

State of New Mexico  
Energy, Minerals and Natural Resources Department

Susana Martinez  
Governor

David Martin  
Cabinet Secretary-Designate

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

Jami Bailey, Division Director  
Oil Conservation Division



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

Operator Signature Date: 2/11/14

Well information:

Operator ENCANA, Well Name and Number Lybrook M11-2308 1H

API# 30-045-35514, Section 11, Township 23 (N/S), Range 8 E(W)

Conditions of Approval:

(See the below checked and handwritten conditions)

- Notify Aztec OCD 24hrs prior to casing & cement.
- Hold C-104 for directional survey & "As Drilled" Plat
- Hold C-104 for NSL, NSP, DHC
- Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned
- Regarding the use of a pit, closed loop system or below grade tank, the operator must comply with the following as applicable:
  - A pit requires a complete C-144 be submitted and approved prior to the construction or use of the pit, pursuant to 19.15.17.8.A
  - A closed loop system requires notification prior to use, pursuant to 19.15.17.9.A
  - A below grade tank requires a registration be filed prior to the construction or use of the below grade tank, pursuant to 19.15.17.8.C
- Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
- Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.

Charlie Terrell  
NMOCD Approved by Signature

6-11-2014  
Date

CONFIDENTIAL RECEIVED  
FEB 13 2014

Form 3160-3  
(August 2007)

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

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

Farmington Field Office  
Bureau of Land Management

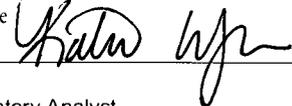
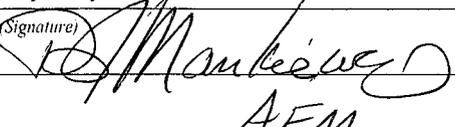
APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		7. If Unit or CA Agreement, Name and No. N/A	
1b. Type of Well: <input type="checkbox"/> Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		8. Lease Name and Well No. Lybrook M11-2308 01H	
2. Name of Operator Encana Oil & Gas (USA) Inc.		9. API Well No. 30-045-35514	
3a. Address 370 17th Street, Suite 1700 Denver, CO 80202	3b. Phone No. (include area code) 720-876-3533	10. Field and Pool, or Exploratory Nageezi Gallup & Basin Mancos Gas	
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface <sup>M</sup> 362' FSL and 203' FWL Section 11, T23N, R8W At proposed prod. zone <sup>M</sup> 430' FSL and 330' FWL Section 10, T23N, R8W		11. Sec., T, R, M, or Blk. and Survey or Area Section 11, T23N, R8W NMPM	
14. Distance in miles and direction from nearest town or post office* +/- 46.1 miles southwest of the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM		12. County or Parish San Juan	13. State NM
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drng. unit line, if any) BHL is 330' from west lease line	16. No. of acres in lease NMNM 118132 - 2,320 ac.	17. Spacing Unit dedicated to this well 160.0 acres - S/2 S/2 Section 10, T23N, R8W	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. Federal 15-41 is +/- 1637' south of SHL	19. Proposed Depth 5,265' TVD/10,169' MD	20. BLM/BIA Bond No. on file COB-000235	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6,905' GL, 6,921' KB	22. Approximate date work will start* 10/22/2014	23. Estimated duration 25 days	

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 	Name (Printed/Typed) Katie Wegner	Date 2/11/14
Title Regulatory Analyst	OIL CONS. DIV DIST. 3 JUN 2 2014	
Approved by (Signature) 	Name (Printed/Typed) AEM	Date 5/30/14
Title AEM	Office FFC	

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)

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

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

\*(Instructions on page 2)  
**DRILLING OPERATIONS AUTHORIZED ARE SUBJECT TO COMPLIANCE WITH ATTACHED "GENERAL REQUIREMENTS"**

NMOCDA



Lybrook M11-2308 01H  
 SHL: SWSW Section 11, T23N, R8W  
 362 FSL and 203 FWL  
 BHL: SWSW Section 10, T23N, R8W  
 430 FSL and 330 FWL  
 San Juan County, New Mexico  
 Lease Number: NMNM 118132

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

**1. ESTIMATED TOPS OF GEOLOGICAL MARKERS (TVD)**

The estimated tops of important geologic markers are as follows:

Formation	Depth (TVD) units = feet
Ojo Alamo Ss.	953
Kirtland Sh.	1,072
Fruitland Coal	1,247
Pictured Cliffs Ss.	1,578
Lewis Sh.	1,662
Cliffhouse Ss.	2,356
Menefee Fn.	3,117
Point Lookout Ss.	3,979
Mancos Sh.	4,164
Mancos Silt	4,867
Gallup Fn.	4,966

The referenced surface elevation is 6,905', KB 6,921'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,247
Oil/Gas	Pictured Cliffs Ss.	1,578
Oil/Gas	Cliffhouse Ss.	2,356
Gas	Menefee Fn.	3,117
Oil/Gas	Point Lookout Ss.	3,979
Oil/Gas	Mancos Sh.	4,164
Oil/Gas	Mancos Silt	4,867
Oil/Gas	Gallup Fn.	4,966

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

**3. PRESSURE CONTROL**

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

**Lybrook M11-2308 01H**

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**San Juan County, New Mexico**

**Lease Number: NMNM 118132**

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

Proposed BOP and choke manifold arrangements are attached.

**4. CASING & CEMENTING PROGRAM**

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

- a) The proposed casing design is as follows:

Casing	Depth	Hole Size	Csg Size	Weight	Grade
Conductor	0-60'	30"	20"	94#	H40, STC New
Surface	0'-500'	12 1/4"	9 5/8"	36#	J55, STC New
Intermediate	0'-5478'MD	8 3/4"	7"	26#	J55, LTC New
Production Liner	5278'-10169'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

**Lybrook M11-2308 01H**

**SHL: SWSW Section 11, T23N, R8W  
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**San Juan County, New Mexico**

**Lease Number: NMNM 118132**

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.

<b>Casing</b>	<b>Depth</b>	<b>Cement Volume (sacks)</b>	<b>Cement Type&amp;Yield</b>	<b>Designed TOC</b>	<b>Centralizers</b>
Conductor	60'	100sk	Type I Neat 16 ppg	Surface	None
Surface	500'	178sk	Type III Cement + 1% CaCl + 0.25lb/sk Cello Flake + 0.2% FL, 16ppg, 1.38cuf/sk	Surface	1 per joint on bottom 3 joints
Intermediate	5478'MD	30% open hole excess Stage 1 Lead: 247sks Stage 1 Tail: 170sks Stage 2 Lead: 143sks	<b>Lead</b> (Stages 1 and 2): PremLite + 3% CaCl + 0.25lb/sk CelloFlake + 5lb/sk LCM, 12.1ppg 2.13cuf/sk <b>Tail</b> (Stage 1): Type III Cmt + 1% CaCl + 0.25lb/sk Cello Flake 14.5ppg 1.38cuf/sk	Surface	1 per joint for bottom 3 joints, 1 every 3 joints for remaining joints
Production Liner*	5278'-10169'	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.

**Lybrook M11-2308 01H**

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**San Juan County, New Mexico**

**Lease Number: NMNM 118132**

**5. WELL PLAN & DIRECTIONAL DRILLING PROGRAM**

The proposed horizontal well will have a kick off point of 4700'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5265'/10169'	Gallup

**6. DRILLING FLUIDS PROGRAM**

a) Surface through Intermediate Casing Point:

Hole Size (in)	Depth (ft)	Mud Type	Density (lb/gal)	Viscosity (sec/qt)	Fluid Loss (cc)
30"	0-60' TVD	Fresh Water	8.3-9.2	38-100	4-28
12 1/4"	0-500' TVD	Fresh Water	8.4-8.6	60-70	NC
8 3/4"	500'TVD- 5265'TVD/5478'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"	5478'-10169'	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

Lybrook M11-2308 01H

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362 FSL and 203 FWL

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San Juan County, New Mexico

Lease Number: NMNM 118132

#### **8. ABNORMAL PRESSURES & HYDROGEN SULFIDE**

The anticipated bottom hole pressure is +/- 2472 psi based on a 9.0 ppg at 5281' TVD of the landing point of the horizontal lateral. No abnormal pressure or temperatures are anticipated.

No hydrogen sulfide gas is anticipated, however, if H<sub>2</sub>S 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 October 22, 2014. It is anticipated that completion operations will begin within 30 days after the well has been drilled depending on fracture treatment schedules with various pumping service companies.

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

MWD LWD		OPEN HOLE LOGGING	FORM	DEPTH		HOLE SIZE	CASING SPECS	MW MUD TYPE	DEVIATION INFORMATION
				TVD	MD				
				60	60'		<b>20" 94#</b> 100sx Type I Neat 16ppg cmt	Fresh wtr 8.3-9.2	
Surveys After csg is run		None					<b>9 5/8" 36ppf J55 STC</b>	Fresh wtr 8.4-8.6	Vertical <1°
				500	500		TOC @ surface 178 sks Type III Cmt		
Surveys every 500'		No OH logs	Ojo Alamo Kirtland	953 1072			<b>7" 26ppf J55 LTC</b>	Fresh Wtr 8.5-8.8	Vertical <1°
			Fruitland Coal	1247					
			Pictured Cliffs Ss Lewis Shale	1578 1662		Stage tool @ 1628'	TOC @ surface 30% OH excess: 560 sks Total. Stage 1 Lead: 247sks Stage 1 Tail: 170sks. Stage 2 Lead: 143sks		
			Cliffhouse Ss Menefee Fn	2356 3117					
		Mud logger onsite	Point Lookout Ss Mancos Sh	3979 4164					
			KICK OFF PT	4700					
			Mancos Silt	4867					
			Gallup Top	4966					KOP 4700 10 deg/100'
			7" csg	5265	5478				
Surveys every 500' Gyro at CP MWD Gamma Directional		No OH Logs	horz target	5281	5615		200' overlap at liner top		.25deg updip 5265'TVD TD = 10169' MD
			Base Gallup	5279			4554' Lateral	8.6-9.0 OBM	
							<b>4 1/2" 11.6ppf SB80 LTC</b>	Switch to OBM 8.6-9.0'	
							Running external swellable csg packers for isolation of prod string Plan on setting top packer within 100' of intermediate casing shoe		

**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 4700' , 8 3/4" hole size,
- 5) PU directional tools and start curve at 10deg/100' build rate
- 6) Drill to casing point of 5478' MD
- 7) R&C 7" casing, circ cmt to surface, switch to OBM
- 8) Land at 90deg, drill 4554' lateral to 10169', 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

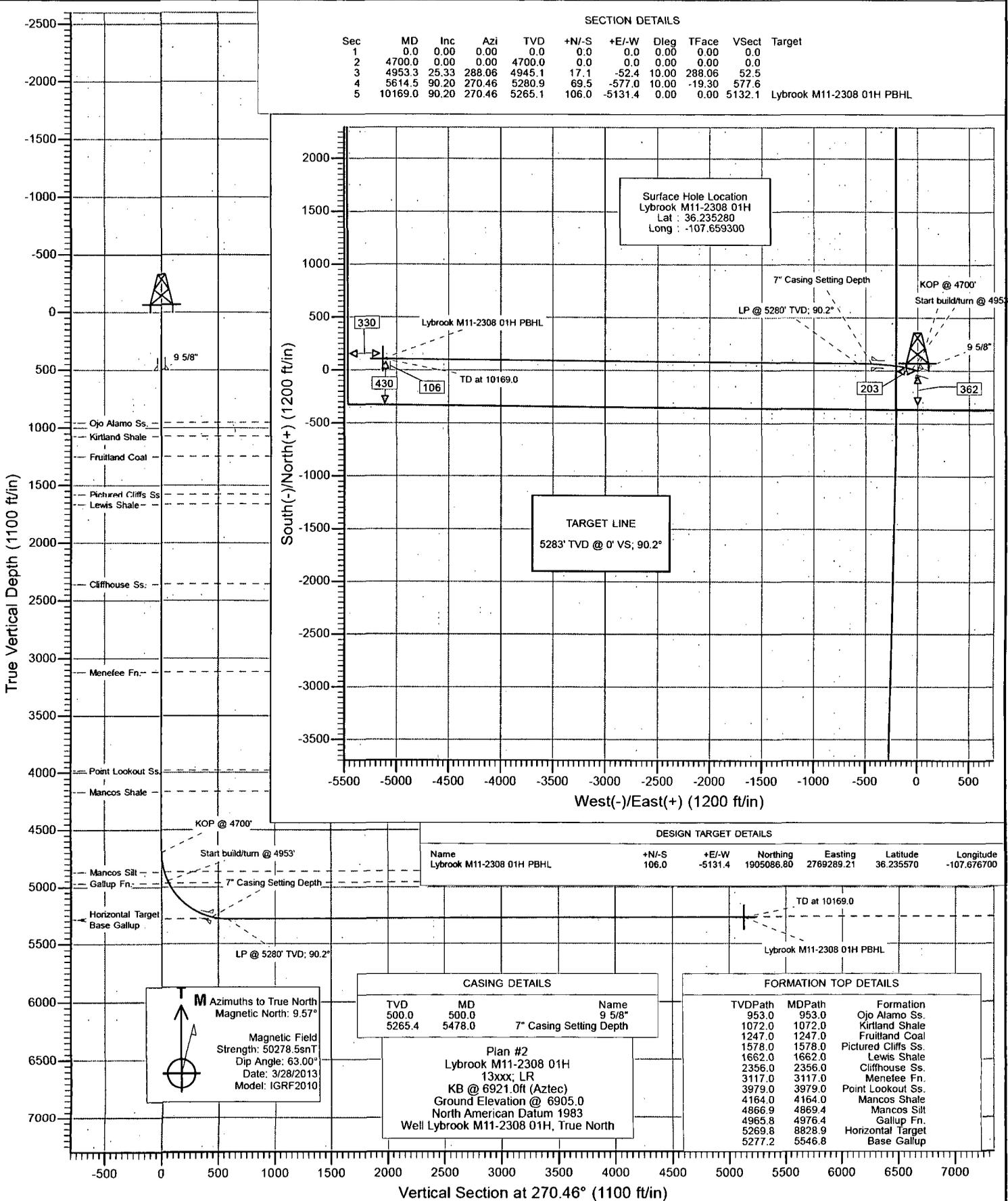
Drilling Mud Weight (ppg)	_____	9.625
Tension Safety Factor	_____	1.80
Maximum Tension Length (ft)	_____	9,630
Internal Yield Safety Factor	_____	1.10
Maximum Depth for Internal Yield (ft)	_____	14,150
Collapse Safety Factor	_____	1.125
Maximum Collapse Depth (ft)	_____	11,290

## 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: San Juan County, NM  
 Site: S11-T23N-R8W  
 Well: Lybrook M11-2308 01H  
 Wellbore: HZ  
 Design: Plan #2

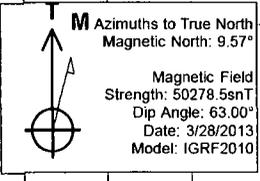


SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	4700.0	0.00	0.00	4700.0	0.0	0.0	0.00	0.00	0.0	
3	4953.3	25.33	288.06	4945.1	17.1	-52.4	10.00	288.06	52.5	
4	5614.5	90.20	270.46	5280.9	69.5	-577.0	10.00	-19.30	577.6	
5	10169.0	90.20	270.46	5265.1	106.0	-5131.4	0.00	0.00	5132.1	Lybrook M11-2308 01H PBHL

DESIGN TARGET DETAILS						
Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Lybrook M11-2308 01H PBHL	106.0	-5131.4	1905086.80	2769289.21	36.235570	-107.676700

CASING DETAILS		
TVD	MD	Name
500.0	500.0	9 5/8"
5265.4	5478.0	7" Casing Setting Depth

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
953.0	953.0	Ojo Alamo Ss.
1072.0	1072.0	Kirtland Shale
1247.0	1247.0	Fruitland Coal
1578.0	1578.0	Pictured Cliffs Ss.
1662.0	1662.0	Lewis Shale
2356.0	2356.0	Cliffhouse Ss.
3117.0	3117.0	Menefee Fn.
3979.0	3979.0	Point Lookout Ss.
4164.0	4164.0	Mancos Shale
4869.9	4869.4	Mancos Silt
4965.8	4976.4	Gallup Fn.
5269.8	8828.9	Horizontal Target
5277.2	5546.8	Base Gallup



Plan #2  
 Lybrook M11-2308 01H  
 13xxx; LR  
 KB @ 6921.0ft (Aztec)  
 Ground Elevation @ 6905.0  
 North American Datum 1983  
 Well Lybrook M11-2308 01H, True North

Vertical Section at 270.46° (1100 ft/in)

## Planning Report

**Database:** USA EDM 5000 Multi Users DB  
**Company:** EnCana Oil & Gas (USA) Inc  
**Project:** San Juan County, NM  
**Site:** S11-T23N-R8W  
**Well:** Lybrook M11-2308 01H  
**Wellbore:** Hz  
**Design:** Plan #2

**Local Co-ordinate Reference:** Well Lybrook M11-2308 01H  
**TVD Reference:** KB @ 6921.0ft (Aztec)  
**MD Reference:** KB @ 6921.0ft (Aztec)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

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

<b>Site</b>	S11-T23N-R8W				
<b>Site Position:</b>		<b>Northing:</b>	1,904,989.99 ft	<b>Latitude:</b>	36.235280
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,774,420.76 ft	<b>Longitude:</b>	-107.659300
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b>	0.10 °

<b>Well</b>	Lybrook M11-2308 01H					
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>	1,904,989.99 ft	<b>Latitude:</b>	36.235280
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>	2,774,420.76 ft	<b>Longitude:</b>	-107.659300
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b>	ft	<b>Ground Level:</b>	6,905.0 ft

<b>Wellbore</b>	Hz				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination</b>	<b>Dip Angle</b>	<b>Field Strength</b>
	IGRF2010	3/28/2013	(°) 9.57	(°) 63.00	(nT) 50,279

<b>Design</b>	Plan #2			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	270.46

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,953.3	25.33	288.06	4,945.1	17.1	-52.4	10.00	10.00	0.00	288.06	
5,614.5	90.20	270.46	5,280.9	69.5	-577.0	10.00	9.81	-2.66	-19.30	
10,169.0	90.20	270.46	5,265.1	106.0	-5,131.4	0.00	0.00	0.00	0.00	Lybrook M11-2308 01

## Planning Report

**Database:** USA EDM 5000 Multi Users DB  
**Company:** EnCana Oil & Gas (USA) Inc  
**Project:** San Juan County, NM  
**Site:** S11-T23N-R8W  
**Well:** Lybrook M11-2308 01H  
**Wellbore:** Hz  
**Design:** Plan #2

**Local Co-ordinate Reference:** Well Lybrook M11-2308 01H  
**TVD Reference:** KB @ 6921.0ft (Aztec)  
**MD Reference:** KB @ 6921.0ft (Aztec)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

### Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	9 5/8"
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	
953.0	0.00	0.00	953.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo Ss.
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	
1,072.0	0.00	0.00	1,072.0	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	
1,247.0	0.00	0.00	1,247.0	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	
1,578.0	0.00	0.00	1,578.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs Ss.
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	
1,662.0	0.00	0.00	1,662.0	0.0	0.0	0.0	0.00	0.00	Lewis 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	
1,900.0	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	
2,356.0	0.00	0.00	2,356.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss.
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	
3,117.0	0.00	0.00	3,117.0	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	
3,979.0	0.00	0.00	3,979.0	0.0	0.0	0.0	0.00	0.00	Point Lookout Ss.
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	
4,164.0	0.00	0.00	4,164.0	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  
**Company:** EnCana Oil & Gas (USA) Inc  
**Project:** San Juan County, NM  
**Site:** S11-T23N-R8W  
**Well:** Lybrook M11-2308 01H  
**Wellbore:** Hz  
**Design:** Plan #2

**Local Co-ordinate Reference:** Well Lybrook M11-2308 01H  
**TVD Reference:** KB @ 6921.0ft (Aztec)  
**MD Reference:** KB @ 6921.0ft (Aztec)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

### Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	
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	KOP @ 4700'
4,800.0	10.00	288.06	4,799.5	2.7	-8.3	8.3	10.00	10.00	
4,869.4	16.94	288.06	4,866.9	7.7	-23.6	23.7	10.00	10.00	Mancos Silt
4,900.0	20.00	288.06	4,896.0	10.7	-32.9	32.9	10.00	10.00	
4,953.3	25.33	288.06	4,945.1	17.1	-52.4	52.5	10.00	10.00	Start build/turn @ 4953'
4,976.4	27.52	286.40	4,965.8	20.1	-62.2	62.3	10.00	9.48	Gallup Fn.
5,000.0	29.78	284.95	4,986.5	23.2	-73.1	73.3	10.00	9.56	
5,100.0	39.46	280.48	5,068.7	35.4	-128.5	128.7	10.00	9.68	
5,200.0	49.25	277.56	5,140.2	46.2	-197.4	197.8	10.00	9.79	
5,300.0	59.09	275.39	5,198.6	55.2	-277.9	278.3	10.00	9.85	
5,400.0	68.97	273.64	5,242.4	62.2	-367.4	367.9	10.00	9.88	
5,478.0	76.68	272.43	5,265.4	66.1	-441.8	442.3	10.00	9.89	7" Casing Setting Depth
5,500.0	78.86	272.10	5,270.0	67.0	-463.2	463.8	10.00	9.90	
5,546.8	83.49	271.42	5,277.2	68.4	-509.4	509.9	10.00	9.90	Base Gallup
5,600.0	88.76	270.67	5,280.8	69.4	-562.5	563.0	10.00	9.90	
5,614.5	90.20	270.46	5,280.9	69.5	-577.0	577.6	10.00	9.90	LP @ 5280' TVD; 90.2°
5,700.0	90.20	270.46	5,280.7	70.2	-662.5	663.0	0.00	0.00	
5,800.0	90.20	270.46	5,280.3	71.0	-762.5	763.0	0.00	0.00	
5,900.0	90.20	270.46	5,280.0	71.8	-862.5	863.0	0.00	0.00	
6,000.0	90.20	270.46	5,279.6	72.6	-962.5	963.0	0.00	0.00	
6,100.0	90.20	270.46	5,279.3	73.4	-1,062.5	1,063.0	0.00	0.00	
6,200.0	90.20	270.46	5,278.9	74.2	-1,162.5	1,163.0	0.00	0.00	
6,300.0	90.20	270.46	5,278.6	75.0	-1,262.5	1,263.0	0.00	0.00	
6,400.0	90.20	270.46	5,278.2	75.8	-1,362.5	1,363.0	0.00	0.00	
6,500.0	90.20	270.46	5,277.9	76.6	-1,462.5	1,463.0	0.00	0.00	
6,600.0	90.20	270.46	5,277.5	77.4	-1,562.5	1,563.0	0.00	0.00	
6,700.0	90.20	270.46	5,277.2	78.2	-1,662.5	1,663.0	0.00	0.00	
6,800.0	90.20	270.46	5,276.8	79.0	-1,762.5	1,763.0	0.00	0.00	
6,900.0	90.20	270.46	5,276.5	79.8	-1,862.5	1,863.0	0.00	0.00	
7,000.0	90.20	270.46	5,276.1	80.6	-1,962.5	1,963.0	0.00	0.00	
7,100.0	90.20	270.46	5,275.8	81.4	-2,062.4	2,063.0	0.00	0.00	
7,200.0	90.20	270.46	5,275.4	82.2	-2,162.4	2,163.0	0.00	0.00	
7,300.0	90.20	270.46	5,275.1	83.0	-2,262.4	2,263.0	0.00	0.00	
7,400.0	90.20	270.46	5,274.7	83.8	-2,362.4	2,363.0	0.00	0.00	
7,500.0	90.20	270.46	5,274.4	84.6	-2,462.4	2,463.0	0.00	0.00	
7,600.0	90.20	270.46	5,274.0	85.4	-2,562.4	2,563.0	0.00	0.00	
7,700.0	90.20	270.46	5,273.7	86.2	-2,662.4	2,663.0	0.00	0.00	
7,800.0	90.20	270.46	5,273.3	87.0	-2,762.4	2,763.0	0.00	0.00	
7,900.0	90.20	270.46	5,273.0	87.8	-2,862.4	2,863.0	0.00	0.00	
8,000.0	90.20	270.46	5,272.6	88.6	-2,962.4	2,963.0	0.00	0.00	
8,100.0	90.20	270.46	5,272.3	89.4	-3,062.4	3,063.0	0.00	0.00	
8,200.0	90.20	270.46	5,272.0	90.2	-3,162.4	3,163.0	0.00	0.00	
8,300.0	90.20	270.46	5,271.6	91.0	-3,262.4	3,263.0	0.00	0.00	
8,400.0	90.20	270.46	5,271.3	91.8	-3,362.4	3,363.0	0.00	0.00	
8,500.0	90.20	270.46	5,270.9	92.6	-3,462.4	3,463.0	0.00	0.00	
8,600.0	90.20	270.46	5,270.6	93.4	-3,562.4	3,563.0	0.00	0.00	
8,700.0	90.20	270.46	5,270.2	94.3	-3,662.4	3,663.0	0.00	0.00	
8,800.0	90.20	270.46	5,269.9	95.1	-3,762.4	3,763.0	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:** S11-T23N-R8W  
**Well:** Lybrook M11-2308 01H  
**Wellbore:** Hz  
**Design:** Plan #2

**Local Co-ordinate Reference:** Well Lybrook M11-2308 01H  
**TVD Reference:** KB @ 6921.0ft (Aztec)  
**MD Reference:** KB @ 6921.0ft (Aztec)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

### Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
8,828.9	90.20	270.46	5,269.8	95.3	-3,791.3	3,791.9	0.00	0.00	Horizontal Target
8,900.0	90.20	270.46	5,269.5	95.9	-3,862.4	3,863.0	0.00	0.00	
9,000.0	90.20	270.46	5,269.2	96.7	-3,962.4	3,963.0	0.00	0.00	
9,100.0	90.20	270.46	5,268.8	97.5	-4,062.4	4,063.0	0.00	0.00	
9,200.0	90.20	270.46	5,268.5	98.3	-4,162.4	4,163.0	0.00	0.00	
9,300.0	90.20	270.46	5,268.1	99.1	-4,262.4	4,263.0	0.00	0.00	
9,400.0	90.20	270.46	5,267.8	99.9	-4,362.4	4,363.0	0.00	0.00	
9,500.0	90.20	270.46	5,267.4	100.7	-4,462.4	4,463.0	0.00	0.00	
9,600.0	90.20	270.46	5,267.1	101.5	-4,562.4	4,563.0	0.00	0.00	
9,700.0	90.20	270.46	5,266.7	102.3	-4,662.3	4,663.0	0.00	0.00	
9,800.0	90.20	270.46	5,266.4	103.1	-4,762.3	4,763.0	0.00	0.00	
9,900.0	90.20	270.46	5,266.0	103.9	-4,862.3	4,863.0	0.00	0.00	
10,000.0	90.20	270.46	5,265.7	104.7	-4,962.3	4,963.0	0.00	0.00	
10,100.0	90.20	270.46	5,265.3	105.5	-5,062.3	5,063.0	0.00	0.00	
10,169.0	90.20	270.46	5,265.1	106.0	-5,131.4	5,132.1	0.00	0.00	TD at 10169.0 - Lybrook M11-2308 01H PBHL

### Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Lybrook M11-2308 01H I - hit/miss target - Shape - Point	0.00	0.00	5,265.1	106.0	-5,131.4	1,905,086.80	2,769,289.21	36.235570	-107.676700

### 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
5,478.0	5,265.4	7" Casing Setting Depth	0.000	0.000

## Planning Report

**Database:** USA EDM 5000 Multi Users DB  
**Company:** EnCana Oil & Gas (USA) Inc  
**Project:** San Juan County, NM  
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**Well:** Lybrook M11-2308 01H  
**Wellbore:** Hz  
**Design:** Plan #2

**Local Co-ordinate Reference:** Well Lybrook M11-2308 01H  
**TVD Reference:** KB @ 6921.0ft (Aztec)  
**MD Reference:** KB @ 6921.0ft (Aztec)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
953.0	953.0	Ojo Alamo Ss.		-0.20	270.46	
1,072.0	1,072.0	Kirtland Shale		-0.20	270.46	
1,247.0	1,247.0	Fruitland Coal		-0.20	270.46	
1,578.0	1,578.0	Pictured Cliffs Ss.		-0.20	270.46	
1,662.0	1,662.0	Lewis Shale		-0.20	270.46	
2,356.0	2,356.0	Cliffhouse Ss.		-0.20	270.46	
3,117.0	3,117.0	Menefee Fn.		-0.20	270.46	
3,979.0	3,979.0	Point Lookout Ss.		-0.20	270.46	
4,164.0	4,164.0	Mancos Shale		-0.20	270.46	
4,869.4	4,867.0	Mancos Silt		-0.20	270.46	
4,976.4	4,966.0	Gallup Fn.		-0.20	270.46	
5,546.8	5,279.0	Base Gallup		-0.20	270.46	
8,828.9	5,283.0	Horizontal Target		-0.20	270.46	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
4,700.0	4,700.0	0.0	0.0	KOP @ 4700'	
4,953.3	4,945.1	17.1	-52.4	Start build/turn @ 4953'	
5,614.5	5,280.9	69.5	-577.0	LP @ 5280' TVD; 90.2°	
10,169.0	5,265.1	106.0	-5,131.4	TD at 10169.0	

**ENCANA OIL & GAS (USA) INC.**

LYBROOK M11-2308 #01H  
362' FSL & 203' FWL  
LOCATED IN THE SW/4 SW/4 OF SECTION 11,  
T23N, R8W, N.M.P.M.,  
SAN JUAN COUNTY, NEW MEXICO

**DIRECTIONS**

- 1) FROM THE INTERSECTION OF HWY 64 & HWY 550 IN BLOOMFIELD, GO SOUTH ON HWY 550, 39.0 MILES TO INDIAN ROUTE 7061 (M.P. 112.6).
- 2) TURN RIGHT AND GO 1.7 MILES TO A DIRT ROAD WITH CATTLE GUARD.
- 3) TURN LEFT AND GO 0.6 MILES TO "Y" INTERSECTION.
- 4) TURN LEFT AND GO 0.9 MILES TO "T" INTERSECTION.
- 5) TURN LEFT AND GO 1.1 MILES TO ABANDONED 2-TRACK TO BE UPGRADED.

WELL FLAG LOCATED AT LAT. 36.23528° N, LONG. 107.65930° W (NAD 83).



encana

SAN JUAN COUNTY,  
NEW MEXICO

- ⊘ Abandoned
  - ⊙ Abandoned Gas
  - ⊘ Abandoned Oil
  - ⊙ Dry Hole
  - ⊙ GAS
  - ⊙ Injection
  - OIL
- 1 inch = 2,167 feet

Basin Mancos  
Gas Pool

**LYBROOK  
GALLUP  
POOL**

STATE OF NEW MEXICO 36 14

23N  
8W

3 2

FEDERAL-3 23      FEDERAL-3 43      JEFFERS FEDERAL-2 23  
JEFFERS FEDERAL 2 23

33 33

Lybrook 102-2308 02H  
Lybrook 102-2308 01H  
JEFFERS-FEDERAL-2 33

LOGOS 5

**NAGEEZI  
GALLUP  
POOL**

FEDERAL-9 31

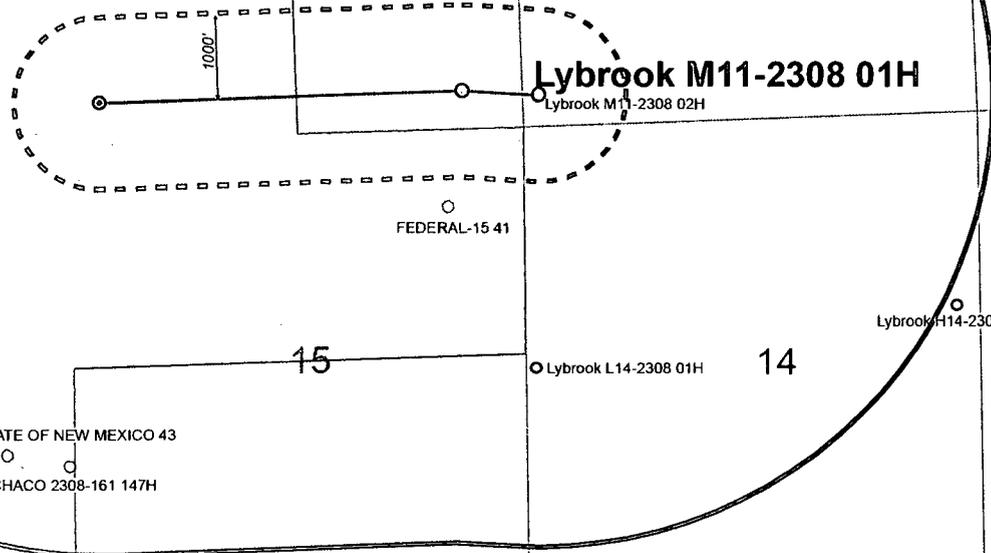
Lybrook H09-2308 01H

9

10

11

Lybrook I10-2308 01H  
Lybrook I10-2308 02H  
Lybrook I10-2308 03H



STATE OF NM 16 21  
STATE OF NEW MEXICO 21

FEDERAL-15 41

Lybrook H14-2308 01H

16

15

14

STATE OF NM-16 23

STATE OF NEW MEXICO 43

CHACO 2308-161 147H

CHACO UNIT 2

GOSE F H 1

CHACO 3

21

22

23

0 0.125 0.25 0.5 Miles



THE BEAR 1



# WELLHEAD BLOWOUT CONTROL SYSTEM

## encana

Well name and number:

Lybrook M11-2308 01H

