

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.

Charles Turner
NMOCD Approved by Signature

6-11-2014
Date

CONFIDENTIAL **RECEIVED**
FEB 13 2014

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		6. If Indian, Allottee or Tribe Name 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		7. If Unit or CA Agreement, Name and No. N/A
2. Name of Operator Encana Oil & Gas (USA) Inc.		8. Lease Name and Well No. Lybrook M11-2308 01H
3a. Address 370 17th Street, Suite 1700 Denver, CO 80202	3b. Phone No. (include area code) 720-876-3533	9. API Well No. 30-045-35514
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface 362' FSL and 203' FWL Section 11, T23N, R8W At proposed prod. zone 430' FSL and 330' FWL Section 10, T23N, R8W		10. Field and Pool, or Exploratory Nageezi Gallup & Basin Mancos Gas
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		11. Sec., T. R. M. or Blk. and Survey or Area Section 11, T23N, R8W NMPM
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drg. 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 <i>Katie Wegner</i>	Name (Printed/Typed) Katie Wegner	Date 2/11/14
Title Regulatory Analyst		
Approved by (Signature) <i>[Signature]</i>	Name (Printed/Typed) JUN 2 2014	Date 5/30/14
Title AFM		

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

RECEIVED

DISTRICT I
1820 N. French Dr., Hobbs, N.M. 88240
Phone: (505) 393-6161 Fax: (505) 393-0720

DISTRICT II
811 S. First St., Artesia, N.M. 88210
Phone: (505) 745-1888 Fax: (505) 748-9720

DISTRICT III
1000 Rio Bravo Rd., Artec, N.M. 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1820 S. St. Francis Dr., Santa Fe, NM 87506
Phone: (505) 478-3460 Fax: (505) 478-3468

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised August 1, 2011

FEB 13 2014

Submit one copy to appropriate
District Office

OIL CONSERVATION DIVISION
1220 South St. Francis
Santa Fe, NM 87506

Albuquerque Field Office
Bureau of Land Management

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30-045-35514		*Pool Code 47540 / 97232	*Pool Name NAGEEZI GALLUP / BASIN MANCOS GAS
*Property Code 313322	*Property Name LYBROOK M11-2308		*Well Number 01H
*GRID No. 282327	*Operator Name ENCANA OIL & GAS (USA) INC.		*Elevation 6905.3'

10 Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	11	23N	8W		362'	SOUTH	203'	WEST	SAN JUAN

11 Bottom Hole Location If Different From Surface

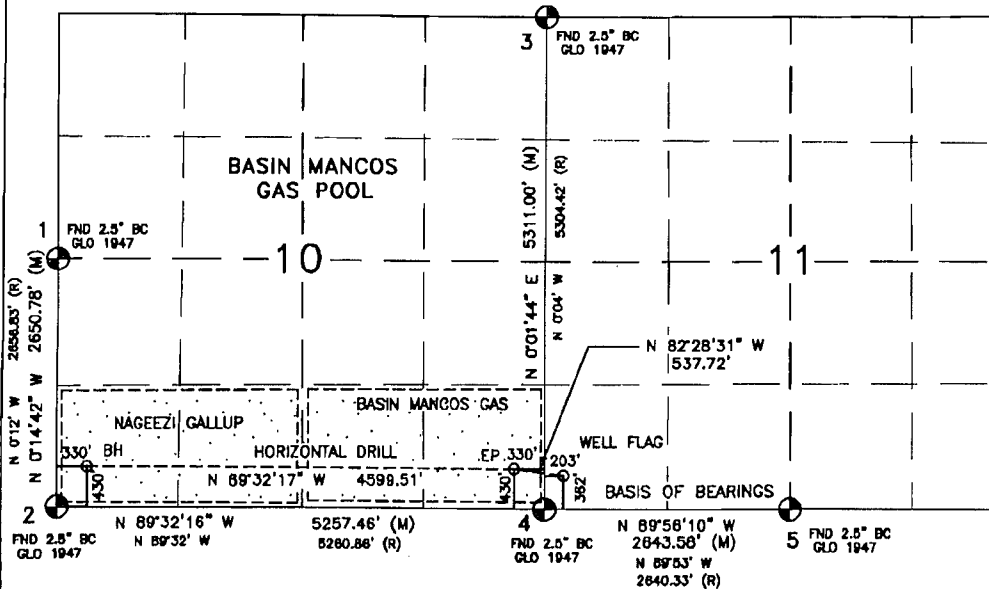
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	10	23N	8W		430'	SOUTH	330'	WEST	SAN JUAN

*Dedicated Acres 160.00 ACRES - S/2 S/2 SEC. 10	*Joint or Infill	*Consolidation Code	*Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

18

<p>1 LAT. 38.24896° N (NAD83) LONG. 107.87788° W (NAD83) LAT. 38.24897° N (NAD27) LONG. 107.87849° W (NAD27)</p> <p>2 LAT. 38.24188° N (NAD83) LONG. 107.87785° W (NAD83) LAT. 38.24189° N (NAD27) LONG. 107.87846° W (NAD27)</p> <p>3 LAT. 38.24889° N (NAD83) LONG. 107.84217° W (NAD83) LAT. 38.24890° N (NAD27) LONG. 107.84278° W (NAD27)</p> <p>4 LAT. 38.23427° N (NAD83) LONG. 107.85103° W (NAD83) LAT. 38.23428° N (NAD27) LONG. 107.85164° W (NAD27)</p> <p>5 LAT. 36.24891° N (NAD83) LONG. 107.86895° W (NAD83) LAT. 36.24892° N (NAD27) LONG. 107.86958° W (NAD27)</p>	<p>17 OPERATOR CERTIFICATION</p> <p>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p><i>Katie Wegner</i> 2/11/14 Signature Date</p> <p>Katie Wegner Printed Name</p> <p>Kathryn.Wegner@encana.com E-mail Address</p> <p>SURVEYOR CERTIFICATION</p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>OCTOBER 23, 2012 Date of Survey</p> <p>Signature and Seal of Professional Surveyor:</p> <p><i>David R. Russell</i> DAVID R. RUSSELL REGISTERED PROFESSIONAL LAND SURVEYOR NEW MEXICO 10201</p> <p>Certificate Number 10201</p>
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BOTTOM HOLE
LAT. 38.23557° N (NAD83)
LONG. 107.87870° W (NAD83)
LAT. 38.23558° N (NAD27)
LONG. 107.87731° W (NAD27)

ENTRY POINT
LAT. 38.23547° N (NAD83)
LONG. 107.86111° W (NAD83)
LAT. 38.23548° N (NAD27)
LONG. 107.86172° W (NAD27)

WELL FLAG
LAT. 38.23528° N (NAD83)
LONG. 107.85930° W (NAD83)
LAT. 38.23529° N (NAD27)
LONG. 107.85991° W (NAD27)

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**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**

- 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
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**

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.

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

**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

8. ABNORMAL PRESSURES & HYDROGEN SULFIDE


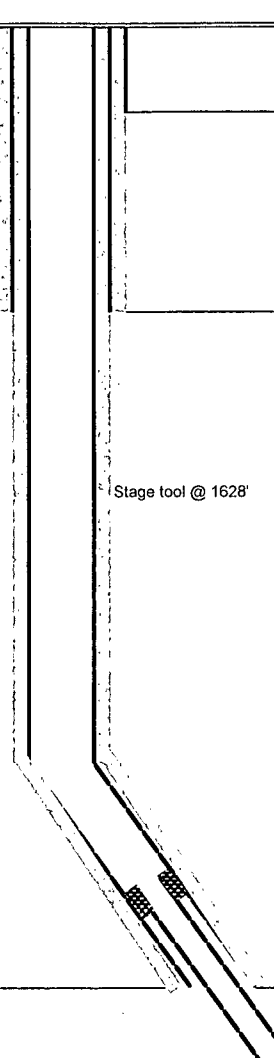
The anticipated bottom hole pressure is +/- 2472 psi based on a 9.0 ppg at 5281' TVD of the landing point of the horizontal lateral. No abnormal pressure or temperatures are anticipated.

No hydrogen sulfide gas is anticipated, however, if 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 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.

LOC: Sec 11-T23N-R8W County: San Juan WELL: Lybrook M11-2308 01H			Encana Natural Gas WELL SUMMARY					ENG: 1/31/14 RIG: GLE: 6905 RKBE: 6921	
MWD LWD	OPEN HOLE LOGGING	FORM	DEPTH			HOLE SIZE	CASING SPECS	MW MUD TYPE	DEVIATION INFORMATION
			TVD	MD					
			60	60'		30	20" 94# 100sx Type I Neat 16ppg cmt	Fresh wtr 8.3-9.2	
Surveys After csg is run	None		500	500		12 1/4	9 5/8" 36ppf J55 STC TOC @ surface 178 sks Type III Cmt	Fresh wtr 8.4-8.6	Vertical <1°
Surveys every 500'	No OH logs Mud logger onsite	Ojo Alamo Kirtland Fruitland Coal Pictured Cliffs Ss Lewis Shale Cliffhouse Ss Menefee Fn Point Lookout Ss Mancos Sh KICK OFF PT Mancos Silt Gallup Top 7" csg	953 1072 1247 1578 1662 2356 3117 3979 4164 4700 4867 4966 5265	5478		8 3/4	7" 26ppf J55 LTC TOC @ surface 30% OH excess: 560 sksTotal. Stage 1 Lead: 247sks Stage 1 Tail: 170sks. Stage 2 Lead: 143sks	Fresh Wtr 8.5-8.8	Vertical <1° KOP 4700 10 deg/100'
Surveys every 500' Gyro at CP MWD Gamma Directional	No OH Logs	horz target Base Gallup	5281 5279	5615		6 1/8	200' overlap at liner top 4554' Lateral	8.6-9.0 OBM	.25deg updip 5265'TVD TD = 10169' MD
							4 1/2" 11.6ppf SB80 LTC Running external swellable csg packers for isolation of prod string Plan on setting top packer within 100' of intermediate casing shoe	Switch to OBM 8.6-9.0'	

NOTES:

- 1) Drill with 30" bit to 60', set 20" 94# conductor pipe
- 2) Drill surface to 500', R&C 9 5/8" casing
- 3) N/U BOP and surface equipment
- 4) Drill to KOP of 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

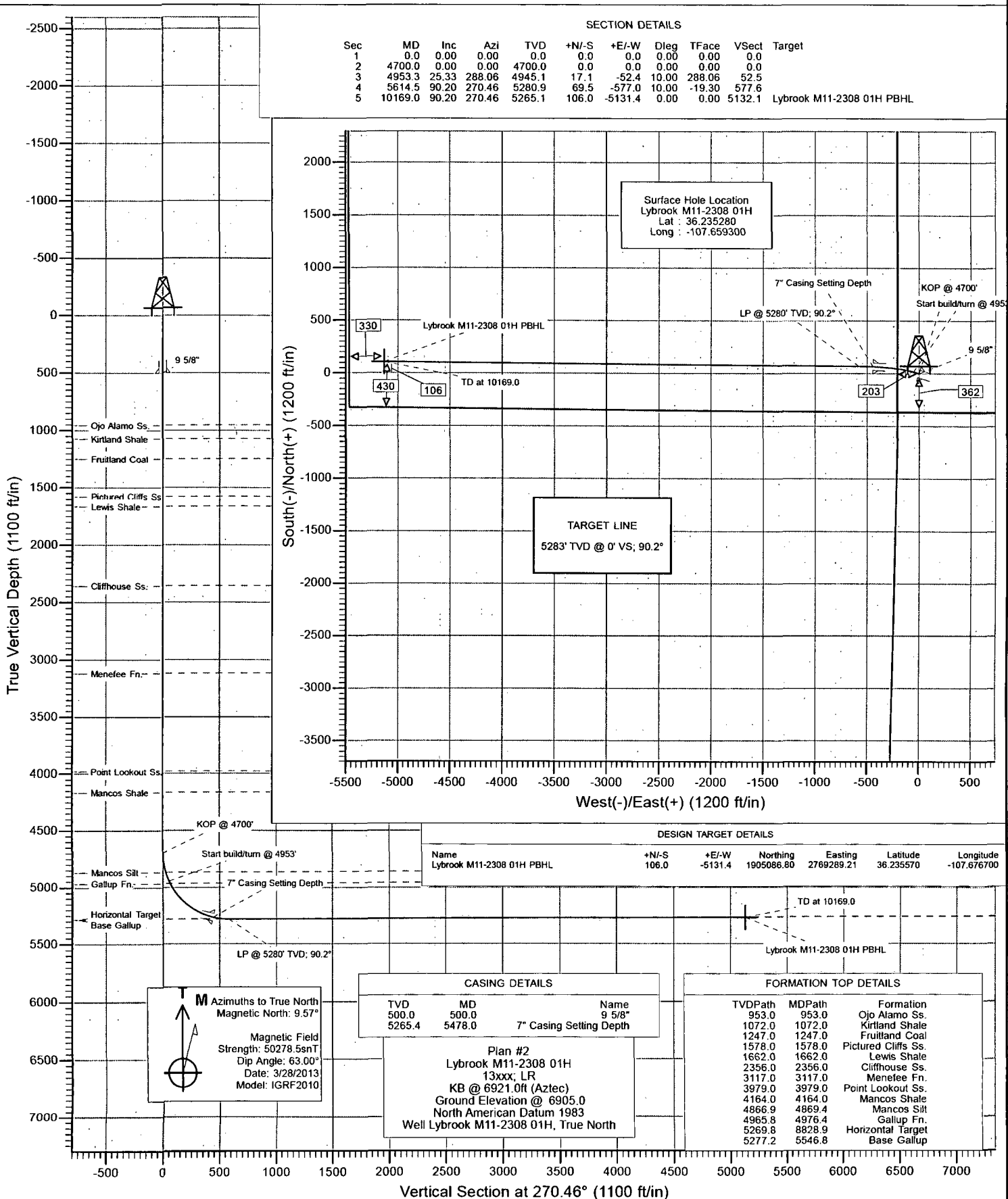
Pipe Outside Diameter (ins)	_____	4.500
Pipe Wall Thickness (ins)	_____	0.250
Nominal Weight Per Foot (lbs)	_____	11.60
Thread Name	_____	Long Thread CSG
Grade Name	_____	SB-80
Pipe Minimum Yield (psi)	_____	80,000
Pipe Minimum Ultimate (psi)	_____	90,000
Coupling Minimum Yield (psi)	_____	80,000
Coupling 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



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

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

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

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

Design	Plan #2			
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	270.46

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
- hit/miss target									
- Shape									
Lybrook M11-2308 01H I	0.00	0.00	5,265.1	106.0	-5,131.4	1,905,086.80	2,769,289.21	36.235570	-107.676700
- plan hits target center									
- Point									

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
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

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

JEFFERS-FEDERAL-2 33

Lybrook 102-2308 02H
Lybrook 102-2308 01H

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

Lybrook M11-2308 01H

Lybrook M11-2308 02H

STATE OF NM 16 21

STATE OF NEW MEXICO 21

FEDERAL-15 41

16

STATE OF NM-16 23

STATE OF NEW MEXICO 43

CHACO 2308-161 147H

CHACO UNIT 2

15

Lybrook L14-2308 01H

14

Lybrook H14-2308 01H

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

