

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

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

Jami Bailey, Division Director
Oil Conservation Division



New Mexico Oil Conservation Division approval and conditions listed below are made in accordance with OCD Rule 19.15.7.11 and are in addition to the actions approved by BLM on the following 3160-4 or 3160-5 form.

Operator Signature Date: 10/9/2014

Well information:

API WELL #	Well Name	Well #	Operator Name	Type	Stat	County	Surf. Owner
30-045-35511-00-00	LYBROOK 110 2308	001H	ENCANA OIL & GAS (USA) INC.	G	N	San Juan	F

Application Type:

- ☐ P&A ☒ Drilling/Casing Change ☐ Location Change
☐ Recomplete/DHC (For hydraulic fracturing operations review EPA Underground injection control Guidance #84)
☐ Other:

Conditions of Approval:

Notify NMOCD 24hrs prior to beginning operations, casing & cement

Hold C-104 for directional survey & "As Drilled" Plat

Hold C-104 for (NSL, NSP, DHC)

See APD Conditions of approval regarding Hydraulic Fracturing, Oil base muds and Well-bore communication.

Charlie T. Lerrin

NMOCD Approved by Signature

10-17-2014

Date

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

CONFIDENTIAL

FORM APPROVED
OMB No. 1004-0137
Expires: October 31, 2014

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

SUBMIT IN TRIPLICATE - Other instructions on page 2 OCT 10 2014

1. Type of Well ☐ Oil Well ☒ Gas Well ☐ Other		5. Lease Serial No. NMNM 118132
2. Name of Operator Encana Oil & Gas (USA) Inc.		6. If Indian, Allottee or Tribe Name N/A
3a. Address 370 17th Street, Suite 1700 Denver, CO 80202	3b. Phone No. (include area code) 720-876-5867	7. If Unit of CA/Agreement, Name and/or No. N/A
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) SHL: 2491' FSL and 508' FEL Section 10, T23N, R8W BHL: 1880' FNL and 330' FWL Section 10, T23N, R8W		8. Well Name and No. Lybrook 110-2308 01H
		9. API Well No. 30-045-35511
		10. Field and Pool or Exploratory Area Basin Mancos Gas & Nageezi Gallup
		11. County or Parish, State San Juan, NM

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

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

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

Encana Oil & Gas (USA) Inc. (Encana) wishes to modify the drilling plan for the Lybrook 110-2308 01H well to cement the 4 1/2" production liner, instead of running open hole swell packers, as previously planned. Attached is an updated Directional Drilling Plan, 10-Point Drilling Plan and Wellbore Diagram that reflect this change. Please note, the 7" ICP was also moved from approximately 72 degrees to approximately 55 degrees.

CONDITIONS OF APPROVAL

Adhere to previously issued stipulations

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

14. I hereby certify that the foregoing is true and correct. Name (Printed/Typed)	
Cristi Bauor	Title Operations Technician
Signature <i>Cristi Bauor</i>	Date 10/9/14

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by <i>William Tamberton</i>		Title <i>Petroleum Engineer</i>	Date <i>10/10/2014</i>
Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.		Office <i>FEO</i>	

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.

NMOCDFV

LOC: Lybrook I10-2308 01H County: 0 WELL: Lybrook I10-2308 01H			Encana Natural Gas WELL SUMMARY			ENG: 0 RIG: Unassigned GLE: 0 RKBE: 5285			10/9/14
MWD LWD	OPEN HOLE LOGGING	FORM	DEPTH			HOLE SIZE	CASING SPECS	MW MUD TYPE	DEVIATION INFORMATION
			TVD	MD					
			60	60'		26	16" 42.09# 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	San Jose Fn. Nacimiento 9 5/8" Csg	0 0 500	 500.00		12 1/4	9 5/8" 36ppf J55 STC TOC Surface with 100% OH Excess: 228 sks Type III Cement + 1% bwoc Calcium Chloride + 0.25 lbs/sack Cello Flake + 0.2% bwoc FL-52A + 58.9% Fresh Water.	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 Ss. Kirtland Shale Fruitland Coal Pictured Cliffs Ss. Lewis Shale Cliffhouse Ss. Menefee Fn. Point Lookout Ss. Mancos Shale	#N/A 1,092 1,268 1,720 1,813 3,105 3,185 4,042 4,210			8 3/4	7" 26ppf J55 LTC TOC @ surface (100% OH excess - 70% Lead 30% Tail) Stage 1 Total: 887sks Stage 1 Lead: 502 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: 384 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	2,900 4,759 5,028 5,144	2,900 5,402'					
Surveys every stand to TD unless directed otherwise by Geologist	No OH Logs	Horizontal Target TD Base Gallup	5,285 5,270 5,312	9,717		6 1/8	100' overlap at liner top 4315' Drilled Lateral		Horz Inc/TVD deg/90.2 degft TD = 9717.1 MD
MWD Gamma Directional							4 1/2" 11.6ppf SB80 LTC TOC @ hanger (50% OH excess) Stage 1 Total: 252sks Stage 1 Blend: 252 sks Premium Lite High Strength FM + 0.7% bwoc R-3 + 3% bwow Potassium Chloride + 0.25lbs/sack Cello Flake + 0.5% bwoc CD-32 + 1.15% bwoc FL- 52A + 60 lbs/sack Calcium Carbonate + 124.4% Fresh Water. Yield 2.63 cuft/sk.	WBM 8.3-10	

NOTES:

- 1) Drill with 26" bit to 60', set 16" 42.09ppf 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 2900', 8 3/4 inch holesize
- 5) Start curve at 10deg/100' build rate
- 6) Drill to csg point of 5402' MD
- 7) R&C 7" csg, circ cmt to surface
- 8) Land at ~90 deg, drill lateral to 9717' run 4 1/2 inch cemented liner

Lybrook I10-2308 01H

SHL: NE/4 SE/4 Sec 10 T23N R8W, 2491' FSL, 508' FEL

BHL:

, 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	991
Kirtland Shale	1,092
Fruitland Coal	1,268
Pictured Cliffs Ss.	1,720
Lewis Shale	1,813
Cliffhouse Ss.	3,105
Menefee Fn.	3,185
Point Lookout Ss.	4,042
Mancos Shale	4,210
Mancos Silt	4,759
Gallup Fn.	5,028
Horizontal Target	5,285
Base Gallup	5,312
Mancos Top	off @

The referenced surface elevation is 0', KB 5285'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,268
Oil/Gas	Pictured Cliffs Ss.	1,720
Oil/Gas	Cliffhouse Ss.	3,105
Gas	Menefee Fn.	3,185
Oil/Gas	Point Lookout Ss.	4,042
Oil/Gas	Mancos Shale	4,210
Oil/Gas	Mancos Silt	4,759
Oil/Gas	Gallup Fn.	5,028

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

Lybrook I10-2308 01H

SHL: NE/4 SE/4 Sec 10 T23N R8W, 2491' FSL, 508' FEL

BHL:

, New Mexico

3. PRESSURE CONTROL

- a) Pressure control equipment and configuration will be designed to meet 2M standards.
- b) Working pressure on rams and BOPE will be 3,000 psi.
- c) Function test and visual inspection of the BOP will be conducted daily and noted in the IADC Daily Drilling Report.
- d) The Annular BOP will be pressure tested to a minimum of 50 percent of its rated working pressure.
- e) Blind and Pipe Rams/BOP will be tested against a test plug to 100 percent of rated working pressure.
- f) Pressure tests are required before drilling out from under all casing strings set and cemented in place.
- g) BOP controls must be installed prior to drilling the surface casing plug and will remain in use until the well is completed or abandoned.
- h) BOP testing procedures and testing frequency will conform to Onshore Order No. 2.
- i) BOP remote controls shall be located on the rig floor at a location readily accessible to the driller. Master controls shall be on the ground at the accumulator and shall have the capability to function all preventers.
- j) The kill line shall be 2-inch minimum and contain two kill line valves, one of which shall be a check valve.
- k) The choke line shall be a 2-inch minimum and contain two choke line valves (2-inch minimum).
- l) The choke and manifold shall contain two adjustable chokes.
- m) Hand wheels shall be installed on all ram preventers.
- n) Safety valves and wrenches (with subs for drill string connections) shall be available on the rig floor at all times.
- o) Inside BOP or float sub shall also be available on the rig floor at all times.

Proposed BOP and choke manifold arrangements are attached.

4. CASING & CEMENTING PROGRAM

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

- a) The proposed casing design is as follows:

Casing	Depth (MD)	Hole Size	Csg Size	Weight	Grade
Conductor	0'-60'	26"	16"	42.09#	
Surface	0'-500'	12 1/4"	9 5/8"	36#	J55, STC New
Intermediate	0'-5402'	8 3/4"	7"	26#	J55, LTC New
Production Liner	5302'-9717'	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

Lybrook I10-2308 01H

SHL: NE/4 SE/4 Sec 10 T23N R8W, 2491' FSL, 508' FEL

BHL:

, New Mexico

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

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'	228 sks	Type III Cement + 1% bwoc Calcium Chloride + 0.25 lbs/sack Cello Flake + 0.2% bwoc FL-52A + 58.9% Fresh Water	Surface	1 per joint on bottom 3 joints
Intermediate	0'-5402'	100% open hole excess Stage 1 Lead: 502 sks Stage 1 Tail: 384 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	5302'- 9717'	50% OH excess Stage 1 Blend Total: 252sks	Blend: Premium Lite High Strength FM + 0.7% bwoc R-3 + 3% bwoc Potassium Chloride + 0.25lbs/sack Cello Flake + 0.5% bwoc CD-32 + 1.15% bwoc FL- 52A + 60 lbs/sack Calcium Carbonate + 124.4% Fresh Water. Yield 2.63 cuft/sk	Liner Hanger	N/A

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 2900'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5270'/9717'	Gallup

Lybrook I10-2308 01H

SHL: NE/4 SE/4 Sec 10 T23N R8W, 2491' FSL, 508' FEL

BHL:

, 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'-5144'/5402'	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"	5144'/5402'- 5270'/9717'	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 +/- 2473 psi based on a 9.0 ppg at 5285' 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.

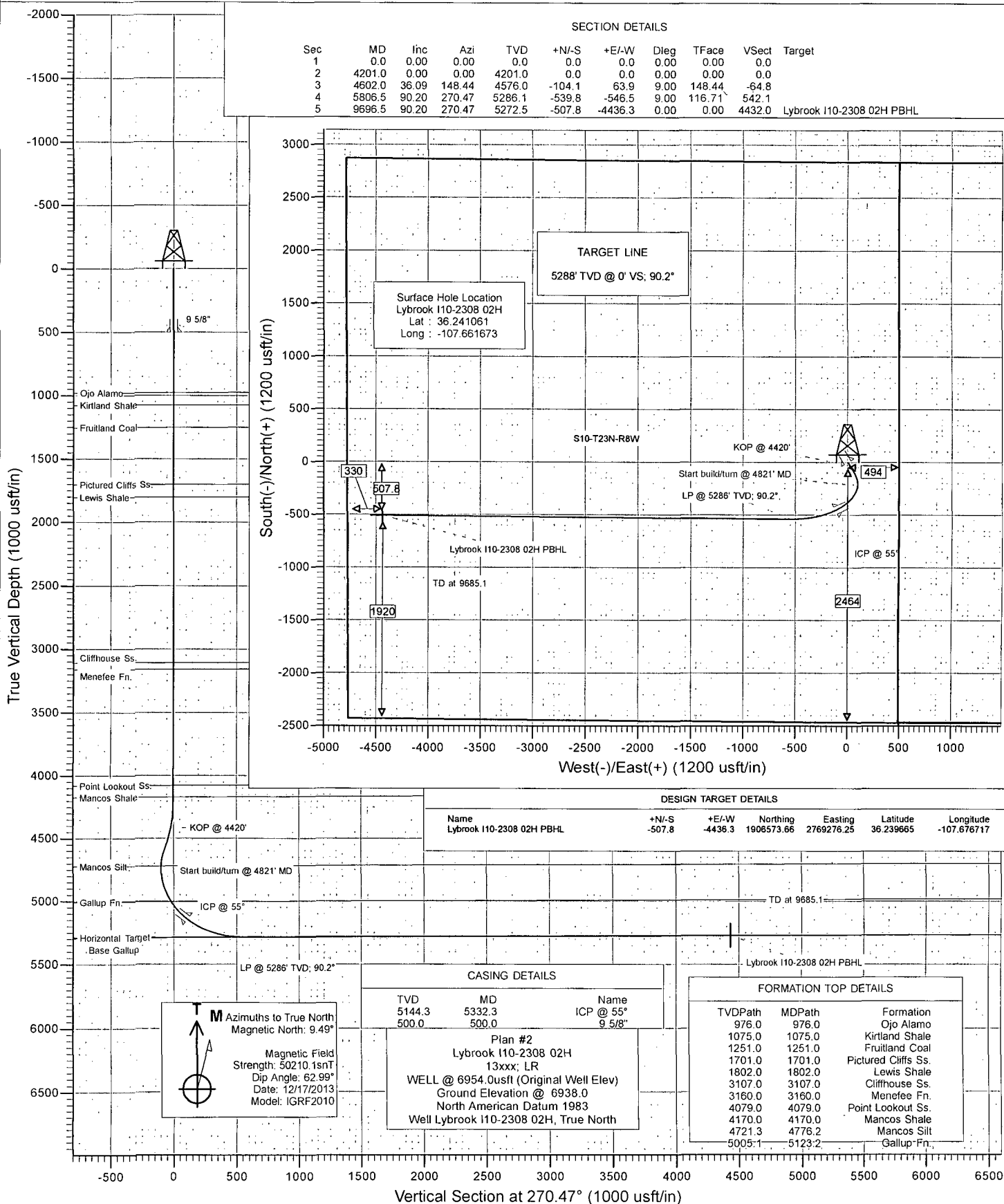
9. ANTICIPATED START DATE AND DURATION OF OPERATIONS

Drilling is estimated to commence on November 5, 2015. 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.



Project: San Juan County, NM
Site: S10-T23N-R8W (Lybrook)
Well: Lybrook I10-2308 02H
Wellbore: Hz
Design: Plan #2



Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook I10-2308 02H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 6954.0usft (Original Well Elev)
Project:	San Juan County, NM	MD Reference:	WELL @ 6954.0usft (Original Well Elev)
Site:	S10-T23N-R8W (Lybrook)	North Reference:	True
Well:	Lybrook I10-2308 02H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #2		

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

Site		S10-T23N-R8W (Lybrook)			
Site Position:		Northing:	1,907,115.89 usft	Latitude:	36.241134
From:	Lat/Long	Easting:	2,773,697.18 usft	Longitude:	-107.661722
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.10 °

Well	Lybrook I10-2308 02H					
Well Position	+N/-S	0.0 usft	Northing:	1,907,089.34 usft	Latitude:	36.241061
	+E/-W	0.0 usft	Easting:	2,773,711.67 usft	Longitude:	-107.661673
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	6,938.0 usft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/17/2013	9.49	62.99	50,210

Design	Plan #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	270.47

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,201.0	0.00	0.00	4,201.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,602.0	36.09	148.44	4,576.0	-104.1	63.9	9.00	9.00	0.00	148.44	
5,806.5	90.20	270.47	5,286.1	-539.8	-546.5	9.00	4.49	10.13	116.71	
9,696.5	90.20	270.47	5,272.5	-507.8	-4,436.3	0.00	0.00	0.00	0.00	Lybrook I10-2308 02H

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook 110-2308 02H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 6954.0usft (Original Well Elev)
Project:	San Juan County, NM	MD Reference:	WELL @ 6954.0usft (Original Well Elev)
Site:	S10-T23N-R8W (Lybrook)	North Reference:	True
Well:	Lybrook 110-2308 02H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	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	
976.0	0.00	0.00	976.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	
1,075.0	0.00	0.00	1,075.0	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	
1,251.0	0.00	0.00	1,251.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
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	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	
1,701.0	0.00	0.00	1,701.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs Ss.
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	
1,802.0	0.00	0.00	1,802.0	0.0	0.0	0.0	0.00	0.00	Lewis Shale
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	
2,300.0	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	
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	
3,107.0	0.00	0.00	3,107.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss.
3,160.0	0.00	0.00	3,160.0	0.0	0.0	0.0	0.00	0.00	Menefee Fn.
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	
3,600.0	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	
4,079.0	0.00	0.00	4,079.0	0.0	0.0	0.0	0.00	0.00	Point Lookout Ss.
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	
4,170.0	0.00	0.00	4,170.0	0.0	0.0	0.0	0.00	0.00	Mancos Shale
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook 110-2308 02H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 6954.0usft (Original Well Elev)
Project:	San Juan County, NM	MD Reference:	WELL @ 6954.0usft (Original Well Elev)
Site:	S10-T23N-R8W (Lybrook)	North Reference:	True
Well:	Lybrook 110-2308 02H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
4,201.0	0.00	0.00	4,201.0	0.0	0.0	0.0	0.00	0.00	
4,300.0	8.91	148.44	4,299.6	-6.5	4.0	-4.1	9.00	9.00	
4,400.0	17.91	148.44	4,396.8	-26.3	16.1	-16.4	9.00	9.00	
4,420.0	19.71	148.44	4,415.7	-31.8	19.5	-19.8	9.00	9.00	KOP @ 4420'
4,500.0	26.91	148.44	4,489.1	-58.7	36.1	-36.6	9.00	9.00	
4,600.0	35.91	148.44	4,574.4	-103.1	63.3	-64.2	9.00	9.00	
4,602.0	36.09	148.44	4,576.0	-104.1	63.9	-64.8	9.00	9.00	
4,700.0	32.95	163.02	4,656.9	-154.3	86.9	-88.1	9.00	-3.20	
4,776.2	31.84	175.68	4,721.3	-194.2	94.5	-96.0	9.00	-1.47	Mancos Silt
4,800.0	31.75	179.73	4,741.5	-206.7	95.0	-96.6	9.00	-0.35	
4,821.2	31.79	183.35	4,759.5	-217.9	94.7	-96.4	9.00	0.16	Start build/turn @ 4821' MD
4,900.0	32.79	196.51	4,826.2	-259.1	87.4	-89.5	9.00	1.28	
5,000.0	35.88	211.54	4,909.0	-310.2	64.3	-66.8	9.00	3.09	
5,100.0	40.55	224.01	4,987.6	-358.6	26.3	-29.2	9.00	4.66	
5,123.2	41.80	226.54	5,005.1	-369.3	15.5	-18.5	9.00	5.40	Gallup Fn.
5,200.0	46.30	234.10	5,060.3	-403.3	-25.7	22.4	9.00	5.86	
5,300.0	52.78	242.31	5,125.2	-443.1	-90.3	86.7	9.00	6.48	
5,332.3	54.99	244.66	5,144.3	-454.7	-113.7	110.0	9.00	6.83	ICP @ 55°
5,400.0	59.74	249.18	5,180.8	-477.0	-166.1	162.2	9.00	7.02	
5,500.0	67.01	255.13	5,225.6	-504.2	-251.2	247.0	9.00	7.27	
5,596.2	74.19	260.25	5,257.5	-523.4	-339.7	335.4	9.00	7.46	Lybrook 110-2308 02H POE
5,600.0	74.48	260.45	5,258.6	-524.0	-343.3	339.0	9.00	7.53	
5,700.0	82.06	265.40	5,278.9	-536.0	-440.4	436.0	9.00	7.58	
5,795.1	89.33	269.93	5,286.0	-539.9	-535.1	530.6	9.00	7.64	LP @ 5286' TVD; 90.2°
5,800.0	89.70	270.16	5,286.1	-539.9	-540.0	535.5	9.00	7.65	
5,806.5	90.20	270.47	5,286.1	-539.8	-546.5	542.1	9.00	7.65	
5,900.0	90.20	270.47	5,285.8	-539.1	-640.0	635.5	0.00	0.00	
6,000.0	90.20	270.47	5,285.4	-538.3	-740.0	735.5	0.00	0.00	
6,100.0	90.20	270.47	5,285.1	-537.4	-840.0	835.5	0.00	0.00	
6,200.0	90.20	270.47	5,284.7	-536.6	-940.0	935.5	0.00	0.00	
6,300.0	90.20	270.47	5,284.4	-535.8	-1,040.0	1,035.5	0.00	0.00	
6,400.0	90.20	270.47	5,284.0	-535.0	-1,139.9	1,135.5	0.00	0.00	
6,500.0	90.20	270.47	5,283.7	-534.1	-1,239.9	1,235.5	0.00	0.00	
6,600.0	90.20	270.47	5,283.3	-533.3	-1,339.9	1,335.5	0.00	0.00	
6,700.0	90.20	270.47	5,283.0	-532.5	-1,439.9	1,435.5	0.00	0.00	
6,800.0	90.20	270.47	5,282.6	-531.7	-1,539.9	1,535.5	0.00	0.00	
6,900.0	90.20	270.47	5,282.3	-530.8	-1,639.9	1,635.5	0.00	0.00	
7,000.0	90.20	270.47	5,281.9	-530.0	-1,739.9	1,735.5	0.00	0.00	
7,100.0	90.20	270.47	5,281.6	-529.2	-1,839.9	1,835.5	0.00	0.00	
7,200.0	90.20	270.47	5,281.2	-528.4	-1,939.9	1,935.5	0.00	0.00	
7,300.0	90.20	270.47	5,280.9	-527.6	-2,039.9	2,035.5	0.00	0.00	
7,400.0	90.20	270.47	5,280.5	-526.7	-2,139.9	2,135.5	0.00	0.00	
7,500.0	90.20	270.47	5,280.2	-525.9	-2,239.9	2,235.5	0.00	0.00	
7,600.0	90.20	270.47	5,279.8	-525.1	-2,339.9	2,335.5	0.00	0.00	
7,700.0	90.20	270.47	5,279.5	-524.3	-2,439.9	2,435.5	0.00	0.00	
7,800.0	90.20	270.47	5,279.1	-523.4	-2,539.9	2,535.5	0.00	0.00	
7,900.0	90.20	270.47	5,278.8	-522.6	-2,639.9	2,635.5	0.00	0.00	
8,000.0	90.20	270.47	5,278.4	-521.8	-2,739.9	2,735.5	0.00	0.00	
8,100.0	90.20	270.47	5,278.1	-521.0	-2,839.9	2,835.5	0.00	0.00	
8,200.0	90.20	270.47	5,277.7	-520.1	-2,939.9	2,935.5	0.00	0.00	
8,300.0	90.20	270.47	5,277.4	-519.3	-3,039.9	3,035.5	0.00	0.00	
8,400.0	90.20	270.47	5,277.0	-518.5	-3,139.9	3,135.5	0.00	0.00	

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: San Juan County, NM
Site: S10-T23N-R8W (Lybrook)
Well: Lybrook 110-2308 02H
Wellbore: Hz
Design: Plan #2

Local Co-ordinate Reference: Well Lybrook 110-2308 02H
TVD Reference: WELL @ 6954.0usft (Original Well Elev)
MD Reference: WELL @ 6954.0usft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
8,500.0	90.20	270.47	5,276.7	-517.7	-3,239.9	3,235.5	0.00	0.00	
8,600.0	90.20	270.47	5,276.3	-516.9	-3,339.9	3,335.5	0.00	0.00	
8,700.0	90.20	270.47	5,276.0	-516.0	-3,439.9	3,435.5	0.00	0.00	
8,800.0	90.20	270.47	5,275.6	-515.2	-3,539.9	3,535.5	0.00	0.00	
8,900.0	90.20	270.47	5,275.3	-514.4	-3,639.8	3,635.5	0.00	0.00	
9,000.0	90.20	270.47	5,274.9	-513.6	-3,739.8	3,735.5	0.00	0.00	
9,100.0	90.20	270.47	5,274.6	-512.7	-3,839.8	3,835.5	0.00	0.00	
9,200.0	90.20	270.47	5,274.2	-511.9	-3,939.8	3,935.5	0.00	0.00	
9,300.0	90.20	270.47	5,273.9	-511.1	-4,039.8	4,035.5	0.00	0.00	
9,400.0	90.20	270.47	5,273.5	-510.3	-4,139.8	4,135.5	0.00	0.00	
9,500.0	90.20	270.47	5,273.2	-509.4	-4,239.8	4,235.5	0.00	0.00	
9,600.0	90.20	270.47	5,272.8	-508.6	-4,339.8	4,335.5	0.00	0.00	
9,685.1	90.20	270.47	5,272.5	-507.9	-4,424.9	4,420.6	0.00	0.00	TD at 9685.1
9,696.5	90.20	270.47	5,272.5	-507.8	-4,436.3	4,432.0	0.00	0.00	Lybrook 110-2308 02H PBHL

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Lybrook 110-2308 02H P - plan hits target center - Point	0.00	0.00	5,272.5	-507.8	-4,436.3	1,906,573.66	2,769,276.25	36.239665	-107.676717
Lybrook 110-2308 02H P - plan misses target center by 37.4usft at 5596.2usft MD (5257.5 TVD, -523.4 N, -339.7 E) - Point	0.00	0.00	5,286.9	-541.7	-325.3	1,906,547.10	2,773,387.37	36.239573	-107.662776

5,332.3 5,144.3 ICP @ 55°
 500.0 500.0 9 5/8"

0 0
 0 0

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
976.0	976.0	Ojo Alamo		-0.20	270.47
1,075.0	1,075.0	Kirtland Shale		-0.20	270.47
1,251.0	1,251.0	Fruitland Coal		-0.20	270.47
1,701.0	1,701.0	Pictured Cliffs Ss.		-0.20	270.47
1,802.0	1,802.0	Lewis Shale		-0.20	270.47
3,107.0	3,107.0	Cliffhouse Ss.		-0.20	270.47
3,160.0	3,160.0	Menefee Fn.		-0.20	270.47
4,079.0	4,079.0	Point Lookout Ss.		-0.20	270.47
4,170.0	4,170.0	Mancos Shale		-0.20	270.47
4,776.2	4,721.0	Mancos Silt		-0.20	270.47
5,123.2	5,005.0	Gallup Fn.		-0.20	270.47

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook 110-2308 02H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 6954.0usft (Original Well Elev)
Project:	San Juan County, NM	MD Reference:	WELL @ 6954.0usft (Original Well Elev)
Site:	S10-T23N-R8W (Lybrook)	North Reference:	True
Well:	Lybrook 110-2308 02H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #2		

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,420.0	4,420.0	0.0	0.0	KOP @ 4420'
4,821.2	4,789.2	-132.3	25.8	Start build/turn @ 4821' MD
5,795.1	5,286.1	-539.8	-546.5	LP @ 5286' TVD; 90.2°
9,685.1	5,272.5	-507.8	-4,436.3	TD at 9685.1