

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 Well-2308 #2H

API# 3004535515, 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 L. Perin
NMOCD Approved by Signature

6-5-2014
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

Lease Serial No.
NMNM 118132 & NMNM 76842

6. If Indian, Allottee or Tribe Name
N/A

1a. Type of work: ☒ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No.
Pending

1b. Type of Well: ☐ Oil Well ☒ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone

8. Lease Name and Well No.
Lybrook M11-2308 02H

2. Name of Operator Encana Oil & Gas (USA) Inc.

9. API Well No.
30-045-35515

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
Basin Mancos Gas

4. Location of Well (Report location clearly and in accordance with any State requirements.)*

At surface 341' FSL and 182' FWL Section 11, T23N, R8W

At proposed prod. zone 330' FSL and 330' FEL Section 14, 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 drg. unit line, if any)
BHL is 330' from east lease line

16. No. of acres in lease
NMNM 118132 - 2,320 ac.
NMNM 76842 - 2,560 ac.

17. Spacing Unit dedicated to this well
640.0 acres - All of Section 14, T23N, R8W

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
Federal 15-41 is +/- 1600' southwest of SHL

19. Proposed Depth
5,255' TVD/12,211' 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*
11/05/2014

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:

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

25. Signature *Katie Wegner*

Name (Printed/Typed)
Katie Wegner

Date
2/11/14

Title
Regulatory Analyst

Approved by (Signature) *[Signature]*

Name (Printed/Typed)

Date
5/29/14

Title
AFM

Office
FFO

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)

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"**

NMCGD TV

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

DISTRICT I
1625 N. French Dr., Hobbs, N.M. 88240
Phone: (505) 393-6161 Fax: (505) 393-0720

DISTRICT II
611 S. First St., Artesia, N.M. 88210
Phone: (505) 746-1863 Fax: (505) 746-9780

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

DISTRICT IV
1820 S. St. Francis Dr., Santa Fe, NM 87506
Phone: (505) 476-3460 Fax: (505) 476-3468

State of New Mexico
Energy, Minerals & Natural Resources Department

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Form C-102
Revised August 1, 2011

FEB 13 2014

Submit one copy to appropriate
District Office

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

Farmington Field Office
Bureau of Land Management

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30-045-35515		*Pool Code 97232	*Pool Name BASIN MANGOS
*Property Code 313322	*Property Name LYBROOK M11-2308		*Well Number 02H
*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		341'	SOUTH	182'	WEST	SAN JUAN

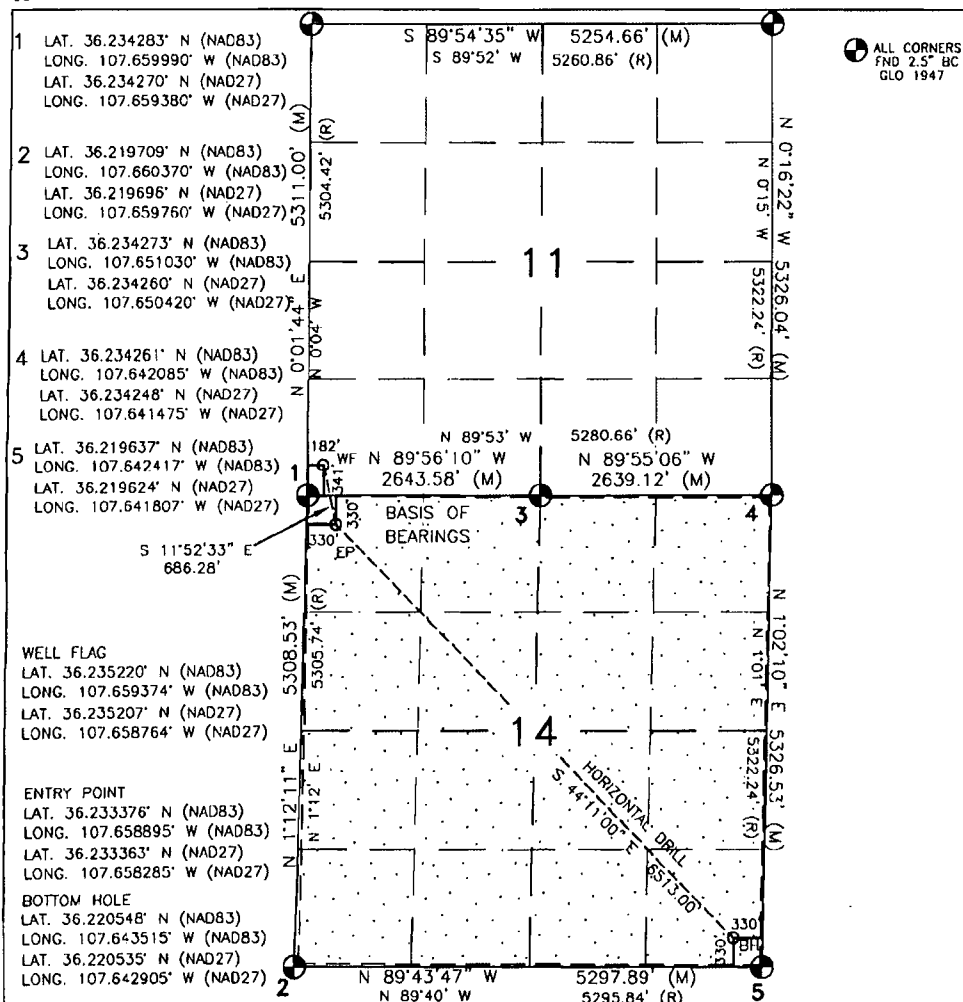
11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	14	23N	8W		330'	SOUTH	330'	EAST	SAN JUAN

*Dedicated Acres 640.00 ACRES ALL SEC. 14	*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

16



18 17 OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Katie Wegner 2/11/14
Signature Date

Katie Wegner

Printed Name

katie.wegner@encana.com

E-mail Address

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

SEPTEMBER 27, 2013

Signature and Seal of Professional Surveyor:

David R. Russell
DAVID R. RUSSELL
NEW MEXICO
REGISTERED PROFESSIONAL LAND SURVEYOR
10201

DAVID RUSSELL

Certificate Number

10201

Lybrook M11-2308 02H
SHL: SWSW Section 11, T23N, R8W
341 FSL and 182 FWL
BHL: SESE Section 14, T23N, R8W
330 FSL and 330 FEL
San Juan, New Mexico
Lease Number: NMNM 118132 & NMNM 76842

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.	958
Kirtland Sh.	1,067
Fruitland Coal	1,221
Pictured Cliffs Ss.	1,568
Lewis Sh.	1,647
Cliffhouse Ss.	2,341
Menefee Fn.	3,077
Point Lookout Ss.	3,973
Mancos Sh.	4,144
Mancos Silt	4,674
Gallup Fn.	4,969

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	1,221
Oil/Gas	Pictured Cliffs Ss.	1,568
Oil/Gas	Cliffhouse Ss.	2,341
Gas	Menefee Fn.	3,077
Oil/Gas	Point Lookout Ss.	3,973
Oil/Gas	Mancos Sh.	4,144
Oil/Gas	Mancos Silt	4,674
Oil/Gas	Gallup Fn.	4,969

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 02H

**SHL: SWSW Section 11, T23N, R8W
341 FSL and 182 FWL**

**BHL: SESE Section 14, T23N, R8W
330 FSL and 330 FEL**

San Juan, New Mexico

Lease Number: NMNM 118132 & NMNM 76842

- 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'-5575'MD	8 3/4"	7"	26#	J55, LTC New
Production Liner	5375'-12211'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 02H**SHL: SWSW Section 11, T23N, R8W
341 FSL and 182 FWL****BHL: SESE Section 14, T23N, R8W
330 FSL and 330 FEL****San Juan, New Mexico****Lease Number: NMNM 118132 & NMNM 76842**

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	5575'MD	30% open hole excess Stage 1 Lead: 254sks Stage 1 Tail: 174sks Stage 2 Lead: 142sks	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*	5375'-12211'	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 02H
SHL: SWSW Section 11, T23N, R8W
341 FSL and 182 FWL
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330 FSL and 330 FEL
San Juan, New Mexico
Lease Number: NMNM 118132 & NMNM 76842

5. WELL PLAN & DIRECTIONAL DRILLING PROGRAM

The proposed horizontal well will have a kick off point of 4510'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5255'/12211'	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- 5267'TVD/5575'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"	5575'-12211'	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 02H

**SHL: SWSW Section 11, T23N, R8W
341 FSL and 182 FWL**

**BHL: SESE Section 14, T23N, R8W
330 FSL and 330 FEL**

San Juan, New Mexico

Lease Number: NMNM 118132 & NMNM 76842

8. ABNORMAL PRESSURES & HYDROGEN SULFIDE

The anticipated bottom hole pressure is +/- 2470 psi based on a 9.0 ppg at 5278' 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 November 5, 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.



Boomerang Tube LLC

CASING (OR) TUBING DESCRIPTION AND PERFORMANCE PROPERTIES

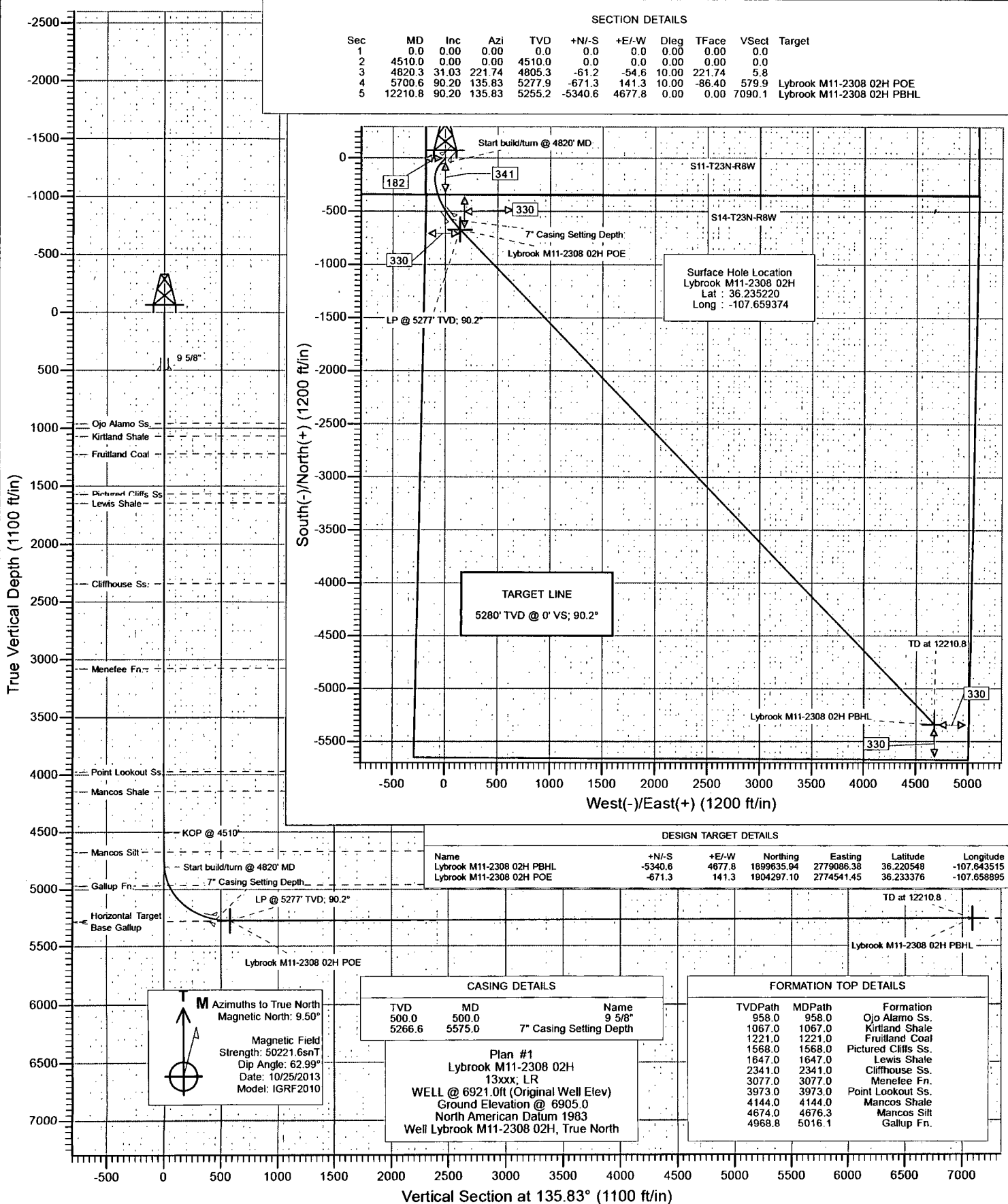
Pipe Outside Diameter (ins)	_____	4.500
Pipe Wall Thickness (ins)	_____	0.250
Nominal Weight Per Foot (lbs)	_____	11.60
Thread Name	_____	Long Thread CSG
Grade Name	_____	SB-80
Pipe Minimum Yield (psi)	_____	80,000
Pipe Minimum Ultimate (psi)	_____	90,000
Coupling Minimum Yield (psi)	_____	80,000
Coupling 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 02H
Wellbore: Hz
Design: Plan #1

Local Co-ordinate Reference: Well Lybrook M11-2308 02H
TVD Reference: WELL @ 6921.0ft (Original Well Elev)
MD Reference: WELL @ 6921.0ft (Original Well Elev)
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 02H					
Well Position	+N/-S	0.0 ft	Northing:	1,904,968.11 ft	Latitude:	36.235220
	+E/-W	0.0 ft	Easting:	2,774,398.98 ft	Longitude:	-107.659374
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	10/25/2013	9.50	62.99	50,222

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	135.83

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	
4,510.0	0.00	0.00	4,510.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,820.3	31.03	221.74	4,805.3	-61.2	-54.6	10.00	10.00	0.00	221.74	
5,700.6	90.20	135.83	5,277.9	-671.3	141.3	10.00	6.72	-9.76	-86.40	Lybrook M11-2308 02
12,210.8	90.20	135.83	5,255.2	-5,340.6	4,677.8	0.00	0.00	0.00	0.00	Lybrook M11-2308 02

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 02H
 Wellbore: Hz
 Design: Plan #1

Local Co-ordinate Reference: Well Lybrook M11-2308 02H
 TVD Reference: WELL @ 6921.0ft (Original Well Elev)
 MD Reference: WELL @ 6921.0ft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
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	
958.0	0.00	0.00	958.0	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	
1,067.0	0.00	0.00	1,067.0	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	
1,221.0	0.00	0.00	1,221.0	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	
1,568.0	0.00	0.00	1,568.0	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	
1,647.0	0.00	0.00	1,647.0	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	
2,341.0	0.00	0.00	2,341.0	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	
3,077.0	0.00	0.00	3,077.0	0.0	0.0	0.0	0.00	0.00	Menefee Fn.
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	
3,600.0	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	
3,973.0	0.00	0.00	3,973.0	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	
4,144.0	0.00	0.00	4,144.0	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 02H
 Wellbore: Hz
 Design: Plan #1

Local Co-ordinate Reference: Well Lybrook M11-2308 02H
 TVD Reference: WELL @ 6921.0ft (Original Well Elev)
 MD Reference: WELL @ 6921.0ft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
4,300.0	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	
4,510.0	0.00	0.00	4,510.0	0.0	0.0	0.0	0.00	0.00	KOP @ 4510'
4,600.0	9.00	221.74	4,599.6	-5.3	-4.7	0.5	10.00	10.00	
4,676.3	16.63	221.74	4,674.0	-17.9	-16.0	1.7	10.00	10.00	Mancos Silt
4,700.0	19.00	221.74	4,696.5	-23.3	-20.8	2.2	10.00	10.00	
4,800.0	29.00	221.74	4,787.8	-53.6	-47.8	5.1	10.00	10.00	
4,820.3	31.03	221.74	4,805.3	-61.2	-54.6	5.8	10.00	10.00	Start build/turn @ 4820' MD
4,900.0	32.42	206.77	4,873.3	-95.6	-77.9	14.3	10.00	1.75	
5,000.0	36.38	190.45	4,955.9	-148.9	-95.4	40.3	10.00	3.96	
5,016.1	37.21	188.14	4,968.8	-158.4	-97.0	46.0	10.00	5.12	Gallup Fn.
5,100.0	42.14	177.47	5,033.4	-211.7	-99.3	82.6	10.00	5.88	
5,200.0	49.05	167.32	5,103.5	-282.2	-89.5	140.1	10.00	6.91	
5,300.0	56.67	159.18	5,163.9	-358.3	-66.3	210.8	10.00	7.63	
5,400.0	64.74	152.38	5,212.8	-437.6	-30.4	292.7	10.00	8.07	
5,500.0	73.08	146.46	5,248.8	-517.8	17.1	383.3	10.00	8.34	
5,575.0	79.45	142.36	5,266.6	-577.0	59.5	455.3	10.00	8.48	7" Casing Setting Depth
5,600.0	81.58	141.04	5,270.7	-596.3	74.8	479.8	10.00	8.54	
5,700.0	90.15	135.86	5,277.9	-670.8	140.9	579.3	10.00	8.57	
5,700.6	90.20	135.83	5,277.9	-671.3	141.3	579.9	10.00	8.58	LP @ 5277' TVD; 90.2° - Lybrook M11-2308 02H
5,800.0	90.20	135.83	5,277.6	-742.6	210.5	679.3	0.00	0.00	
5,900.0	90.20	135.83	5,277.2	-814.3	280.2	779.3	0.00	0.00	
6,000.0	90.20	135.83	5,276.9	-886.0	349.9	879.3	0.00	0.00	
6,100.0	90.20	135.83	5,276.5	-957.7	419.6	979.3	0.00	0.00	
6,200.0	90.20	135.83	5,276.2	-1,029.5	489.3	1,079.3	0.00	0.00	
6,300.0	90.20	135.83	5,275.8	-1,101.2	559.0	1,179.3	0.00	0.00	
6,400.0	90.20	135.83	5,275.5	-1,172.9	628.6	1,279.3	0.00	0.00	
6,500.0	90.20	135.83	5,275.1	-1,244.6	698.3	1,379.3	0.00	0.00	
6,600.0	90.20	135.83	5,274.8	-1,316.3	768.0	1,479.3	0.00	0.00	
6,700.0	90.20	135.83	5,274.4	-1,388.1	837.7	1,579.3	0.00	0.00	
6,800.0	90.20	135.83	5,274.1	-1,459.8	907.4	1,679.3	0.00	0.00	
6,900.0	90.20	135.83	5,273.7	-1,531.5	977.1	1,779.3	0.00	0.00	
7,000.0	90.20	135.83	5,273.4	-1,603.2	1,046.7	1,879.3	0.00	0.00	
7,100.0	90.20	135.83	5,273.0	-1,675.0	1,116.4	1,979.3	0.00	0.00	
7,200.0	90.20	135.83	5,272.7	-1,746.7	1,186.1	2,079.3	0.00	0.00	
7,300.0	90.20	135.83	5,272.3	-1,818.4	1,255.8	2,179.3	0.00	0.00	
7,400.0	90.20	135.83	5,272.0	-1,890.1	1,325.5	2,279.3	0.00	0.00	
7,500.0	90.20	135.83	5,271.6	-1,961.9	1,395.2	2,379.3	0.00	0.00	
7,600.0	90.20	135.83	5,271.3	-2,033.6	1,464.8	2,479.3	0.00	0.00	
7,700.0	90.20	135.83	5,270.9	-2,105.3	1,534.5	2,579.3	0.00	0.00	
7,800.0	90.20	135.83	5,270.6	-2,177.0	1,604.2	2,679.3	0.00	0.00	
7,900.0	90.20	135.83	5,270.2	-2,248.7	1,673.9	2,779.3	0.00	0.00	
8,000.0	90.20	135.83	5,269.9	-2,320.5	1,743.6	2,879.3	0.00	0.00	
8,100.0	90.20	135.83	5,269.6	-2,392.2	1,813.3	2,979.3	0.00	0.00	
8,200.0	90.20	135.83	5,269.2	-2,463.9	1,882.9	3,079.3	0.00	0.00	
8,300.0	90.20	135.83	5,268.9	-2,535.6	1,952.6	3,179.3	0.00	0.00	
8,400.0	90.20	135.83	5,268.5	-2,607.4	2,022.3	3,279.3	0.00	0.00	
8,500.0	90.20	135.83	5,268.2	-2,679.1	2,092.0	3,379.3	0.00	0.00	
8,600.0	90.20	135.83	5,267.8	-2,750.8	2,161.7	3,479.3	0.00	0.00	
8,700.0	90.20	135.83	5,267.5	-2,822.5	2,231.4	3,579.3	0.00	0.00	
8,800.0	90.20	135.83	5,267.1	-2,894.2	2,301.0	3,679.3	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 02H
 Wellbore: Hz
 Design: Plan #1

Local Co-ordinate Reference: Well Lybrook M11-2308 02H
 TVD Reference: WELL @ 6921.0ft (Original Well Elev)
 MD Reference: WELL @ 6921.0ft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
8,900.0	90.20	135.83	5,266.8	-2,966.0	2,370.7	3,779.3	0.00	0.00	
9,000.0	90.20	135.83	5,266.4	-3,037.7	2,440.4	3,879.3	0.00	0.00	
9,100.0	90.20	135.83	5,266.1	-3,109.4	2,510.1	3,979.3	0.00	0.00	
9,200.0	90.20	135.83	5,265.7	-3,181.1	2,579.8	4,079.3	0.00	0.00	
9,300.0	90.20	135.83	5,265.4	-3,252.9	2,649.5	4,179.3	0.00	0.00	
9,400.0	90.20	135.83	5,265.0	-3,324.6	2,719.1	4,279.3	0.00	0.00	
9,500.0	90.20	135.83	5,264.7	-3,396.3	2,788.8	4,379.3	0.00	0.00	
9,600.0	90.20	135.83	5,264.3	-3,468.0	2,858.5	4,479.3	0.00	0.00	
9,700.0	90.20	135.83	5,264.0	-3,539.7	2,928.2	4,579.3	0.00	0.00	
9,800.0	90.20	135.83	5,263.6	-3,611.5	2,997.9	4,679.3	0.00	0.00	
9,900.0	90.20	135.83	5,263.3	-3,683.2	3,067.6	4,779.3	0.00	0.00	
10,000.0	90.20	135.83	5,262.9	-3,754.9	3,137.2	4,879.3	0.00	0.00	
10,100.0	90.20	135.83	5,262.6	-3,826.6	3,206.9	4,979.3	0.00	0.00	
10,200.0	90.20	135.83	5,262.2	-3,898.4	3,276.6	5,079.3	0.00	0.00	
10,300.0	90.20	135.83	5,261.9	-3,970.1	3,346.3	5,179.3	0.00	0.00	
10,400.0	90.20	135.83	5,261.6	-4,041.8	3,416.0	5,279.3	0.00	0.00	
10,500.0	90.20	135.83	5,261.2	-4,113.5	3,485.7	5,379.3	0.00	0.00	
10,600.0	90.20	135.83	5,260.9	-4,185.2	3,555.3	5,479.3	0.00	0.00	
10,700.0	90.20	135.83	5,260.5	-4,257.0	3,625.0	5,579.3	0.00	0.00	
10,800.0	90.20	135.83	5,260.2	-4,328.7	3,694.7	5,679.3	0.00	0.00	
10,900.0	90.20	135.83	5,259.8	-4,400.4	3,764.4	5,779.3	0.00	0.00	
11,000.0	90.20	135.83	5,259.5	-4,472.1	3,834.1	5,879.3	0.00	0.00	
11,100.0	90.20	135.83	5,259.1	-4,543.9	3,903.8	5,979.3	0.00	0.00	
11,200.0	90.20	135.83	5,258.8	-4,615.6	3,973.4	6,079.3	0.00	0.00	
11,300.0	90.20	135.83	5,258.4	-4,687.3	4,043.1	6,179.3	0.00	0.00	
11,400.0	90.20	135.83	5,258.1	-4,759.0	4,112.8	6,279.3	0.00	0.00	
11,500.0	90.20	135.83	5,257.7	-4,830.8	4,182.5	6,379.3	0.00	0.00	
11,600.0	90.20	135.83	5,257.4	-4,902.5	4,252.2	6,479.3	0.00	0.00	
11,700.0	90.20	135.83	5,257.0	-4,974.2	4,321.9	6,579.3	0.00	0.00	
11,800.0	90.20	135.83	5,256.7	-5,045.9	4,391.5	6,679.3	0.00	0.00	
11,900.0	90.20	135.83	5,256.3	-5,117.6	4,461.2	6,779.3	0.00	0.00	
12,000.0	90.20	135.83	5,256.0	-5,189.4	4,530.9	6,879.3	0.00	0.00	
12,100.0	90.20	135.83	5,255.6	-5,261.1	4,600.6	6,979.3	0.00	0.00	
12,200.0	90.20	135.83	5,255.3	-5,332.8	4,670.3	7,079.3	0.00	0.00	
12,210.8	90.20	135.83	5,255.2	-5,340.6	4,677.8	7,090.1	0.00	0.00	TD at 12210.8 - Lybrook M11-2308 02H 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 02H I - hit/miss target - Shape	0.00	0.00	5,255.2	-5,340.6	4,677.8	1,899,635.94	2,779,086.38	36.220548	-107.643515
- plan hits target center - Point									
Lybrook M11-2308 02H I - plan hits target center - Point	0.00	0.00	5,277.9	-671.3	141.3	1,904,297.10	2,774,541.45	36.233376	-107.658895

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook M11-2308 02H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 6921.0ft (Original Well Elev)
Project:	San Juan County, NM	MD Reference:	WELL @ 6921.0ft (Original Well Elev)
Site:	S11-T23N-R8W	North Reference:	True
Well:	Lybrook M11-2308 02H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #1		

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
5,575.0	5,266.6	7" Casing Setting Depth	0.000	0.000
500.0	500.0	9 5/8"	0.000	0.000

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
958.0	958.0	Ojo Alamo Ss.		-0.20	135.83
1,067.0	1,067.0	Kirtland Shale		-0.20	135.83
1,221.0	1,221.0	Fruitland Coal		-0.20	135.83
1,568.0	1,568.0	Pictured Cliffs Ss.		-0.20	135.83
1,647.0	1,647.0	Lewis Shale		-0.20	135.83
2,341.0	2,341.0	Cliffhouse Ss.		-0.20	135.83
3,077.0	3,077.0	Menefee Fn.		-0.20	135.83
3,973.0	3,973.0	Point Lookout Ss.		-0.20	135.83
4,144.0	4,144.0	Mancos Shale		-0.20	135.83
4,676.3	4,674.0	Mancos Silt		-0.20	135.83
5,016.1	4,969.0	Gallup Fn.		-0.20	135.83

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,510.0	4,510.0	0.0	0.0	KOP @ 4510'
4,820.3	4,805.3	-61.2	-54.6	Start build/turn @ 4820' MD
5,700.6	5,277.9	-671.3	141.3	LP @ 5277' TVD; 90.2°
12,210.8	5,255.2	-5,340.6	4,677.8	TD at 12210.8

ENCANA OIL & GAS (USA) INC.

LYBROOK M11-2308 #02H

341' FSL & 182' 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. 36.235220° N, LONG. 107.659374° W (NAD 83).



encana

SAN JUAN COUNTY,
NEW MEXICO

- ⊗ Abandoned
 - ⊗ Abandoned Gas
 - ⊗ Abandoned Oil
 - ⊗ Dry Hole
 - ⊗ GAS
 - ⊗ Injection
 - OIL
 - Basin Mancos Gas Pool
- 1 inch = 2,167 feet

GREAT WESTERN FED 1

1

23N
8W

JEFFERS FEDERAL-2 23
FEDERAL-3 43
JEFFERS FEDERAL 2 23
33 33
JEFFERS-FEDERAL-2 33
Lybrook 102-2308 02H
Lybrook 102-2308 01H

RIDDLE FEDERAL 1

FEDERAL-12 22

**LYBROOK
GALLUP
POOL**

FEDERAL-12 33

Lybrook M12-2308 01H

Lybrook N12-2308 01H

Lybrook A13-2308 01H
DOME FEDERAL-13 41

13

Lybrook H14-2308 01H

DOME-FEDERAL-24-21

24

23

22

THE BEAR 1

0 0.125 0.25 0.5 Miles

STATE OF NEW MEXICO 43
CHACO 2308-161 147H

GOSE F H 1

**NAGEEZI
GALLUP
POOL**

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

Lybrook M11-2308 01H

Lybrook-M11-2308-02H

FEDERAL-15 41

Lybrook L14-2308 01H

1000'

WELLHEAD BLOWOUT CONTROL SYSTEM

encana

Well name and number:

Lybrook M11-2308 02H

