

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: 2-27-14

Well information;

Operator Encina, Well Name and Number Lybrook 001-2306 #1H

API# 30039-31220, Section 1, Township 23 N, Range 6 E

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 * NSP per 5/20/13 sundry
- ☐ 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 P. ...
NMOCD Approved by Signature

6-20-2014
Date

RECEIVED

Form 3160-3
(August 2007)

MAR 03 2014

FORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Birmingham Field Office
Bureau of Land Management

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMNM 118127
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name N/A
2. Name of Operator Encana Oil & Gas (USA) Inc.		7. If Unit or CA Agreement, Name and No. N/A
3a. Address 370 17th Street, Suite 1700 Denver, CO 80202		8. Lease Name and Well No. Lybrook O01-2306 01H
3b. Phone No. (include area code) 720-876-3533		9. API Well No. 30-039-31220
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface 729' FSL and 2540' FEL Section 1, T23N, R6W At proposed prod. zone 330' FSL and 1870' FWL Section 12, T23N, R6W		10. Field and Pool, or Exploratory Counselors Gallup- Dakota
14. Distance in miles and direction from nearest town or post office* +/- 65 miles southeast of the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM		11. Sec., T, R, M. or Blk. and Survey or Area Sections 12, T23N, R6W NMMPM
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) BHL is 330' from south lease line Section 12 T23N, R6W	16. No. of acres in lease NM 118127 - 1,160	17. Spacing Unit dedicated to this well 320 acres - W/2 Section 12, T23N, R6W
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. Lybrook O01-2308 02H is +/- 30' East of wellhead	19. Proposed Depth 5,674' TVD/11,703' MD	20. BLM/BLA Bond No. on file COB-000235
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6,883' GL, 6,899 KB	22. Approximate date work will start* 09/18/2014	23. Estimated duration 20 days

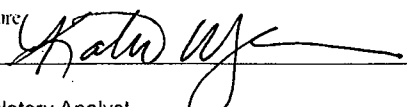
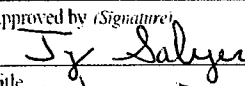
OIL CONS. DIV DIST. 3

JUN 16 2014

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 6/27/14
Title Regulatory Analyst		
Approved by (Signature): 	Name (Printed/Typed) Troy Salyers	Date 6/16/2014
Title Petroleum Engineer (Acting 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.

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)

NMOCB
N

CONFIDENTIAL

DRILLING OPERATIONS AUTHORIZED ARE
SUBJECT TO COMPLIANCE WITH ATTACHED
"GENERAL REQUIREMENTS".

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: (575) 393-8161 Fax: (575) 393-0720

DISTRICT II

811 S. First St., Artesia, N.M. 88210
Phone: (575) 748-1283 Fax: (575) 748-8720

DISTRICT III

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

DISTRICT IV

1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3482

State of New Mexico
Energy, Minerals & Natural Resources Department

RECEIVED

Form C-102
Revised August 1, 2011

MAR 03 2014

Submit one copy to appropriate
District Office

OIL CONSERVATION DIVISION

1220 South St. Francis Dr. Farmington Field Office
Santa Fe, NM 87505 Bureau of Land Management

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039-31220	² Pool Code 13379	³ Pool Name COUNSELORS GALLUP - DAKOTA
⁴ Property Code 313380	⁵ Property Name LYBROOK 001-2306	⁶ Well Number 01H
⁷ GRID No. 282327	⁸ Operator Name ENCANA OIL & GAS (USA) INC.	⁹ Elevation 6882.6'

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	WEST/West line	County
0	1	23N	6W		729'	SOUTH	2540'	EAST	RIO ARRIBA

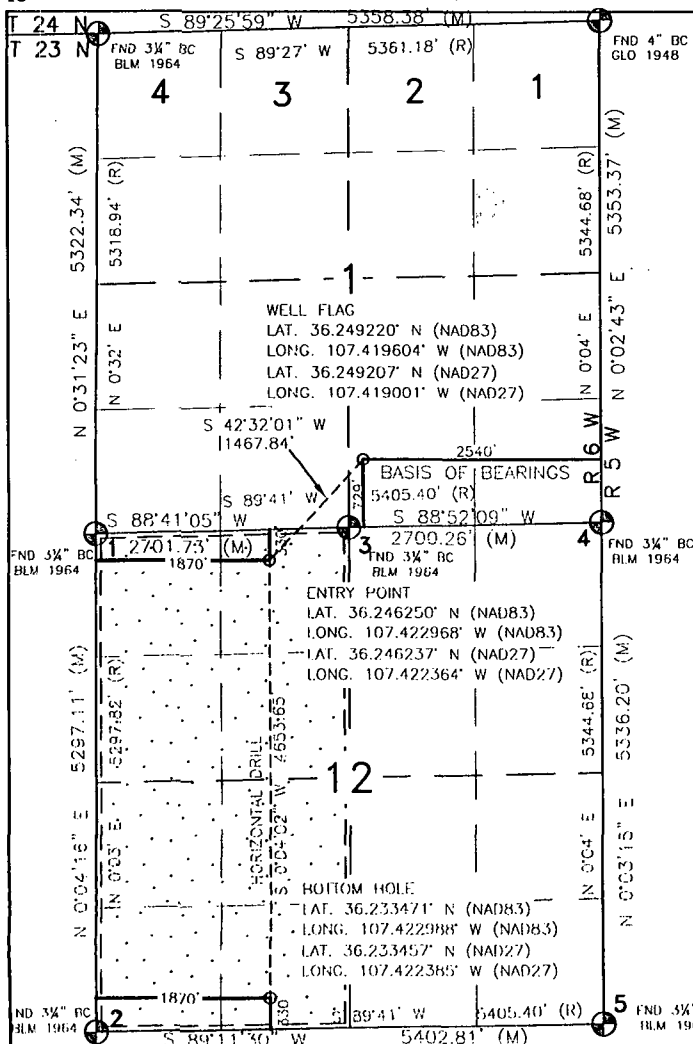
¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	WEST/West line	County
N	12	23N	6W		330'	SOUTH	1870'	WEST	RIO ARRIBA

¹² Dedicated Acres 320 AC. W/2 12	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ 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



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 02/27/14
Signature Date
Katie Wegner

Printed Name
katie.wegner@encana.com

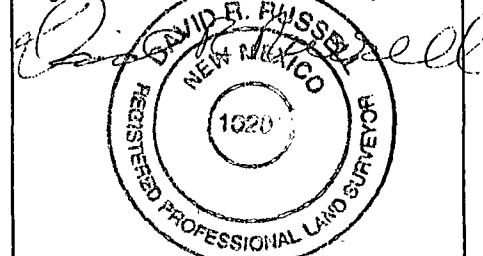
E-mail Address

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.

NOVEMBER 26, 2013

Signature and Seal of Professional Surveyor:



DAVID RUSSELL

Certificate Number

10201

Lybrook O01-2306 01H
SHL: SWSE 1 23N 6W
729 FSL 2540 FEL
BHL: SESW 12 23N 6W
330 FSL 1870 FWL
Lease Number: NMNM 118127
Rio Arriba, New Mexico

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

1. ESTIMATED TOPS OF GEOLOGICAL MARKERS (TVD)

The estimated tops of important geologic markers are as follows:

Formation	Depth (TVD) units = feet
Ojo Alamo	1,578
Kirtland Shale	1,718
Fruitland Coal	1,967
Pictured Cliffs Ss.	2,107
Lewis Shale	2,231
Cliffhouse Ss.	2,952
Menefee Fn.	3,682
Point Lookout Ss.	4,363
Mancos Shale	4,551
Mancos Silt	5,159
Gallup Fn.	5,468

The referenced surface elevation is 6883', KB 6899'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,967
Oil/Gas	Pictured Cliffs Ss.	2,107
Oil/Gas	Cliffhouse Ss.	2,952
Gas	Menefee Fn.	3,682
Oil/Gas	Point Lookout Ss.	4,363
Oil/Gas	Mancos Shale	4,551
Oil/Gas	Mancos Silt	5,159
Oil/Gas	Gallup Fn.	5,468

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

3. PRESSURE CONTROL

- a) Pressure control equipment and configuration will be designed to meet 2M standards.
- b) Working pressure on rams and BOPE will be 3,000 psi.
- c) Function test and visual inspection of the BOP will be conducted daily and noted in the IADC Daily Drilling Report.
- d) The Annular BOP will be pressure tested to a minimum of 50 percent of its rated working pressure.
- e) Blind and Pipe Rams/BOP will be tested against a test plug to 100 percent of rated working pressure.
- f) Pressure tests are required before drilling out from under all casing strings set and cemented in place.

Lybrook O01-2306 01H

SHL: SWSE 1 23N 6W

729 FSL 2540 FEL

BHL: SESW 12 23N 6W

330 FSL 1870 FWL

Lease Number: NMNM 118127

Rio Arriba, New Mexico

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

Proposed BOP and choke manifold arrangements are attached.

4. CASING & CEMENTING PROGRAM

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

- a) The proposed casing design is as follows:

Casing	Depth (MD)	Hole Size	Csg Size	Weight	Grade
Conductor	0'-60'	30"	20"	94#	H40, STC New
Surface	0'-500'	12 1/4"	9 5/8"	36#	J55, STC New
Intermediate	0'-6950'	8 3/4"	7"	26#	J55, LTC New
Production Liner	6750'-11703'	6 1/8"	4 1/2"	11.6#	B80*, LTC New

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

*B80 pipe specifications are attached

Casing design is subject to revision based on geologic conditions encountered

All casing strings below the conductor shall be pressure tested to 0.22 psi per foot of casing string length or 1,500 psi, whichever is greater, but not to exceed 70 percent of the minimum internal yield. If pressure declines more than 10 percent in 30 minutes, corrective action shall be taken.

Lybrook O01-2306 01H
 SHL: SWSE 1 23N 6W
 729 FSL 2540 FEL
 BHL: SESW 12 23N 6W
 330 FSL 1870 FWL
 Lease Number: NMNM 118127
 Rio Arriba, New Mexico

b) The proposed cementing program is as follows

Casing	Depth (MD)	Cement Volume (sacks)	Cement Type & Yield	Designed TOC	Centralizers
Conductor	0'-60'	100 sks	Type I Neat 16 ppg	Surface	None
Surface	0'-500'	201 sks	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	0'-6950'	30% open hole excess Stage 1 Lead: 347 sks Stage 1 Tail: 351 sks Stage 2 Lead: 184 sks	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 every 3 joints through water bearing zones
Production Liner	6750'-11703'	None - External Casing Packers	N/A	N/A	N/A

*Production liner clarification: Utilizing external swell casing packer system for zonal isolation will not use cement in the production liner

Actual volumes will be calculated and determined by conditions onsite. All cement slurries will meet or exceed minimum BLM and New Mexico Oil Conservation Division requirements. Slurries used will be the slurries listed above or equivalent slurries depending on service provider selected. Cement yields may change depending on slurries selected

All waiting on cement times shall be a minimum of 8 hours or adequate to achieve minimum of 500 psi compressive strength at the casing shoe prior to drilling out.

5. WELL PLAN & DIRECTIONAL DRILLING PROGRAM

The proposed horizontal well will have a kick off point of 5190'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5674'/11703'	Gallup

6. DRILLING FLUIDS PROGRAM

a) Surface through Intermediate Casing Point:

Hole Size (in)	Depth (TVD/MD)	Mud Type	Density (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
30"	0-60'/60'	Fresh Water	8.3-9.2	38-100	4-28
12 1/4"	0'-500'/500'	Fresh Water	8.4-8.6	60-70	NC
8 3/4"	500'/500'-5749'/6950'	Fresh Water LSND	9.5-8.8	40-50	8-10

Lybrook 001-2306 01H

SHL: SWSE 1 23N 6W
729 FSL 2540 FEL

BHL: SESW 12 23N 6W
330 FSL 1870 FWL

Lease Number: NMNM 118127

Rio Arriba, New Mexico

b) Intermediate Casing Point to TD:

Hole Size (in)	Depth (TVD/MD)	Mud Type	Density (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
6 1/8"	5749'/6950'- 5674'/11703'	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, & LOGGING

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

Cased Hole:

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

8. ABNORMAL PRESSURES & HYDROGEN SULFIDE

The anticipated bottom hole pressure is +/- 2697 psi based on a 9.0 ppg at 5764' TVD of the horizontal lateral target. No abnormal pressure or temperatures are anticipated.

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

9. ANTICIPATED START DATE AND DURATION OF OPERATIONS

Drilling is estimated to commence on September 18, 2014. It is anticipated that completion operations will begin within 30 days after the well has been drilled depending on fracture treatment schedules with various pumping service companies.

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

LOC: Sec 12-T23N-R6W County: Rio Arriba WELL: Lybrook A12-2306 01H			Encana Natural Gas WELL SUMMARY			ENG: S Kuykendall 2/27/14 RIG: TBD GLE: 6693 RKBE: 6709			
MWD LWD	OPEN HOLE LOGGING	FORM	DEPTH TVDMD			HOLE SIZE	CASING SPECS	MW MUD TYPE	DEVIATION INFORMATION
			60	60'		30	20" 94# 100sx Type I Neat 16.0ppg cmt	Fresh wtr 8.3-9.2	
Multi-Well pad take survey every stand and run anti- collision report prior to spud	None					12 1/4	9 5/8" 36ppf J55 STC	Fresh wtr 8.4-8.6	Vertical <1°
		Naciriento 9 5/8" Csg	0 500	500.00	TOC Surface - 201 sks of Type III Cement				
Survey Every 60'-120', updating anticollision report after surveys. Stop operations and contact drilling engineer if separation factor approaches 1.5	No OH logs	Ojo Alamo Kirtland Shale	1,594 1,734		Stage tool @ ~ 2,200	8 3/4	7" 26ppf J55 LTC	Fresh Wtr 8.5-8.8	Vertical <1°
		Pictured Cliffs Ss. Lewis Shale	2,123 2,247				TOC @ surface 30% OH excess. 698 sksTotal.		
		Cliffhouse Ss. Menefee Fn.	2,968 3,698				Stage 1 Lead: 347 sks Premium Lite FM + 3% CaCl2 + 0.25/sk Cello Flake + 5#/sk LCM-1 + 8% Bentonite + 0.4% FL-52A + 0.4% Sodium Metasilicate. Mixed at 12.1 ppg. Yield 2.13 cuft/sk.		
		Point Lookout Ss. Mancos Shale	4,379 4,567				Stage 1 Tail: 351 sks Type III Cement + 1% CaCl2 + 0.25#/sk Cello Flake + 0.2% FL-52A Mixed at 14.6 ppg. Yield 1.38 cuft/sk.		
Surveys every 30' through the curve	Mud logger on-site	KOP	5,190	5,189.8					Build Rate
		Mancos Silt	5,175						
		Gallup Fn.	5,484						
		7" Csg	5,749	6,950.0					
Surveys every stand to TD unless directed otherwise by Geologist	No OH Logs	Horizontal Target TD	5,764 5,674	11,703.3		6 1/8	200' overlap at liner top	Horizontal Inclination Horizontal TVD	Horz Inc/TVD 90.9 deg/5763.6
							5,094' Drilled Lat, 4,634' Completable	8.6-9.0 OBM	TD = 11,703.3 MD
		Base Gallup	5,820				4 1/2" 11.6ppf SB80 LTC	Switch to OBM 8.6-9.0	
MWD Gamma Directional							Running external swellable csg packers for isolation of prod string Plan on setting top packer within 100' of intermediate casing shoe		

NOTES:



Boomerang Tube LLC

CASING (OR) TUBING DESCRIPTION AND PERFORMANCE PROPERTIES

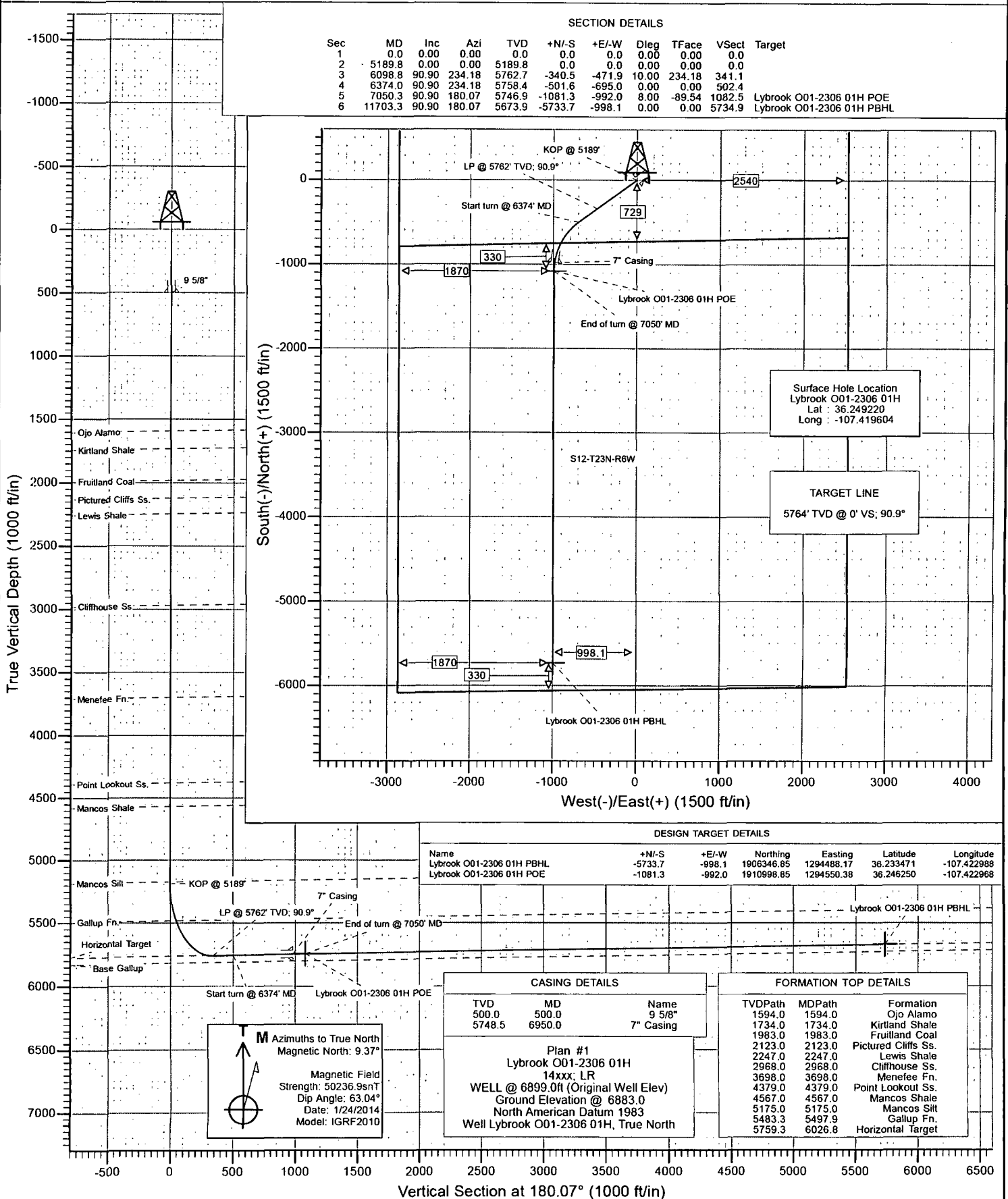
Pipe Outside Diameter (ins)	_____	4.500
Pipe Wall Thickness (ins)	_____	0.250
Nominal Weight Per Foot (lbs)	_____	11.60
Thread Name	_____	Long Thread CSG
Grade Name	_____	SB-80
Pipe Minimum Yield (psi)	_____	80,000
Pipe Minimum Ultimate (psi)	_____	90,000
Coupling Minimum Yield (psi)	_____	80,000
Coupling 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	Local Co-ordinate Reference:	Well Lybrook O01-2306 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 6899.0ft (Original Well Elev)
Project:	Rio Arriba County, NM	MD Reference:	WELL @ 6899.0ft (Original Well Elev)
Site:	S1-T23N-R6W	North Reference:	True
Well:	Lybrook O01-2306 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #1		

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

Site	S1-T23N-R6W				
Site Position:		Northing:	1,912,068.06 ft	Latitude:	36.249220
From:	Lat/Long	Easting:	1,295,555.41 ft	Longitude:	-107.419604
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-0.69 °

Well	Lybrook O01-2306 01H					
Well Position	+N/-S	0.0 ft	Northing:	1,912,068.06 ft	Latitude:	36.249220
	+E/-W	0.0 ft	Easting:	1,295,555.41 ft	Longitude:	-107.419604
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,883.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/24/2014	9.37	63.04	50,237

Design	Plan #1			
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	180.07

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	
5,189.8	0.00	0.00	5,189.8	0.0	0.0	0.00	0.00	0.00	0.00	
6,098.8	90.90	234.18	5,762.7	-340.5	-471.9	10.00	10.00	0.00	234.18	
6,374.0	90.90	234.18	5,758.4	-501.6	-695.0	0.00	0.00	0.00	0.00	
7,050.3	90.90	180.07	5,746.9	-1,081.3	-992.0	8.00	0.00	-8.00	-89.54	Lybrook O01-2306 01
11,703.3	90.90	180.07	5,673.9	-5,733.7	-998.1	0.00	0.00	0.00	0.00	Lybrook O01-2306 01

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook O01-2306 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 6899.0ft (Original Well Elev)
Project:	Rio Arriba County, NM	MD Reference:	WELL @ 6899.0ft (Original Well Elev)
Site:	S1-T23N-R6W	North Reference:	True
Well:	Lybrook O01-2306 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #1		

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	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	
1,400.0	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	
1,594.0	0.00	0.00	1,594.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	
1,734.0	0.00	0.00	1,734.0	0.0	0.0	0.0	0.00	0.00	Kirtland Shale
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	
1,983.0	0.00	0.00	1,983.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
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	
2,123.0	0.00	0.00	2,123.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs Ss.
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	
2,247.0	0.00	0.00	2,247.0	0.0	0.0	0.0	0.00	0.00	Lewis Shale
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	
2,968.0	0.00	0.00	2,968.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss.
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	
3,200.0	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	
3,698.0	0.00	0.00	3,698.0	0.0	0.0	0.0	0.00	0.00	Menefee Fn.
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	
4,379.0	0.00	0.00	4,379.0	0.0	0.0	0.0	0.00	0.00	Point Lookout Ss.

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook 001-2306 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 6899.0ft (Original Well Elev)
Project:	Rio Arriba County, NM	MD Reference:	WELL @ 6899.0ft (Original Well Elev)
Site:	S1-T23N-R6W	North Reference:	True
Well:	Lybrook 001-2306 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #1		

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
4,400.0	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	
4,567.0	0.00	0.00	4,567.0	0.0	0.0	0.0	0.00	0.00	Mancos Shale
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	
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	
5,175.0	0.00	0.00	5,175.0	0.0	0.0	0.0	0.00	0.00	Mancos Silt
5,189.8	0.00	0.00	5,189.8	0.0	0.0	0.0	0.00	0.00	KOP @ 5189'
5,200.0	1.02	234.18	5,200.0	-0.1	-0.1	0.1	10.00	10.00	
5,300.0	11.02	234.18	5,299.3	-6.2	-8.6	6.2	10.00	10.00	
5,400.0	21.02	234.18	5,395.3	-22.3	-30.9	22.3	10.00	10.00	
5,497.9	30.81	234.18	5,483.3	-47.3	-65.6	47.4	10.00	10.00	Gallup Fn.
5,500.0	31.02	234.18	5,485.1	-48.0	-66.4	48.0	10.00	10.00	
5,600.0	41.02	234.18	5,565.8	-82.3	-114.1	82.5	10.00	10.00	
5,700.0	51.02	234.18	5,635.2	-124.4	-172.3	124.6	10.00	10.00	
5,800.0	61.02	234.18	5,691.0	-172.8	-239.5	173.1	10.00	10.00	
5,900.0	71.02	234.18	5,731.6	-226.2	-313.5	226.6	10.00	10.00	
6,000.0	81.02	234.18	5,755.7	-283.0	-392.1	283.4	10.00	10.00	
6,026.8	83.70	234.18	5,759.3	-298.5	-413.7	299.0	10.00	10.00	Horizontal Target
6,098.8	90.90	234.18	5,762.7	-340.5	-471.9	341.1	10.00	10.00	LP @ 5762' TVD; 90.9°
6,100.0	90.90	234.18	5,762.7	-341.3	-472.9	341.8	0.00	0.00	
6,200.0	90.90	234.18	5,761.1	-399.8	-554.0	400.5	0.00	0.00	
6,300.0	90.90	234.18	5,759.5	-458.3	-635.0	459.1	0.00	0.00	
6,374.0	90.90	234.18	5,758.4	-501.6	-695.0	502.4	0.00	0.00	Start turn @ 6374' MD
6,400.0	90.91	232.10	5,758.0	-517.2	-715.8	518.1	8.00	0.06	
6,500.0	90.96	224.10	5,756.3	-583.9	-790.2	584.9	8.00	0.05	
6,600.0	91.00	216.10	5,754.6	-660.3	-854.6	661.4	8.00	0.03	
6,700.0	91.01	208.10	5,752.9	-744.9	-907.6	746.0	8.00	0.01	
6,800.0	91.00	200.10	5,751.1	-836.1	-948.4	837.3	8.00	-0.01	
6,900.0	90.97	192.10	5,749.4	-932.1	-976.1	933.3	8.00	-0.03	
6,950.0	90.95	188.10	5,748.5	-981.3	-984.9	982.5	8.00	-0.04	7" Casing
7,000.0	90.93	184.10	5,747.7	-1,031.0	-990.2	1,032.2	8.00	-0.05	
7,050.3	90.90	180.07	5,746.9	-1,081.3	-992.0	1,082.5	8.00	-0.06	End of turn @ 7050' MD
7,100.0	90.90	180.07	5,746.1	-1,131.0	-992.1	1,132.2	0.00	0.00	
7,200.0	90.90	180.07	5,744.6	-1,231.0	-992.2	1,232.2	0.00	0.00	
7,300.0	90.90	180.07	5,743.0	-1,330.9	-992.4	1,332.2	0.00	0.00	
7,400.0	90.90	180.07	5,741.4	-1,430.9	-992.5	1,432.1	0.00	0.00	
7,500.0	90.90	180.07	5,739.8	-1,530.9	-992.6	1,532.1	0.00	0.00	
7,600.0	90.90	180.07	5,738.3	-1,630.9	-992.8	1,632.1	0.00	0.00	
7,700.0	90.90	180.07	5,736.7	-1,730.9	-992.9	1,732.1	0.00	0.00	
7,800.0	90.90	180.07	5,735.1	-1,830.9	-993.0	1,832.1	0.00	0.00	
7,900.0	90.90	180.07	5,733.6	-1,930.9	-993.1	1,932.1	0.00	0.00	
8,000.0	90.90	180.07	5,732.0	-2,030.9	-993.3	2,032.1	0.00	0.00	
8,100.0	90.90	180.07	5,730.4	-2,130.8	-993.4	2,132.1	0.00	0.00	
8,200.0	90.90	180.07	5,728.9	-2,230.8	-993.5	2,232.0	0.00	0.00	
8,300.0	90.90	180.07	5,727.3	-2,330.8	-993.7	2,332.0	0.00	0.00	
8,400.0	90.90	180.07	5,725.7	-2,430.8	-993.8	2,432.0	0.00	0.00	
8,500.0	90.90	180.07	5,724.2	-2,530.8	-993.9	2,532.0	0.00	0.00	
8,600.0	90.90	180.07	5,722.6	-2,630.8	-994.1	2,632.0	0.00	0.00	

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook O01-2306 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 6899.0ft (Original Well Elev)
Project:	Rio Arriba County, NM	MD Reference:	WELL @ 6899.0ft (Original Well Elev)
Site:	S1-T23N-R6W	North Reference:	True
Well:	Lybrook O01-2306 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #1		

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
8,700.0	90.90	180.07	5,721.0	-2,730.8	-994.2	2,732.0	0.00	0.00	
8,800.0	90.90	180.07	5,719.4	-2,830.8	-994.3	2,832.0	0.00	0.00	
8,900.0	90.90	180.07	5,717.9	-2,930.7	-994.4	2,932.0	0.00	0.00	
9,000.0	90.90	180.07	5,716.3	-3,030.7	-994.6	3,031.9	0.00	0.00	
9,100.0	90.90	180.07	5,714.7	-3,130.7	-994.7	3,131.9	0.00	0.00	
9,200.0	90.90	180.07	5,713.2	-3,230.7	-994.8	3,231.9	0.00	0.00	
9,300.0	90.90	180.07	5,711.6	-3,330.7	-995.0	3,331.9	0.00	0.00	
9,400.0	90.90	180.07	5,710.0	-3,430.7	-995.1	3,431.9	0.00	0.00	
9,500.0	90.90	180.07	5,708.5	-3,530.7	-995.2	3,531.9	0.00	0.00	
9,600.0	90.90	180.07	5,706.9	-3,630.7	-995.4	3,631.9	0.00	0.00	
9,700.0	90.90	180.07	5,705.3	-3,730.6	-995.5	3,731.9	0.00	0.00	
9,800.0	90.90	180.07	5,703.8	-3,830.6	-995.6	3,831.9	0.00	0.00	
9,900.0	90.90	180.07	5,702.2	-3,930.6	-995.7	3,931.8	0.00	0.00	
10,000.0	90.90	180.07	5,700.6	-4,030.6	-995.9	4,031.8	0.00	0.00	
10,100.0	90.90	180.07	5,699.1	-4,130.6	-996.0	4,131.8	0.00	0.00	
10,200.0	90.90	180.07	5,697.5	-4,230.6	-996.1	4,231.8	0.00	0.00	
10,300.0	90.90	180.07	5,695.9	-4,330.6	-996.3	4,331.8	0.00	0.00	
10,400.0	90.90	180.07	5,694.3	-4,430.6	-996.4	4,431.8	0.00	0.00	
10,500.0	90.90	180.07	5,692.8	-4,530.5	-996.5	4,531.8	0.00	0.00	
10,600.0	90.90	180.07	5,691.2	-4,630.5	-996.7	4,631.8	0.00	0.00	
10,700.0	90.90	180.07	5,689.6	-4,730.5	-996.8	4,731.7	0.00	0.00	
10,800.0	90.90	180.07	5,688.1	-4,830.5	-996.9	4,831.7	0.00	0.00	
10,900.0	90.90	180.07	5,686.5	-4,930.5	-997.0	4,931.7	0.00	0.00	
11,000.0	90.90	180.07	5,684.9	-5,030.5	-997.2	5,031.7	0.00	0.00	
11,100.0	90.90	180.07	5,683.4	-5,130.5	-997.3	5,131.7	0.00	0.00	
11,200.0	90.90	180.07	5,681.8	-5,230.5	-997.4	5,231.7	0.00	0.00	
11,300.0	90.90	180.07	5,680.2	-5,330.5	-997.6	5,331.7	0.00	0.00	
11,400.0	90.90	180.07	5,678.7	-5,430.4	-997.7	5,431.7	0.00	0.00	
11,500.0	90.90	180.07	5,677.1	-5,530.4	-997.8	5,531.6	0.00	0.00	
11,600.0	90.90	180.07	5,675.5	-5,630.4	-998.0	5,631.6	0.00	0.00	
11,700.0	90.90	180.07	5,674.0	-5,730.4	-998.1	5,731.6	0.00	0.00	
11,703.3	90.90	180.07	5,673.9	-5,733.7	-998.1	5,734.9	0.00	0.00	TD at 11703.3

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Lybrook O01-2306 01H I - plan hits target center - Point	0.00	0.00	5,746.9	-1,081.3	-992.0	1,910,998.85	1,294,550.38	36.246250	-107.422968
Lybrook O01-2306 01H I - plan hits target center - Point	0.00	0.00	5,673.9	-5,733.7	-998.1	1,906,346.85	1,294,488.17	36.233471	-107.422988

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook O01-2306 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 6899.0ft (Original Well Elev)
Project:	Rio Arriba County, NM	MD Reference:	WELL @ 6899.0ft (Original Well Elev)
Site:	S1-T23N-R6W	North Reference:	True
Well:	Lybrook O01-2306 01H	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)	
500.0	500.0	9 5/8"	0.000	0.000	
6,950.0	5,748.5	7" Casing	0.000	0.000	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,594.0	1,594.0	Ojo Alamo		-0.90	180.07
1,734.0	1,734.0	Kirtland Shale		-0.90	180.07
1,983.0	1,983.0	Fruitland Coal		-0.90	180.07
2,123.0	2,123.0	Pictured Cliffs Ss.		-0.90	180.07
2,247.0	2,247.0	Lewis Shale		-0.90	180.07
2,968.0	2,968.0	Cliffhouse Ss.		-0.90	180.07
3,698.0	3,698.0	Menefee Fn.		-0.90	180.07
4,379.0	4,379.0	Point Lookout Ss.		-0.90	180.07
4,567.0	4,567.0	Mancos Shale		-0.90	180.07
5,175.0	5,175.0	Mancos Silt		-0.90	180.07
5,497.9	5,484.0	Gallup Fn.		-0.90	180.07
6,026.8	5,764.0	Horizontal Target		-0.90	180.07

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
5,189.8	5,189.8	0.0	0.0	KOP @ 5189'	
6,098.8	5,762.7	-340.5	-471.9	LP @ 5762' TVD; 90.9°	
6,374.0	5,758.4	-501.6	-695.0	Start turn @ 6374' MD	
7,050.3	5,746.9	-1,081.3	-992.0	End of turn @ 7050' MD	
11,703.3	5,673.9	-5,733.7	-998.1	TD at 11703.3	

ENCANA OIL & GAS (USA) INC.

LYBROOK 001-2308 #01H
729' FSL & 2540' FEL
LOCATED IN THE SW/4 SE/4 OF SECTION 1,
T23N, R6W, N.M.P.M.,
RIO ARRIBA COUNTY, NEW MEXICO

DIRECTIONS

- 1) FROM THE INTERSECTION OF HWY 64 & HWY 550 IN BLOOMFIELD, GO SOUTH ON HWY 550, 53.9 MILES TO CR 370 (M.P. 97.7, COUNSELORS STORE).
- 2) TURN LEFT ONTO CR 370 AND GO 7.8 MILES.
- 3) TURN RIGHT AND GO THROUGH WELL PAD 0.2 MILES TO "T" INTERSECTION.
- 4) TURN RIGHT AND GO 3.1 MILES.
- 5) TURN RIGHT AND FOLLOW 2-TRACK TO WHERE ACCESS IS STAKED ON RIGHT SIDE OF 2-TRACK.

WELL FLAG LOCATED AT LAT. 36.249220° N, LONG. 107.419604° W (NAD 83).



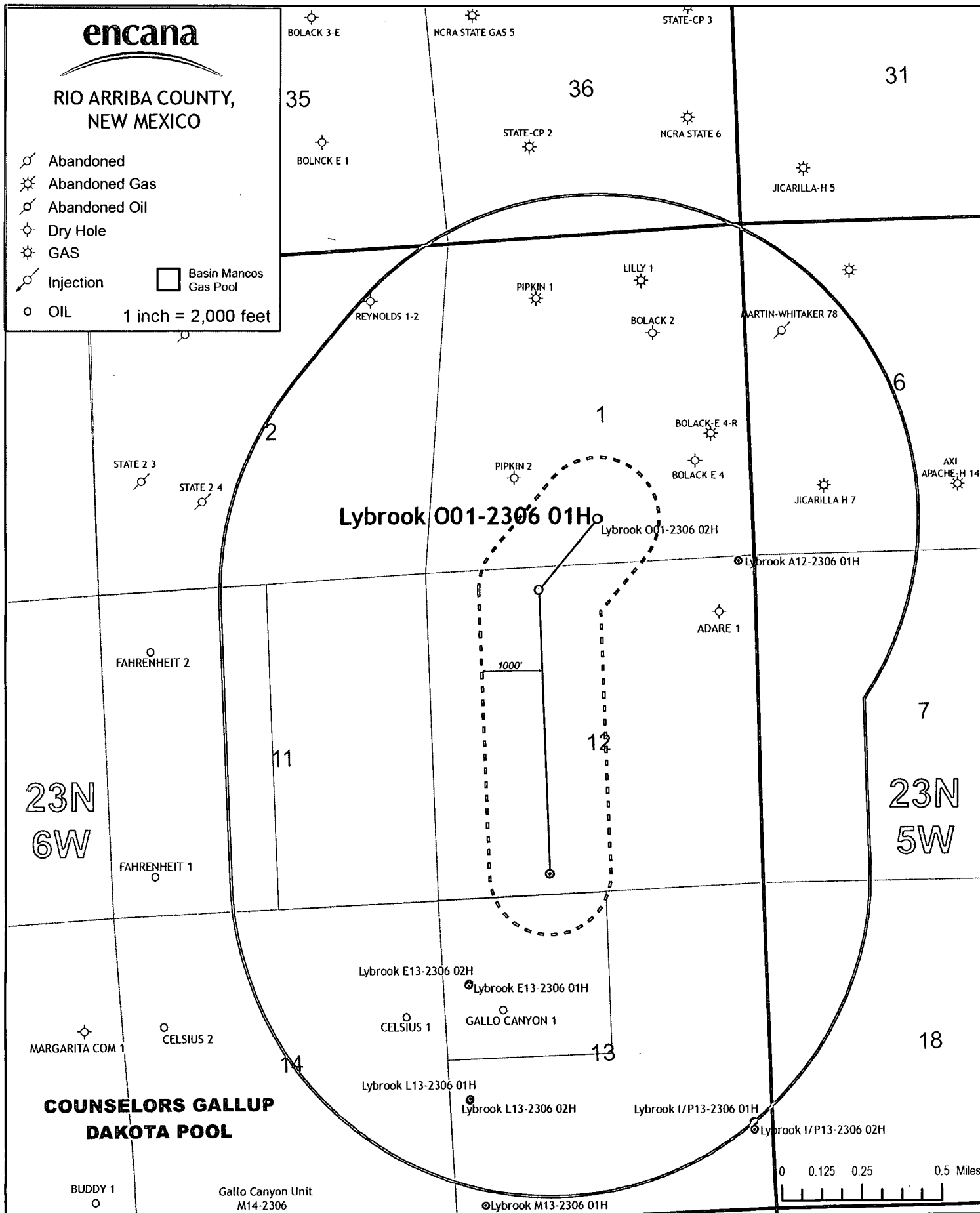
encana

**RIO ARRIBA COUNTY,
NEW MEXICO**

- ⊗ Abandoned
- ⊗ Abandoned Gas
- ⊗ Abandoned Oil
- ⊗ Dry Hole
- ⊗ GAS
- ⊗ Injection
- OIL

Basin Mancos
Gas Pool

1 inch = 2,000 feet



WELLHEAD BLOWOUT CONTROL SYSTEM

encana

Well Name and Number:
Lybrook O01-2306 01H

