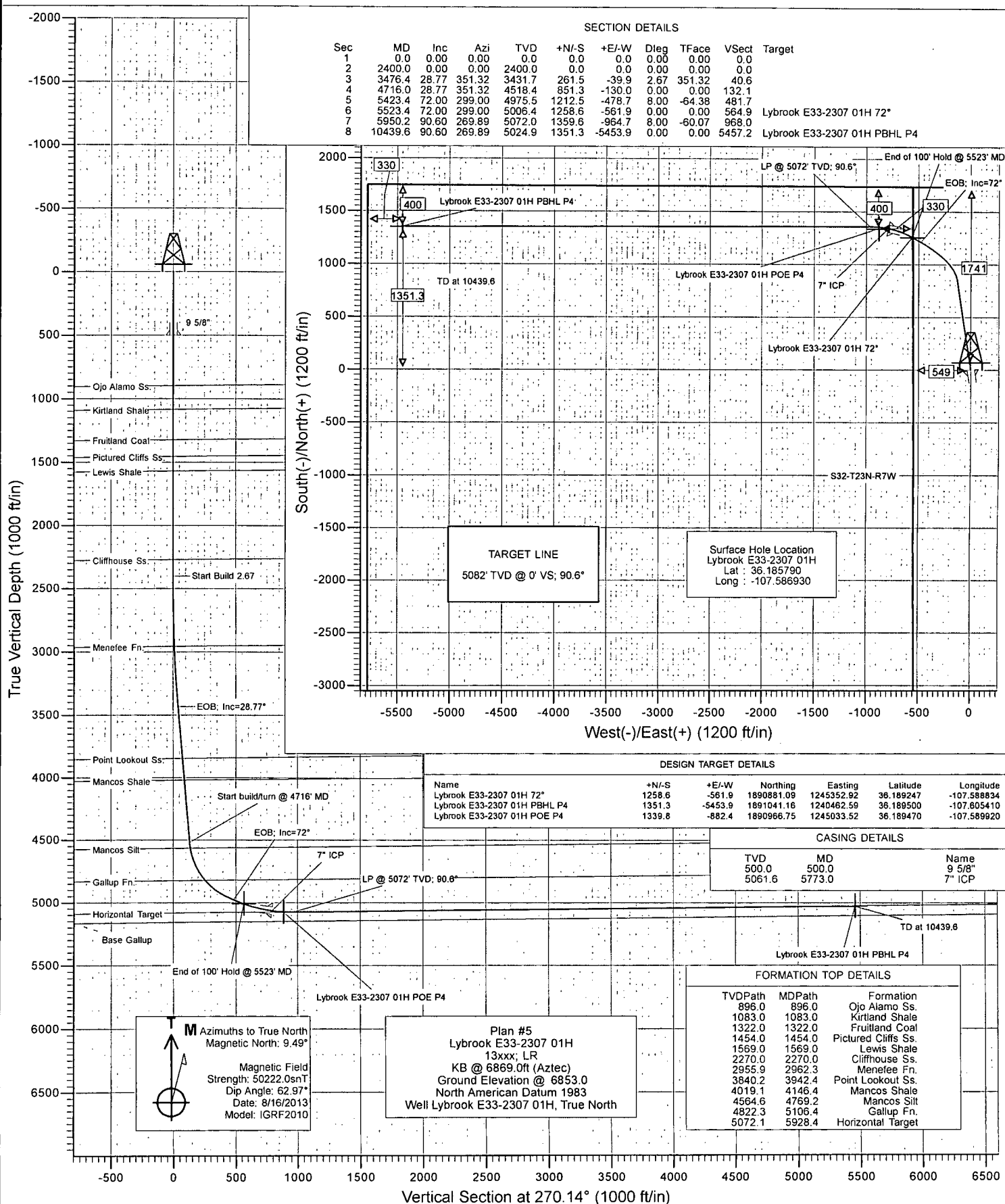
Minimum Make-up Torque (ft-lbs)	_____	1,640
Nominal Make-up Torque (ft-lbs)	_____	2,190
Maximum Make-up Torque (ft-lbs)	_____	2,740

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
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Project: Sandoval County, NM
 Site: Lybrook
 Well: Lybrook E33-2307 01H
 Wellbore: Hz
 Design: Plan #5



Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook E33-2307 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB @ 6869.0ft (Aztec)
Project:	Sandoval County, NM	MD Reference:	KB @ 6869.0ft (Aztec)
Site:	Lybrook	North Reference:	True
Well:	Lybrook E33-2307 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #5		

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

Site		Lybrook			
Site Position:		Northing:	1,882,676.45 ft	Latitude:	36.168210
From:	Lat/Long	Easting:	1,287,068.90 ft	Longitude:	-107.447150
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-0.71 °

Well		Lybrook E33-2307 01H				
Well Position	+N/-S	0.0 ft	Northing:	1,889,614.89 ft	Latitude:	36.185790
	+E/-W	0.0 ft	Easting:	1,245,897.40 ft	Longitude:	-107.586930
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,853.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/16/2013	9.49	62.97	50,222

Design	Plan #5			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	270.14

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,476.4	28.77	351.32	3,431.7	261.5	-39.9	2.67	2.67	0.00	351.32	
4,716.0	28.77	351.32	4,518.4	851.3	-130.0	0.00	0.00	0.00	0.00	
5,423.4	72.00	299.00	4,975.5	1,212.5	-478.7	8.00	6.11	-7.40	-64.38	
5,523.4	72.00	299.00	5,006.4	1,258.6	-561.9	0.00	0.00	0.00	0.00	Lybrook E33-2307 01
5,950.2	90.60	269.89	5,072.0	1,359.6	-964.7	8.00	4.36	-6.82	-60.07	
10,439.6	90.60	269.89	5,024.9	1,351.3	-5,453.9	0.00	0.00	0.00	0.00	Lybrook E33-2307 01

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook E33-2307 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB @ 6869.0ft (Aztec)
Project:	Sandoval County, NM	MD Reference:	KB @ 6869.0ft (Aztec)
Site:	Lybrook	North Reference:	True
Well:	Lybrook E33-2307 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #5		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
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	
896.0	0.00	0.00	896.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo Ss.
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	
1,083.0	0.00	0.00	1,083.0	0.0	0.0	0.0	0.00	0.00	Kirtland Shale
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	
1,322.0	0.00	0.00	1,322.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	
1,454.0	0.00	0.00	1,454.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs Ss.
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	
1,569.0	0.00	0.00	1,569.0	0.0	0.0	0.0	0.00	0.00	Lewis Shale
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	
1,900.0	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	
2,100.0	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	
2,270.0	0.00	0.00	2,270.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss.
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	Start Build 2.67
2,500.0	2.67	351.32	2,500.0	2.3	-0.4	0.4	2.67	2.67	
2,600.0	5.35	351.32	2,599.7	9.2	-1.4	1.4	2.67	2.67	
2,700.0	8.02	351.32	2,699.0	20.7	-3.2	3.2	2.67	2.67	
2,800.0	10.69	351.32	2,797.7	36.8	-5.6	5.7	2.67	2.67	
2,900.0	13.36	351.32	2,895.5	57.4	-8.8	8.9	2.67	2.67	
2,962.3	15.03	351.32	2,955.9	72.5	-11.1	11.2	2.67	2.67	Menefee Fn.
3,000.0	16.04	351.32	2,992.2	82.5	-12.6	12.8	2.67	2.67	
3,100.0	18.71	351.32	3,087.6	112.0	-17.1	17.4	2.67	2.67	
3,200.0	21.38	351.32	3,181.6	145.9	-22.3	22.6	2.67	2.67	
3,300.0	24.05	351.32	3,273.8	184.0	-28.1	28.5	2.67	2.67	
3,400.0	26.73	351.32	3,364.1	226.4	-34.6	35.1	2.67	2.67	
3,476.4	28.77	351.32	3,431.7	261.5	-39.9	40.6	2.67	2.67	EOB; Inc=28.77°
3,500.0	28.77	351.32	3,452.4	272.8	-41.7	42.3	0.00	0.00	
3,600.0	28.77	351.32	3,540.1	320.4	-48.9	49.7	0.00	0.00	
3,700.0	28.77	351.32	3,627.7	367.9	-56.2	57.1	0.00	0.00	
3,800.0	28.77	351.32	3,715.4	415.5	-63.4	64.5	0.00	0.00	
3,900.0	28.77	351.32	3,803.1	463.1	-70.7	71.8	0.00	0.00	
3,942.4	28.77	351.32	3,840.2	483.2	-73.8	75.0	0.00	0.00	Point Lookout Ss.
4,000.0	28.77	351.32	3,890.7	510.7	-78.0	79.2	0.00	0.00	
4,100.0	28.77	351.32	3,978.4	558.2	-85.2	86.6	0.00	0.00	
4,146.4	28.77	351.32	4,019.1	580.3	-88.6	90.0	0.00	0.00	Mancos Shale

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook E33-2307 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB @ 6869.0ft (Aztec)
Project:	Sandoval County, NM	MD Reference:	KB @ 6869.0ft (Aztec)
Site:	Lybrook	North Reference:	True
Well:	Lybrook E33-2307 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #5		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
4,200.0	28.77	351.32	4,066.0	605.8	-92.5	94.0	0.00	0.00	
4,300.0	28.77	351.32	4,153.7	653.4	-99.8	101.4	0.00	0.00	
4,400.0	28.77	351.32	4,241.4	700.9	-107.0	108.7	0.00	0.00	
4,500.0	28.77	351.32	4,329.0	748.5	-114.3	116.1	0.00	0.00	
4,600.0	28.77	351.32	4,416.7	796.1	-121.6	123.5	0.00	0.00	
4,700.0	28.77	351.32	4,504.3	843.7	-128.8	130.9	0.00	0.00	
4,716.0	28.77	351.32	4,518.4	851.3	-130.0	132.1	0.00	0.00	Start build/turn @ 4716' MD
4,769.2	30.82	343.82	4,564.6	877.0	-135.7	137.9	8.00	3.87	Mancos Silt
4,800.0	32.19	339.90	4,590.8	892.3	-140.7	142.9	8.00	4.45	
4,900.0	37.35	329.13	4,673.0	943.5	-165.5	167.8	8.00	5.15	
5,000.0	43.26	320.78	4,749.3	996.1	-202.8	205.2	8.00	5.91	
5,100.0	49.66	314.14	4,818.2	1,049.3	-251.9	254.4	8.00	6.40	
5,106.4	50.08	313.76	4,822.3	1,052.7	-255.4	258.0	8.00	6.59	Gallup Fn.
5,200.0	56.37	308.68	4,878.3	1,101.9	-311.8	314.5	8.00	6.72	
5,300.0	63.29	304.02	4,928.6	1,153.0	-381.5	384.3	8.00	6.92	
5,400.0	70.34	299.91	4,967.9	1,201.6	-459.4	462.3	8.00	7.05	
5,423.4	72.00	299.00	4,975.5	1,212.5	-478.7	481.7	8.00	7.11	EOB; Inc=72°
5,500.0	72.00	299.00	4,999.2	1,247.8	-542.4	545.5	0.00	0.00	
5,523.4	72.00	299.00	5,006.4	1,258.6	-561.9	564.9	0.00	0.00	End of 100' Hold @ 5523' MD
5,600.0	75.13	293.51	5,028.1	1,291.0	-627.7	630.9	8.00	4.09	
5,700.0	79.41	286.57	5,050.1	1,324.4	-719.3	722.5	8.00	4.27	
5,773.0	82.62	281.64	5,061.6	1,341.9	-789.2	792.5	8.00	4.41	7" ICP
5,800.0	83.83	279.83	5,064.7	1,346.9	-815.6	818.8	8.00	4.46	
5,900.0	88.33	273.20	5,071.6	1,358.2	-914.6	917.9	8.00	4.50	
5,928.4	89.62	271.33	5,072.1	1,359.3	-943.0	946.3	8.00	4.53	Horizontal Target
5,950.2	90.60	269.89	5,072.0	1,359.6	-964.7	968.0	8.00	4.53	LP @ 5072' TVD; 90.6°
6,000.0	90.60	269.89	5,071.5	1,359.5	-1,014.6	1,017.9	0.00	0.00	
6,100.0	90.60	269.89	5,070.5	1,359.3	-1,114.6	1,117.9	0.00	0.00	
6,200.0	90.60	269.89	5,069.4	1,359.1	-1,214.6	1,217.9	0.00	0.00	
6,300.0	90.60	269.89	5,068.4	1,358.9	-1,314.5	1,317.9	0.00	0.00	
6,400.0	90.60	269.89	5,067.3	1,358.7	-1,414.5	1,417.9	0.00	0.00	
6,500.0	90.60	269.89	5,066.3	1,358.6	-1,514.5	1,517.8	0.00	0.00	
6,600.0	90.60	269.89	5,065.2	1,358.4	-1,614.5	1,617.8	0.00	0.00	
6,700.0	90.60	269.89	5,064.2	1,358.2	-1,714.5	1,717.8	0.00	0.00	
6,800.0	90.60	269.89	5,063.1	1,358.0	-1,814.5	1,817.8	0.00	0.00	
6,900.0	90.60	269.89	5,062.1	1,357.8	-1,914.5	1,917.8	0.00	0.00	
7,000.0	90.60	269.89	5,061.0	1,357.6	-2,014.5	2,017.8	0.00	0.00	
7,100.0	90.60	269.89	5,060.0	1,357.4	-2,114.5	2,117.8	0.00	0.00	
7,200.0	90.60	269.89	5,058.9	1,357.3	-2,214.5	2,217.8	0.00	0.00	
7,300.0	90.60	269.89	5,057.9	1,357.1	-2,314.5	2,317.8	0.00	0.00	
7,400.0	90.60	269.89	5,056.8	1,356.9	-2,414.5	2,417.8	0.00	0.00	
7,500.0	90.60	269.89	5,055.8	1,356.7	-2,514.5	2,517.8	0.00	0.00	
7,600.0	90.60	269.89	5,054.7	1,356.5	-2,614.5	2,617.8	0.00	0.00	
7,700.0	90.60	269.89	5,053.7	1,356.3	-2,714.5	2,717.8	0.00	0.00	
7,800.0	90.60	269.89	5,052.6	1,356.1	-2,814.5	2,817.8	0.00	0.00	
7,900.0	90.60	269.89	5,051.5	1,356.0	-2,914.5	2,917.8	0.00	0.00	
8,000.0	90.60	269.89	5,050.5	1,355.8	-3,014.4	3,017.8	0.00	0.00	
8,100.0	90.60	269.89	5,049.4	1,355.6	-3,114.4	3,117.7	0.00	0.00	
8,200.0	90.60	269.89	5,048.4	1,355.4	-3,214.4	3,217.7	0.00	0.00	
8,300.0	90.60	269.89	5,047.3	1,355.2	-3,314.4	3,317.7	0.00	0.00	
8,400.0	90.60	269.89	5,046.3	1,355.0	-3,414.4	3,417.7	0.00	0.00	
8,500.0	90.60	269.89	5,045.2	1,354.8	-3,514.4	3,517.7	0.00	0.00	

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook E33-2307 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB @ 6869.0ft (Aztec)
Project:	Sandoval County, NM	MD Reference:	KB @ 6869.0ft (Aztec)
Site:	Lybrook	North Reference:	True
Well:	Lybrook E33-2307 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #5		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
8,600.0	90.60	269.89	5,044.2	1,354.7	-3,614.4	3,617.7	0.00	0.00	
8,700.0	90.60	269.89	5,043.1	1,354.5	-3,714.4	3,717.7	0.00	0.00	
8,800.0	90.60	269.89	5,042.1	1,354.3	-3,814.4	3,817.7	0.00	0.00	
8,900.0	90.60	269.89	5,041.0	1,354.1	-3,914.4	3,917.7	0.00	0.00	
9,000.0	90.60	269.89	5,040.0	1,353.9	-4,014.4	4,017.7	0.00	0.00	
9,100.0	90.60	269.89	5,038.9	1,353.7	-4,114.4	4,117.7	0.00	0.00	
9,200.0	90.60	269.89	5,037.9	1,353.5	-4,214.4	4,217.7	0.00	0.00	
9,300.0	90.60	269.89	5,036.8	1,353.4	-4,314.4	4,317.7	0.00	0.00	
9,400.0	90.60	269.89	5,035.8	1,353.2	-4,414.4	4,417.7	0.00	0.00	
9,500.0	90.60	269.89	5,034.7	1,353.0	-4,514.4	4,517.7	0.00	0.00	
9,600.0	90.60	269.89	5,033.7	1,352.8	-4,614.4	4,617.6	0.00	0.00	
9,700.0	90.60	269.89	5,032.6	1,352.6	-4,714.4	4,717.6	0.00	0.00	
9,800.0	90.60	269.89	5,031.6	1,352.4	-4,814.3	4,817.6	0.00	0.00	
9,900.0	90.60	269.89	5,030.5	1,352.3	-4,914.3	4,917.6	0.00	0.00	
10,000.0	90.60	269.89	5,029.5	1,352.1	-5,014.3	5,017.6	0.00	0.00	
10,100.0	90.60	269.89	5,028.4	1,351.9	-5,114.3	5,117.6	0.00	0.00	
10,200.0	90.60	269.89	5,027.4	1,351.7	-5,214.3	5,217.6	0.00	0.00	
10,300.0	90.60	269.89	5,026.3	1,351.5	-5,314.3	5,317.6	0.00	0.00	
10,400.0	90.60	269.89	5,025.3	1,351.3	-5,414.3	5,417.6	0.00	0.00	
10,439.6	90.60	269.89	5,024.9	1,351.3	-5,453.9	5,457.2	0.00	0.00	TD at 10439.6

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Lybrook E33-2307 01H f - hit/miss target - Shape - Point	0.00	0.00	5,012.3	1,351.3	-5,453.9	1,891,041.16	1,240,462.59	36.189500	-107.605410
- plan misses target center by 12.6ft at 10439.6ft MD (5024.9 TVD, 1351.3 N, -5453.9 E)									
Lybrook E33-2307 01H f - plan hits target center - Point	0.00	0.00	5,024.9	1,351.3	-5,453.9	1,891,041.16	1,240,462.59	36.189500	-107.605410
Lybrook E33-2307 01H f - plan hits target center - Point	0.00	0.00	5,006.4	1,258.6	-561.9	1,890,881.09	1,245,352.92	36.189247	-107.588834
Lybrook E33-2307 01H f - plan misses target center by 21.0ft at 10439.4ft MD (5024.9 TVD, 1351.3 N, -5453.7 E) - Point	0.00	0.00	5,045.9	1,351.3	-5,453.9	1,891,041.16	1,240,462.59	36.189500	-107.605410
Lybrook E33-2307 01H f - plan misses target center by 16.1ft at 5866.1ft MD (5070.1 TVD, 1355.7 N, -880.8 E) - Point	0.00	0.00	5,072.7	1,339.8	-882.4	1,890,966.75	1,245,033.52	36.189470	-107.589920
Lybrook E33-2307 01H f - plan misses target center by 17.9ft at 5865.3ft MD (5070.1 TVD, 1355.6 N, -880.1 E) - Point	0.00	0.00	5,061.9	1,339.8	-882.4	1,890,966.75	1,245,033.52	36.189470	-107.589920
Lybrook E33-2307 01H f - plan misses target center by 16.0ft at 5865.8ft MD (5070.1 TVD, 1355.6 N, -880.5 E) - Point	0.00	0.00	5,068.2	1,339.8	-882.4	1,890,966.75	1,245,033.52	36.189470	-107.589920

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook E33-2307 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB @ 6869.0ft (Aztec)
Project:	Sandoval County, NM	MD Reference:	KB @ 6869.0ft (Aztec)
Site:	Lybrook	North Reference:	True
Well:	Lybrook E33-2307 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	H2		
Design:	Plan #5		

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
5,773.0	5,061.6	7" ICP	0.000	0.000

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
896.0	896.0	Ojo Alamo Ss.		-0.60	270.14
1,083.0	1,083.0	Kirtland Shale		-0.60	270.14
1,322.0	1,322.0	Fruitland Coal		-0.60	270.14
1,454.0	1,454.0	Pictured Cliffs Ss.		-0.60	270.14
1,569.0	1,569.0	Lewis Shale		-0.60	270.14
2,270.0	2,270.0	Cliffhouse Ss.		-0.60	270.14
2,962.3	2,956.0	Menefee Fn.		-0.60	270.14
3,942.4	3,841.0	Point Lookout Ss.		-0.60	270.14
4,146.4	4,020.0	Mancos Shale		-0.60	270.14
4,769.2	4,566.0	Mancos Silt		-0.60	270.14
5,106.4	4,825.0	Gallup Fn.		-0.60	270.14
5,928.4	5,082.0	Horizontal Target		-0.60	270.14

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,400.0	2,400.0	0.0	0.0	Start Build 2.67
3,476.4	3,431.7	261.5	-39.9	EOB; Inc=28.77°
4,716.0	4,518.4	851.3	-130.0	Start build/turn @ 4716' MD
5,423.4	4,975.5	1,212.5	-478.7	EOB; Inc=72°
5,523.4	5,006.4	1,258.6	-561.9	End of 100' Hold @ 5523' MD
5,950.2	5,072.0	1,359.6	-964.7	LP @ 5072' TVD; 90.6°
10,439.6	5,024.9	1,351.3	-5,453.9	TD at 10439.6