

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



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: 12-18-14

Well information;

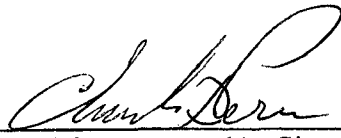
Operator Encana, Well Name and Number Lybrook L29 2307 #04H

API# 30-043-21248, Section 29, Township 23 NS, Range 7 EW

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
- ☒ Regarding Hydraulic Fracturing, review EPA Underground Injection Control Guidance 84
- ☒ 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.
- ☒ Well-bore communication is regulated under 19.15.29 NMAC. This requires well-bore Communication to be reported in accordance with 19.15.29.8.


NMOCD Approved by Signature

12-18-2014
Date

DEC 18 2014

Form 3160-3
(March 2012)FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

DEC 05 2014

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NM 36943
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. Pending
3a. Address 370 17th Street, Suite 1700 Denver, CO 80202	3b. Phone No. (include area code) (720) 876-3448	8. Lease Name and Well No. Lybrook L29-2307 04H
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface 1683' FSL and 792' FWL Section 29, T23N, R7W At proposed prod. zone 420' FSL and 330' FWL Section 30, T23N, R7W		9. API Well No. 30-043-21248
14. Distance in miles and direction from nearest town or post office* +/- 49.1 miles southeast of the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM		10. Field and Pool, or Exploratory Basin Mancos
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) BHL is 330' from west lease line Section 30, T23N, R7W	16. No. of acres in lease NM 36943 -1402.64 ac.	11. Sec., T. R. M. or Blk. and Survey or Area Section 29, T23N, R7W NMPM
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. Lybrook L29-2307 03H is +/-20' NW from SHL	19. Proposed Depth 5041' TVD/10386'MD	12. County or Parish Sandoval
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6874' GL, 6892' KB	22. Approximate date work will start* 03/26/2015	13. State NM
23. Estimated duration 20 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 	Name (Printed/Typed) Christopher Simmons	Date 12.3.14
Title Regulatory Analyst		
Approved by (Signature) 	Name (Printed/Typed) AFM	Date 12/16/14
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)
subject to procedural review
43 CFR 3165.3 and
pursuant to 43 CFR 3165.4

*(Instructions on page 2)

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

NMOCDA

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

District I
1625 N. French Dr., Hobbs, NM 88240
Phone (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone (575) 748-1283 Fax: (575) 334-6170
District III
1000 Rio Brazos Road, Aztec, NM 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) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-043-21248	² Pool Code 97232	³ Pool Name BASIN MANCOS
⁴ Property Code 313379	⁵ Property Name LYBROOK L29-2307	⁶ Well Number 04H
⁷ OGRID No. 282327	⁸ Operator Name ENCANA OIL & GAS (USA) INC.	⁹ Elevation 6874'

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
L	29	23N	7W		1683	SOUTH	792	WEST	SANDOVAL

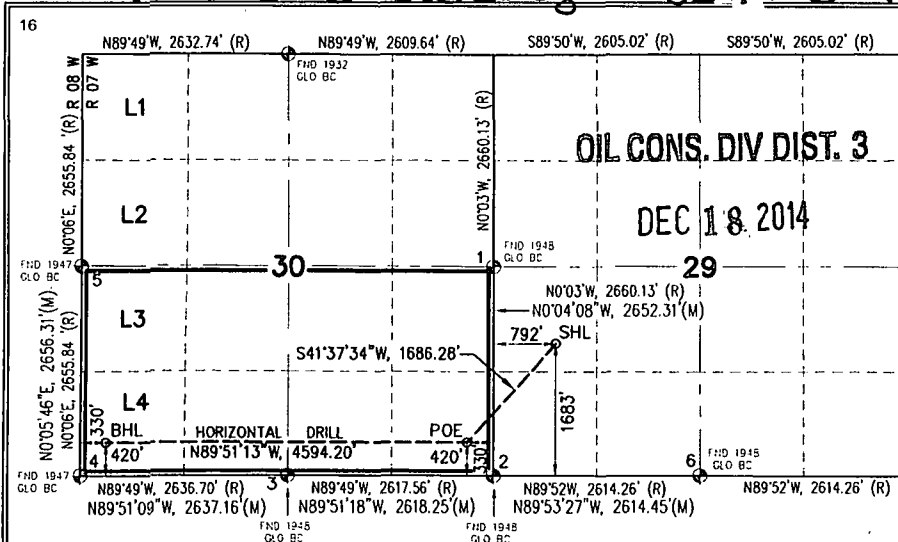
¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West Line	County
M	30	23N	7W	4	420	SOUTH	330	WEST	SANDOVAL

¹² Dedicated Acres 320 ACRES	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.

Per SLO acreage = 321.26 A



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 working interest, or to a voluntary pooling agreement or a compulsory pooling order hereafter entered by the division.

Signature: Christopher Simmons Date: 12.3.14

Printed Name: Christopher Simmons

E-mail Address: Christopher.Simmons@encana.com

¹⁸ 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.

October 7, 2014

Date of Survey

Signature and Seal of Professional Surveyor:

RICHARD L. MULLIKEN
NEW MEXICO
16873
PROFESSIONAL SURVEYOR
10-14-14

RICHARD L. MULLIKEN

Certificate Number

16873

LYBROOK L29-2307 04H WELL
SHL (WELL FLAG)
LAT. 36.195209°N (NAD83)
LONG. 107.603854°W (NAD83)
LAT. 36.195195°N (NAD27)
LONG. 107.603246°W (NAD27)
POE (POINT OF ENTRY)
LAT. 36.191749°N (NAD83)
LONG. 107.607650°W (NAD83)
LAT. 36.191735°N (NAD27)
LONG. 107.607041°W (NAD27)
BHL (BOTTOM HOLE LOCATION)
LAT. 36.191782°N (NAD83)
LONG. 107.623213°W (NAD83)
LAT. 36.191768°N (NAD27)
LONG. 107.622604°W (NAD27)

SECTION CORNERS

- | | |
|--|--|
| 1 LAT. 36.197876°N (NAD83)
LONG. 107.608539°W (NAD83)
LAT. 36.197862°N (NAD27)
LONG. 107.605931°W (NAD27) | 5 LAT. 36.197925°N (NAD83)
LONG. 107.624318°W (NAD83)
LAT. 36.197911°N (NAD27)
LONG. 107.623709°W (NAD27) |
| 2 LAT. 36.190593°N (NAD83)
LONG. 107.606530°W (NAD83)
LAT. 36.190579°N (NAD27)
LONG. 107.605922°W (NAD27) | 6 LAT. 36.190577°N (NAD83)
LONG. 107.597674°W (NAD83)
LAT. 36.190563°N (NAD27)
LONG. 107.597065°W (NAD27) |
| 3 LAT. 36.190612°N (NAD83)
LONG. 107.615400°W (NAD83)
LAT. 36.190598°N (NAD27)
LONG. 107.614791°W (NAD27) | |
| 4 LAT. 36.190631°N (NAD83)
LONG. 107.624333°W (NAD83)
LAT. 36.190617°N (NAD27)
LONG. 107.623724°W (NAD27) | |

Lybrook L29-2307 04H
 SHL: 1683' FSL, 792' FWL Sec 29 23N 07W
 BHL: 420' FSL, 330' FWL Sec 30 23N 07W
 Sandoval, 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
San Jose Fn.	n/a
Nacimiento Fn.	surface
Ojo Alamo Ss.	884
Kirtland Shale	1,094
Fruitland Coal	1,362
Pictured Cliffs Ss.	1,480
Lewis Shale	1,602
Cliffhouse Ss.	2,296
Menefee Fn.	3,004
Point Lookout Ss.	3,838
Mancos Shale	4,042
Mancos Silt	4,550
Gallup Fn.	4,809
Base Gallup	5,129

The referenced surface elevation is 6874', KB 6892'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,362
Oil/Gas	Pictured Cliffs Ss.	1,480
Oil/Gas	Cliffhouse Ss.	2,296
Gas	Menefee Fn.	3,004
Oil/Gas	Point Lookout Ss.	3,838
Oil/Gas	Mancos Shale	4,042
Oil/Gas	Mancos Silt	4,550
Oil/Gas	Gallup Fn.	4,809

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

Lybrook L29-2307 04H

SHL: 1683' FSL, 792' FWL Sec 29 23N 07W

BHL: 420' FSL, 330' FWL Sec 30 23N 07W

Sandoval, New Mexico

3. PRESSURE CONTROL

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

Proposed BOP and choke manifold arrangements are attached.

4. CASING & CEMENTING PROGRAM

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

- a) The proposed casing design is as follows:

Casing	Depth (MD)	Hole Size	Csg Size	Weight	Grade
Conductor	0'-60'	26"	16"	42.09#	
Surface	0'-500'	12 1/4"	9 5/8"	36#	J55, STC New
Intermediate	0'-5286'	8 3/4"	7"	26#	J55, LTC New
Production Liner	5186'-10386'	6 1/8"	4 1/2"	11.6#	B80*, LTC New

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

*B80 pipe specifications are attached

Casing design is subject to revision based on geologic conditions encountered.

Lybrook L29-2307 04H

SHL: 1683' FSL, 792' FWL Sec 29 23N 07W

BHL: 420' FSL, 330' FWL Sec 30 23N 07W

Sandoval, New Mexico

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

b) The proposed cementing program is as follows:

Casing	Depth (MD)	Cement Volume (sacks)	Cement Type & Yield	Designed TOC	Centralizers
Conductor	0'-60'	100 sks	Type I Neat 16 ppg	Surface	None
Surface	0'-500'	228 sks	Type III Cement + 1% bwoc Calcium Chloride + 0.25 lbs/sack Cello Flake + 0.2% bwoc FL-52A + 58.9% Fresh Water	Surface	1 per joint on bottom 3 joints
Intermediate	0'-5286'	100% open hole excess Stage 1 Lead: 491 sks Stage 1 Tail: 377 sks	Lead: PremLite + 3% CaCl + 0.25lb/sk CelloFlake + 5lb/sk LCM, 12.1ppg 2.13cuft/sk Tail: Type III Cmt + 1% CaCl + 0.25lb/sk Cello Flake 14.5ppg 1.38cuft/sk	Surface	1 every 3 joints through water bearing zones
Production Liner	5186'-10386'	50% OH excess Stage 1 Blend Total: 294sks	Blend: Premium Lite High Strength FM + 0.7% bwoc R-3 + 3% bwow Potassium Chloride + 0.25lbs/sack Cello Flake + 0.5% bwoc CD-32 + 1.15% bwoc FL-52A + 60 lbs/sack Calcium Carbonate + 124.4% Fresh Water. Yield 2.63 cuft/sk	Liner Hanger	N/A

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

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

5. WELL PLAN & DIRECTIONAL DRILLING PROGRAM

The proposed horizontal well will have a kick off point of 2100'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5041'/10386'	Gallup

Lybrook L29-2307 04H
 SHL: 1683' FSL, 792' FWL Sec 29 23N 07W
 BHL: 420' FSL, 330' FWL Sec 30 23N 07W
 Sandoval, New Mexico

6. DRILLING FLUIDS PROGRAM

a) Surface through Intermediate Casing Point:

Hole Size (in)	Depth (TVD/MD)	Mud Type	Density (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
30"	0-60'/60'	Fresh Water	8.3-9.2	38-100	4-28
12 1/4"	0'-500'/500'	Fresh Water	8.3-10	60-70	NC
8 3/4"	500'/500'-4906'/5286'	Fresh Water LSND	8.3-10	40-50	8-10

b) Intermediate Casing Point to TD:

Hole Size (in)	Depth (TVD/MD)	Mud Type	Density (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
6 1/8"	4906'/5286'- 5041'/10386'	Fresh Water LSND	8.3-10	15-25	<15

c) There will be sufficient mud on location to control a blowout should one occur. Mud flow and volume will be monitored both visually and with electronic pit volume totalizers. Mud tests shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH.

✓ d) A closed-loop system will be used to recover drilling fluid and dry cuttings in both phases of the well and on all hole intervals. Above-ground tanks will be utilized to hold cuttings and fluids for rig operations. A frac tank will be on location to store fresh water. Waste will be disposed of properly at an EPA-approved hazardous waste facility. Fresh water cuttings will be disposed of at Basin Disposal, Inc. and/or Industrial Ecosystems, Inc. The location will be lined in accordance with the Surface Use Plan of Operations.

7. TESTING, CORING, & LOGGING

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

Cased Hole:

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

8. ABNORMAL PRESSURES & HYDROGEN SULFIDE

The anticipated bottom hole pressure is +/- 2368 psi based on a 9.0 ppg at 5061' 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 March 26, 2015. It is anticipated that completion operations will begin within 30 days after the well has been drilled depending on fracture treatment schedules with various pumping service companies.

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

LOC: 1683' FSL, 792' FWL Sec 29 23N 07W County: Sandoval WELL: Lybrook L29-2307 04H			Encana Natural Gas WELL SUMMARY				ENG: Michael Sanch RIG: Aztec 1099 GLE: 6874 RKBE: 6891.5		12/2/14	
MWD LWD	OPEN HOLE LOGGING	FORM	DEPTH TVDMD				HOLE SIZE	CASING SPECS	MW MUD TYPE	DEVIATION INFORMATION
			60 0	60'			26	16" 42.09# 100sx Type I Neat 16.0ppg cmt	Fresh wtr 8.3-9.2	
Multi-Well pad take survey every stand and run anti-collision report prior to spud	None	San Jose Fn. Nacimiento Fn. 9 5/8" Csg	0 surface 500				12 1/4	9 5/8" 36ppf J55 STC TOC Surface with 100% OH Excess: 228 sks Type III Cement + 1% bwoc Calcium Chloride + 0.25 lbs/sack Cello Flake + 0.2% bwoc FL-52A + 58.9% Fresh Water.	Fresh wtr 8.3-10	Vertical <1°
Survey Every 60'-120', updating anticollision report after surveys. Stop operations and contact drilling engineer if separation factor approaches 1.5	No OH logs	Ojo Alamo Ss. Kirtland Shale Fruitland Coal Pictured Cliffs Ss. Lewis Shale Cliffhouse Ss. Menefee Fn. Point Lookout Ss. Mancos Shale	884 1,094 1,362 1,480 1,602 2,296 3,004 3,838 4,042				8 3/4	7" 26ppf J55 LTC TOC @ surface (100% OH excess - 70% Lead 30% Tail) Stage 1 Total: 868sks Stage 1 Lead: 491 sks Premium Lite FM + 3% CaCl2 + 0.25/sk Cello Flake + 5#/sk LCM-1 + 8% Bentonite + 0.4% FL-52A + 0.4% Sodium Metasilicate. Mixed at 12.1 ppg. Yield 2.13 cuft/sk. Stage 1 Tail: 377 sks Type III Cement + 1% CaCl2 + 0.25#/sk Cello Flake + 0.2% FL-52A. Mixed at 14.6 ppg. Yield 1.38 cuft/sk.	Fresh Wtr 8.3-10	Vertical <1°
Surveys every 30' through the curve	Mud logger onsite	KOP Mancos Silt Gallup Fn. 7" Csg	2,100 4,550 4,809 4,906	2,100						
Surveys every stand to TD unless directed otherwise by Geologist	No OH Logs	Horizontal Target TD Base Gallup	5,061 5,041 5,129	10,386			6 1/8	100' overlap at liner top 5101' Drilled Lateral		Horiz Inc/TVD 90.2deg/5060.5ft TD = 10386.3 MD
MWD Gamma Directional								4 1/2" 11.6ppf SB80 LTC TOC @ hanger (50% OH excess) Stage 1 Total: 294sks Stage 1 Blend: 294 sks Premium Lite High Strength FM + 0.7% bwoc R-3 + 3% bwow Potassium Chloride + 0.25lbs/sack Cello Flake + 0.5% bwoc CD-32 + 1.15% bwoc FL-52A + 60 lbs/sack Calcium Carbonate + 124.4% Fresh Water. Yield 2.63 cuft/sk.	WBM 8.3-10	

NOTES:

- 1) Drill with 26" bit to 60', set 16" 42.09ppf conductor pipe
- 2) Drill surface to 500', R&C 9 5/8" casing
- 3) N/U BOP and surface equipment
- 4) Drill to KOP of 2100', 8 3/4 inch holesize
- 5) Start curve at 10deg/100' build rate
- 6) Drill to csg point of 5286' MD
- 7) R&C 7" csg, circ cmt to surface
- 8) Land at ~90 deg, drill lateral to 10386' run 4 1/2 inch cemented liner



Boomerang Tube LLC

CASING (OR) TUBING DESCRIPTION AND PERFORMANCE PROPERTIES

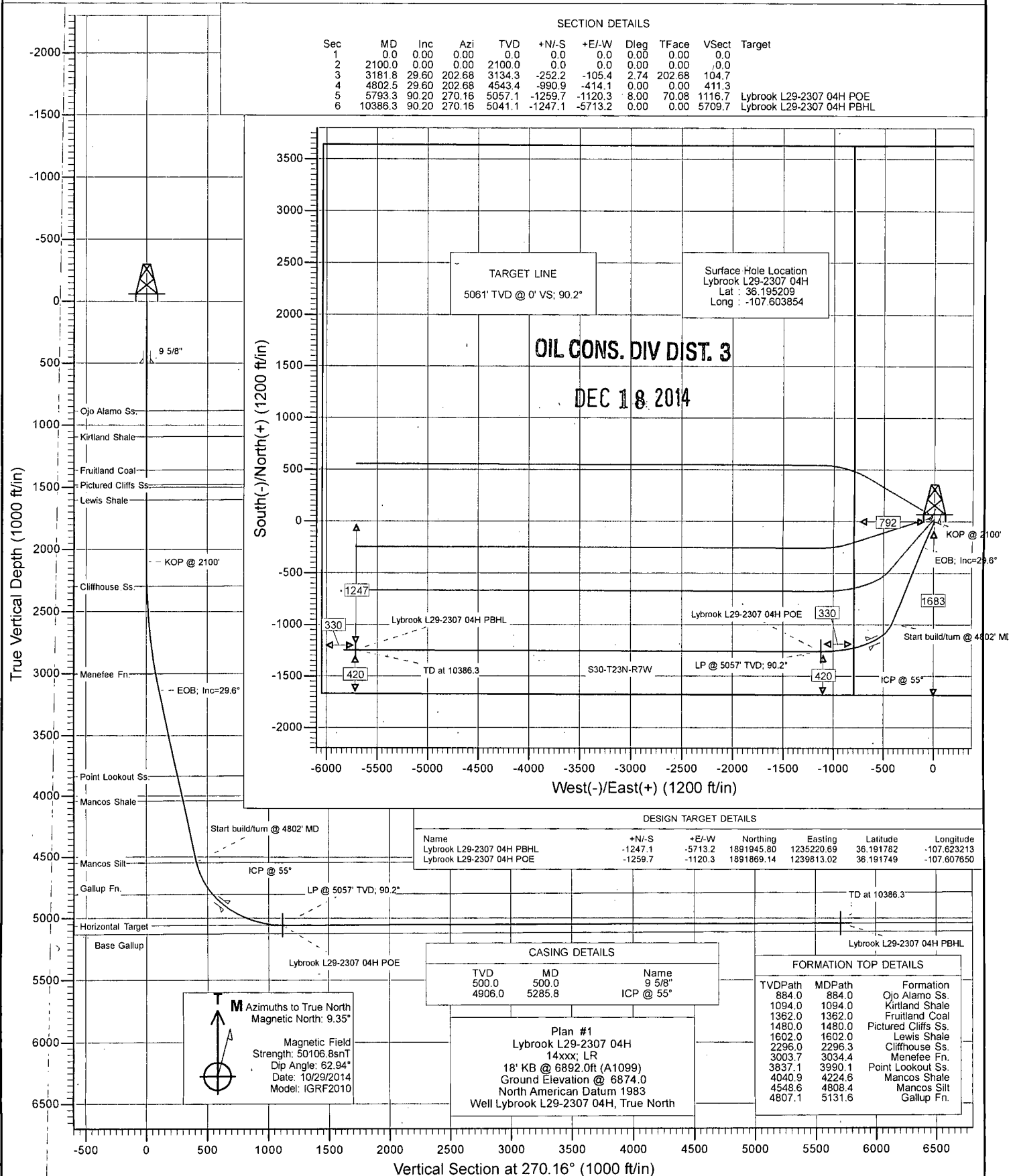
Pipe Outside Diameter (ins)	_____	4.500
Pipe Wall Thickness (ins)	_____	0.250
Nominal Weight Per Foot (lbs)	_____	11.60
Thread Name	_____	Long Thread CSG
Grade Name	_____	SB-80
Pipe Minimum Yield (psi)	_____	80,000
Pipe Minimum Ultimate (psi)	_____	90,000
Coupling Minimum Yield (psi)	_____	80,000
Coupling 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 L29-2307 04H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	18' KB @ 6892.0ft (A1099)
Project:	Sandoval County, NM	MD Reference:	18' KB @ 6892.0ft (A1099)
Site:	S29-T23N-R7W	North Reference:	True
Well:	Lybrook L29-2307 04H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Project	Sandoval 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	S29-T23N-R7W				
Site Position:		Northing:	1,893,172.01 ft	Latitude:	36.195370
From:	Lat/Long	Easting:	1,240,929.16 ft	Longitude:	-107.603930
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-0.80 °

Well	Lybrook L29-2307 04H					
Well Position	+N/-S	0.0 ft	Northing:	1,893,113.09 ft	Latitude:	36.195209
	+E/-W	0.0 ft	Easting:	1,240,950.77 ft	Longitude:	-107.603854
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	6,874.0 ft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/29/2014	9.35	62.94	50,107

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	270.16

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	
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,181.8	29.60	202.68	3,134.3	-252.2	-105.4	2.74	2.74	0.00	202.68	
4,802.5	29.60	202.68	4,543.4	-990.9	-414.1	0.00	0.00	0.00	0.00	
5,793.3	90.20	270.16	5,057.1	-1,259.7	-1,120.3	8.00	6.12	6.81	70.08	Lybrook L29-2307 04H
10,386.3	90.20	270.16	5,041.1	-1,247.1	-5,713.2	0.00	0.00	0.00	0.00	Lybrook L29-2307 04H

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: S29-T23N-R7W
Well: Lybrook L29-2307 04H
Wellbore: HZ
Design: Plan #1

Local Co-ordinate Reference: Well Lybrook L29-2307 04H
TVD Reference: 18' KB @ 6892.0ft (A1099)
MD Reference: 18' KB @ 6892.0ft (A1099)
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	
884.0	0.00	0.00	884.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo Ss.
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	
1,094.0	0.00	0.00	1,094.0	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	
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	
1,362.0	0.00	0.00	1,362.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	
1,480.0	0.00	0.00	1,480.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs Ss.
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	
1,602.0	0.00	0.00	1,602.0	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	KOP @ 2100'
2,200.0	2.74	202.68	2,200.0	-2.2	-0.9	0.9	2.74	2.74	
2,296.3	5.37	202.68	2,296.0	-8.5	-3.5	3.5	2.74	2.74	Cliffhouse Ss.
2,300.0	5.47	202.68	2,299.7	-8.8	-3.7	3.7	2.74	2.74	
2,400.0	8.21	202.68	2,399.0	-19.8	-8.3	8.2	2.74	2.74	
2,500.0	10.95	202.68	2,497.6	-35.2	-14.7	14.6	2.74	2.74	
2,600.0	13.68	202.68	2,595.3	-54.8	-22.9	22.8	2.74	2.74	
2,700.0	16.42	202.68	2,691.8	-78.8	-32.9	32.7	2.74	2.74	
2,800.0	19.16	202.68	2,787.0	-107.0	-44.7	44.4	2.74	2.74	
2,900.0	21.89	202.68	2,880.7	-139.3	-58.2	57.8	2.74	2.74	
3,000.0	24.63	202.68	2,972.5	-175.8	-73.4	73.0	2.74	2.74	
3,034.4	25.57	202.68	3,003.7	-189.2	-79.1	78.5	2.74	2.74	Menefee Fn.
3,100.0	27.37	202.68	3,062.4	-216.2	-90.3	89.7	2.74	2.74	
3,181.8	29.60	202.68	3,134.3	-252.2	-105.4	104.7	2.74	2.74	EOB; Inc=29.6°
3,200.0	29.60	202.68	3,150.1	-260.5	-108.8	108.1	0.00	0.00	
3,300.0	29.60	202.68	3,237.1	-306.1	-127.9	127.0	0.00	0.00	
3,400.0	29.60	202.68	3,324.0	-351.7	-146.9	146.0	0.00	0.00	
3,500.0	29.60	202.68	3,411.0	-397.2	-166.0	164.9	0.00	0.00	
3,600.0	29.60	202.68	3,497.9	-442.8	-185.0	183.8	0.00	0.00	
3,700.0	29.60	202.68	3,584.9	-488.4	-204.1	202.7	0.00	0.00	
3,800.0	29.60	202.68	3,671.8	-534.0	-223.1	221.6	0.00	0.00	
3,900.0	29.60	202.68	3,758.7	-579.6	-242.2	240.6	0.00	0.00	
3,990.1	29.60	202.68	3,837.1	-620.6	-259.3	257.6	0.00	0.00	Point Lookout Ss.
4,000.0	29.60	202.68	3,845.7	-625.1	-261.2	259.5	0.00	0.00	
4,100.0	29.60	202.68	3,932.6	-670.7	-280.3	278.4	0.00	0.00	
4,200.0	29.60	202.68	4,019.6	-716.3	-299.3	297.3	0.00	0.00	

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: S29-T23N-R7W
Well: Lybrook L29-2307 04H
Wellbore: HZ
Design: Plan #1

Local Co-ordinate Reference: Well Lybrook L29-2307 04H
TVD Reference: 18' KB @ 6892.0ft (A1099)
MD Reference: 18' KB @ 6892.0ft (A1099)
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
4,224.6	29.60	202.68	4,040.9	-727.5	-304.0	302.0	0.00	0.00	Mancos Shale
4,300.0	29.60	202.68	4,106.5	-761.9	-318.4	316.2	0.00	0.00	
4,400.0	29.60	202.68	4,193.5	-807.5	-337.4	335.2	0.00	0.00	
4,500.0	29.60	202.68	4,280.4	-853.1	-356.5	354.1	0.00	0.00	
4,600.0	29.60	202.68	4,367.4	-898.6	-375.5	373.0	0.00	0.00	
4,700.0	29.60	202.68	4,454.3	-944.2	-394.5	391.9	0.00	0.00	
4,800.0	29.60	202.68	4,541.3	-989.8	-413.6	410.8	0.00	0.00	
4,802.5	29.60	202.68	4,543.4	-990.9	-414.1	411.3	0.00	0.00	Start build/turn @ 4802' MD
4,808.4	29.77	203.58	4,548.6	-993.6	-415.2	412.4	8.00	2.78	Mancos Silt
4,900.0	33.01	216.23	4,626.8	-1,034.7	-439.1	436.2	8.00	3.54	
5,000.0	37.74	227.40	4,708.4	-1,077.4	-477.8	474.8	8.00	4.73	
5,100.0	43.32	236.26	4,784.5	-1,117.2	-528.9	525.8	8.00	5.57	
5,131.6	45.20	238.67	4,807.1	-1,129.1	-547.5	544.4	8.00	5.97	Gallup Fn.
5,200.0	49.44	243.38	4,853.5	-1,153.4	-591.5	588.3	8.00	6.20	
5,285.8	54.99	248.50	4,906.0	-1,180.9	-653.4	650.1	8.00	6.47	ICP @ 55°
5,300.0	55.93	249.28	4,914.1	-1,185.1	-664.3	661.0	8.00	6.61	
5,400.0	62.66	254.32	4,965.1	-1,211.8	-746.0	742.6	8.00	6.73	
5,500.0	69.55	258.77	5,005.6	-1,233.0	-834.8	831.4	8.00	6.89	
5,600.0	76.54	262.84	5,034.8	-1,248.2	-929.2	925.7	8.00	6.99	
5,700.0	83.59	266.67	5,052.0	-1,257.1	-1,027.2	1,023.7	8.00	7.05	
5,793.3	90.20	270.16	5,057.1	-1,259.7	-1,120.3	1,116.7	8.00	7.08	LP @ 5057' TVD; 90.2°
5,800.0	90.20	270.16	5,057.1	-1,259.7	-1,126.9	1,123.4	0.00	0.00	
5,900.0	90.20	270.16	5,056.7	-1,259.4	-1,226.9	1,223.4	0.00	0.00	
6,000.0	90.20	270.16	5,056.4	-1,259.1	-1,326.9	1,323.4	0.00	0.00	
6,100.0	90.20	270.16	5,056.0	-1,258.9	-1,426.9	1,423.4	0.00	0.00	
6,200.0	90.20	270.16	5,055.7	-1,258.6	-1,526.9	1,523.4	0.00	0.00	
6,300.0	90.20	270.16	5,055.3	-1,258.3	-1,626.9	1,623.4	0.00	0.00	
6,400.0	90.20	270.16	5,055.0	-1,258.0	-1,726.9	1,723.4	0.00	0.00	
6,500.0	90.20	270.16	5,054.6	-1,257.8	-1,826.9	1,823.4	0.00	0.00	
6,600.0	90.20	270.16	5,054.3	-1,257.5	-1,926.9	1,923.4	0.00	0.00	
6,700.0	90.20	270.16	5,053.9	-1,257.2	-2,026.9	2,023.4	0.00	0.00	
6,800.0	90.20	270.16	5,053.6	-1,256.9	-2,126.9	2,123.4	0.00	0.00	
6,900.0	90.20	270.16	5,053.2	-1,256.7	-2,226.9	2,223.4	0.00	0.00	
7,000.0	90.20	270.16	5,052.9	-1,256.4	-2,326.9	2,323.4	0.00	0.00	
7,100.0	90.20	270.16	5,052.5	-1,256.1	-2,426.9	2,423.4	0.00	0.00	
7,200.0	90.20	270.16	5,052.2	-1,255.9	-2,526.9	2,523.4	0.00	0.00	
7,300.0	90.20	270.16	5,051.8	-1,255.6	-2,626.9	2,623.4	0.00	0.00	
7,400.0	90.20	270.16	5,051.5	-1,255.3	-2,726.9	2,723.4	0.00	0.00	
7,500.0	90.20	270.16	5,051.1	-1,255.0	-2,826.9	2,823.4	0.00	0.00	
7,600.0	90.20	270.16	5,050.8	-1,254.8	-2,926.9	2,923.4	0.00	0.00	
7,700.0	90.20	270.16	5,050.4	-1,254.5	-3,026.9	3,023.4	0.00	0.00	
7,800.0	90.20	270.16	5,050.1	-1,254.2	-3,126.9	3,123.4	0.00	0.00	
7,900.0	90.20	270.16	5,049.7	-1,253.9	-3,226.9	3,223.4	0.00	0.00	
8,000.0	90.20	270.16	5,049.4	-1,253.7	-3,326.9	3,323.4	0.00	0.00	
8,100.0	90.20	270.16	5,049.0	-1,253.4	-3,426.9	3,423.4	0.00	0.00	
8,200.0	90.20	270.16	5,048.7	-1,253.1	-3,526.9	3,523.4	0.00	0.00	
8,300.0	90.20	270.16	5,048.3	-1,252.8	-3,626.9	3,623.4	0.00	0.00	
8,400.0	90.20	270.16	5,048.0	-1,252.6	-3,726.9	3,723.4	0.00	0.00	
8,500.0	90.20	270.16	5,047.6	-1,252.3	-3,826.9	3,823.4	0.00	0.00	
8,600.0	90.20	270.16	5,047.3	-1,252.0	-3,926.9	3,923.4	0.00	0.00	
8,700.0	90.20	270.16	5,046.9	-1,251.8	-4,026.9	4,023.4	0.00	0.00	
8,800.0	90.20	270.16	5,046.6	-1,251.5	-4,126.9	4,123.4	0.00	0.00	

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook L29-2307 04H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	18' KB @ 6892.0ft (A1099)
Project:	Sandoval County, NM	MD Reference:	18' KB @ 6892.0ft (A1099)
Site:	S29-T23N-R7W	North Reference:	True
Well:	Lybrook L29-2307 04H	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
8,900.0	90.20	270.16	5,046.3	-1,251.2	-4,226.9	4,223.4	0.00	0.00	
9,000.0	90.20	270.16	5,045.9	-1,250.9	-4,326.9	4,323.4	0.00	0.00	
9,100.0	90.20	270.16	5,045.6	-1,250.7	-4,426.9	4,423.4	0.00	0.00	
9,200.0	90.20	270.16	5,045.2	-1,250.4	-4,526.9	4,523.4	0.00	0.00	
9,300.0	90.20	270.16	5,044.9	-1,250.1	-4,626.9	4,623.4	0.00	0.00	
9,400.0	90.20	270.16	5,044.5	-1,249.8	-4,726.9	4,723.4	0.00	0.00	
9,500.0	90.20	270.16	5,044.2	-1,249.6	-4,826.9	4,823.4	0.00	0.00	
9,600.0	90.20	270.16	5,043.8	-1,249.3	-4,926.9	4,923.4	0.00	0.00	
9,700.0	90.20	270.16	5,043.5	-1,249.0	-5,026.9	5,023.4	0.00	0.00	
9,800.0	90.20	270.16	5,043.1	-1,248.7	-5,126.9	5,123.4	0.00	0.00	
9,900.0	90.20	270.16	5,042.8	-1,248.5	-5,226.9	5,223.4	0.00	0.00	
10,000.0	90.20	270.16	5,042.4	-1,248.2	-5,326.9	5,323.4	0.00	0.00	
10,100.0	90.20	270.16	5,042.1	-1,247.9	-5,426.9	5,423.4	0.00	0.00	
10,200.0	90.20	270.16	5,041.7	-1,247.7	-5,526.9	5,523.4	0.00	0.00	
10,300.0	90.20	270.16	5,041.4	-1,247.4	-5,626.9	5,623.4	0.00	0.00	
10,386.3	90.20	270.16	5,041.1	-1,247.1	-5,713.2	5,709.7	0.00	0.00	TD at 10386.3

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Lybrook L29-2307 04H F - hit/miss target - Shape - Point	0.00	0.00	5,057.1	-1,259.7	-1,120.3	1,891,869.14	1,239,813.02	36.191749	-107.607650
Lybrook L29-2307 04H F - plan hits target center - Point	0.00	0.00	5,041.1	-1,247.1	-5,713.2	1,891,945.80	1,235,220.69	36.191782	-107.623213

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	
5,285.8	4,906.0	ICP @ 55°	0.000	0.000	

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook L29-2307 04H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	18' KB @ 6892.0ft (A1099)
Project:	Sandoval County, NM	MD Reference:	18' KB @ 6892.0ft (A1099)
Site:	S29-T23N-R7W	North Reference:	True
Well:	Lybrook L29-2307 04H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
884.0	884.0	Ojo Alamo Ss.		-0.20	270.16	
1,094.0	1,094.0	Kirtland Shale		-0.20	270.16	
1,362.0	1,362.0	Fruitland Coal		-0.20	270.16	
1,480.0	1,480.0	Pictured Cliffs Ss.		-0.20	270.16	
1,602.0	1,602.0	Lewis Shale		-0.20	270.16	
2,296.3	2,296.0	Cliffhouse Ss.		-0.20	270.16	
3,034.4	3,004.0	Menefee Fn.		-0.20	270.16	
3,990.1	3,838.0	Point Lookout Ss.		-0.20	270.16	
4,224.6	4,042.0	Mancos Shale		-0.20	270.16	
4,808.4	4,550.0	Mancos Silt		-0.20	270.16	
5,131.6	4,809.0	Gallup Fn.		-0.20	270.16	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
2,100.0	2,100.0	0.0	0.0	KOP @ 2100'	
3,181.8	3,134.3	-252.2	-105.4	EOB; Inc=29.6°	
4,802.5	4,543.4	-990.9	-414.1	Start build/turn @ 4802' MD	
5,793.3	5,057.1	-1,259.7	-1,120.3	LP @ 5057' TVD; 90.2°	
10,386.3	5,041.1	-1,247.1	-5,713.2	TD at 10386.3	

EnCana Oil & Gas (USA) Inc

Sandoval County, NM

S29-T23N-R7W

Lybrook L29-2307 04H

HZ

Plan #1

Anticollision Report

29 October, 2014

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook L29-2307 04H
Project:	Sandoval County, NM	TVD Reference:	18' KB @ 6892.0ft (A1099)
Reference Site:	S29-T23N-R7W	MD Reference:	18' KB @ 6892.0ft (A1099)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook L29-2307 04H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference	Plan #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	Error Model:	Systematic Ellipse
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date	10/29/2014		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	10,386.3	Plan #1 (HZ)	Geolink MWD	Geolink MWD

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
S29-T23N-R7W						
Lybrook L29-2307 01H - Hz - Plan #1	2,100.0	2,093.0	62.8	55.5	8.646	CC, ES
Lybrook L29-2307 01H - Hz - Plan #1	2,200.0	2,193.0	64.5	56.9	8.483	SF
Lybrook L29-2307 02H - Hz - Plan #1	2,100.0	2,093.0	43.7	36.4	6.015	CC, ES
Lybrook L29-2307 02H - Hz - Plan #1	2,200.0	2,193.0	45.4	37.8	5.967	SF
Lybrook L29-2307 03H - Hz - Plan #3	2,100.0	2,100.0	20.0	12.7	2.749	CC, ES
Lybrook L29-2307 03H - Hz - Plan #3	10,386.3	10,063.6	614.8	353.7	2.355	SF

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S29-T23N-R7W
Site Error: 0.0ft
Reference Well: Lybrook L29-2307 04H
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #1

Local Co-ordinate Reference: Well Lybrook L29-2307 04H
TVD Reference: 18' KB @ 6892.0ft (A1099)
MD Reference: 18' KB @ 6892.0ft (A1099)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Offset Design S29-T23N-R7W - Lybrook L29-2307 01H - Hz - Plan #1													Offset Site Error: 0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error: 0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Total Uncertainty Axis	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			
0.0	0.0	0.0	0.0	0.0	0.0	-20.94	58.6	-22.4	63.2				
100.0	100.0	93.0	93.0	0.1	0.1	-20.94	58.6	-22.4	62.8	62.5	0.28	224.578	
200.0	200.0	193.0	193.0	0.3	0.3	-20.94	58.6	-22.4	62.8	62.1	0.63	100.166	
300.0	300.0	293.0	293.0	0.5	0.5	-20.94	58.6	-22.4	62.8	61.8	0.98	64.328	
400.0	400.0	393.0	393.0	0.7	0.7	-20.94	58.6	-22.4	62.8	61.4	1.32	47.377	
500.0	500.0	493.0	493.0	0.8	0.8	-20.94	58.6	-22.4	62.8	61.1	1.67	37.497	
600.0	600.0	593.0	593.0	1.0	1.0	-20.94	58.6	-22.4	62.8	60.7	2.02	31.026	
700.0	700.0	693.0	693.0	1.2	1.2	-20.94	58.6	-22.4	62.8	60.4	2.37	26.460	
800.0	800.0	793.0	793.0	1.4	1.4	-20.94	58.6	-22.4	62.8	60.0	2.72	23.066	
900.0	900.0	893.0	893.0	1.5	1.5	-20.94	58.6	-22.4	62.8	59.7	3.07	20.443	
1,000.0	1,000.0	993.0	993.0	1.7	1.7	-20.94	58.6	-22.4	62.8	59.3	3.42	18.356	
1,100.0	1,100.0	1,093.0	1,093.0	1.9	1.9	-20.94	58.6	-22.4	62.8	59.0	3.77	16.656	
1,200.0	1,200.0	1,193.0	1,193.0	2.1	2.1	-20.94	58.6	-22.4	62.8	58.6	4.12	15.244	
1,300.0	1,300.0	1,293.0	1,293.0	2.2	2.2	-20.94	58.6	-22.4	62.8	58.3	4.47	14.052	
1,400.0	1,400.0	1,393.0	1,393.0	2.4	2.4	-20.94	58.6	-22.4	62.8	57.9	4.82	13.034	
1,500.0	1,500.0	1,493.0	1,493.0	2.6	2.6	-20.94	58.6	-22.4	62.8	57.6	5.16	12.153	
1,600.0	1,600.0	1,593.0	1,593.0	2.8	2.8	-20.94	58.6	-22.4	62.8	57.2	5.51	11.383	
1,700.0	1,700.0	1,693.0	1,693.0	2.9	2.9	-20.94	58.6	-22.4	62.8	56.9	5.86	10.705	
1,800.0	1,800.0	1,793.0	1,793.0	3.1	3.1	-20.94	58.6	-22.4	62.8	56.5	6.21	10.104	
1,900.0	1,900.0	1,893.0	1,893.0	3.3	3.3	-20.94	58.6	-22.4	62.8	56.2	6.56	9.566	
2,000.0	2,000.0	1,993.0	1,993.0	3.5	3.5	-20.94	58.6	-22.4	62.8	55.9	6.91	9.083	
2,100.0	2,100.0	2,093.0	2,093.0	3.6	3.6	-20.94	58.6	-22.4	62.8	55.5	7.26	8.646 CC, ES	
2,200.0	2,200.0	2,193.0	2,193.0	3.8	3.8	137.81	58.6	-22.4	64.5	56.9	7.61	8.483 SF	
2,300.0	2,299.7	2,292.7	2,292.7	4.0	4.0	141.66	58.6	-22.4	70.0	62.0	7.94	8.808	
2,400.0	2,399.0	2,392.0	2,392.0	4.2	4.1	146.82	58.6	-22.4	79.7	71.4	8.28	9.629	
2,500.0	2,497.6	2,490.6	2,490.6	4.4	4.3	152.17	58.6	-22.4	94.1	85.5	8.59	10.951	
2,600.0	2,595.3	2,588.3	2,588.3	4.7	4.5	156.98	58.6	-22.4	113.4	104.6	8.89	12.760	
2,700.0	2,691.8	2,684.8	2,684.8	5.0	4.7	160.97	58.6	-22.4	137.8	128.6	9.17	15.027	
2,800.0	2,787.0	2,780.0	2,780.0	5.4	4.8	164.14	58.6	-22.4	167.1	157.7	9.43	17.718	
2,900.0	2,880.7	2,873.7	2,873.7	5.8	5.0	166.64	58.6	-22.4	201.1	191.5	9.67	20.800	
3,000.0	2,972.5	2,965.5	2,965.5	6.4	5.1	168.59	58.6	-22.4	239.9	230.0	9.89	24.248	
3,100.0	3,062.4	3,055.4	3,055.4	7.0	5.3	170.11	58.6	-22.4	283.1	273.0	10.09	28.044	
3,200.0	3,150.1	3,143.1	3,143.1	7.7	5.5	171.36	58.6	-22.4	330.6	320.3	10.30	32.085	
3,300.0	3,237.1	3,230.1	3,230.1	8.5	5.6	172.48	58.6	-22.4	379.6	369.0	10.62	35.730	
3,400.0	3,324.0	3,317.0	3,317.0	9.3	5.8	173.34	58.6	-22.4	428.8	417.8	10.95	39.168	
3,500.0	3,411.0	3,404.0	3,404.0	10.1	5.9	174.03	58.6	-22.4	477.9	466.7	11.27	42.413	
3,600.0	3,497.9	3,490.9	3,490.9	10.9	6.1	174.59	58.6	-22.4	527.1	515.6	11.59	45.482	
3,700.0	3,584.9	3,577.9	3,577.9	11.7	6.2	175.05	58.6	-22.4	576.4	564.5	11.91	48.387	
3,800.0	3,671.8	3,664.8	3,664.8	12.5	6.4	175.44	58.6	-22.4	625.7	613.4	12.23	51.142	
3,900.0	3,758.7	3,751.7	3,751.7	13.4	6.5	175.77	58.6	-22.4	675.0	662.4	12.56	53.758	
4,000.0	3,845.7	3,838.7	3,838.7	14.2	6.7	176.06	58.6	-22.4	724.3	711.4	12.88	56.245	
4,100.0	3,932.6	3,925.6	3,925.6	15.1	6.8	176.31	58.6	-22.4	773.6	760.4	13.20	58.612	
4,200.0	4,019.6	4,012.6	4,012.6	15.9	7.0	176.53	58.6	-22.4	822.9	809.4	13.52	60.867	
4,300.0	4,106.5	4,099.5	4,099.5	16.8	7.1	176.73	58.6	-22.4	872.2	858.4	13.84	63.019	
4,400.0	4,193.5	4,186.5	4,186.5	17.7	7.3	176.90	58.6	-22.4	921.6	907.4	14.16	65.075	
4,500.0	4,280.4	4,273.4	4,273.4	18.5	7.4	177.06	58.6	-22.4	970.9	956.5	14.48	67.040	

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S29-T23N-R7W
Site Error: 0.0ft
Reference Well: Lybrook L29-2307 04H
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #1

Local Co-ordinate Reference: Well Lybrook L29-2307 04H
TVD Reference: 18' KB @ 6892.0ft (A1099)
MD Reference: 18' KB @ 6892.0ft (A1099)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Offset Design S29-T23N-R7W - Lybrook L29-2307 02H - Hz - Plan #1														Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD														Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance		Total		Separation		Warning					
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Factor			
0.0	0.0	0.0	0.0	0.0	0.0	-22.24	40.4	-16.5	44.2						
100.0	100.0	93.0	93.0	0.1	0.1	-22.24	40.4	-16.5	43.7	43.4	0.28	156.233			
200.0	200.0	193.0	193.0	0.3	0.3	-22.24	40.4	-16.5	43.7	43.0	0.63	69.683			
300.0	300.0	293.0	293.0	0.5	0.5	-22.24	40.4	-16.5	43.7	42.7	0.98	44.752			
400.0	400.0	393.0	393.0	0.7	0.7	-22.24	40.4	-16.5	43.7	42.3	1.32	32.959			
500.0	500.0	493.0	493.0	0.8	0.8	-22.24	40.4	-16.5	43.7	42.0	1.67	26.086			
600.0	600.0	593.0	593.0	1.0	1.0	-22.24	40.4	-16.5	43.7	41.6	2.02	21.584			
700.0	700.0	693.0	693.0	1.2	1.2	-22.24	40.4	-16.5	43.7	41.3	2.37	18.408			
800.0	800.0	793.0	793.0	1.4	1.4	-22.24	40.4	-16.5	43.7	40.9	2.72	16.046			
900.0	900.0	893.0	893.0	1.5	1.5	-22.24	40.4	-16.5	43.7	40.6	3.07	14.222			
1,000.0	1,000.0	993.0	993.0	1.7	1.7	-22.24	40.4	-16.5	43.7	40.2	3.42	12.770			
1,100.0	1,100.0	1,093.0	1,093.0	1.9	1.9	-22.24	40.4	-16.5	43.7	39.9	3.77	11.587			
1,200.0	1,200.0	1,193.0	1,193.0	2.1	2.1	-22.24	40.4	-16.5	43.7	39.5	4.12	10.605			
1,300.0	1,300.0	1,293.0	1,293.0	2.2	2.2	-22.24	40.4	-16.5	43.7	39.2	4.47	9.776			
1,400.0	1,400.0	1,393.0	1,393.0	2.4	2.4	-22.24	40.4	-16.5	43.7	38.8	4.82	9.067			
1,500.0	1,500.0	1,493.0	1,493.0	2.6	2.6	-22.24	40.4	-16.5	43.7	38.5	5.16	8.454			
1,600.0	1,600.0	1,593.0	1,593.0	2.8	2.8	-22.24	40.4	-16.5	43.7	38.1	5.51	7.919			
1,700.0	1,700.0	1,693.0	1,693.0	2.9	2.9	-22.24	40.4	-16.5	43.7	37.8	5.86	7.447			
1,800.0	1,800.0	1,793.0	1,793.0	3.1	3.1	-22.24	40.4	-16.5	43.7	37.4	6.21	7.029			
1,900.0	1,900.0	1,893.0	1,893.0	3.3	3.3	-22.24	40.4	-16.5	43.7	37.1	6.56	6.655			
2,000.0	2,000.0	1,993.0	1,993.0	3.5	3.5	-22.24	40.4	-16.5	43.7	36.8	6.91	6.319			
2,100.0	2,100.0	2,093.0	2,093.0	3.6	3.6	-22.24	40.4	-16.5	43.7	36.4	7.26	6.015 CC, ES			
2,200.0	2,200.0	2,193.0	2,193.0	3.8	3.8	-22.24	40.4	-16.5	43.7	36.0	7.61	5.967 SF			
2,300.0	2,299.7	2,292.7	2,292.7	4.0	4.0	142.57	40.4	-16.5	50.9	42.9	7.94	6.403			
2,400.0	2,399.0	2,392.0	2,392.0	4.2	4.1	149.26	40.4	-16.5	60.8	52.5	8.27	7.347			
2,500.0	2,497.6	2,490.6	2,490.6	4.4	4.3	155.53	40.4	-16.5	75.6	67.0	8.58	8.806			
2,600.0	2,595.3	2,588.3	2,588.3	4.7	4.5	160.65	40.4	-16.5	95.5	86.6	8.88	10.754			
2,700.0	2,691.8	2,684.8	2,684.8	5.0	4.7	164.55	40.4	-16.5	120.3	111.2	9.15	13.149			
2,800.0	2,787.0	2,780.0	2,780.0	5.4	4.8	167.47	40.4	-16.5	150.1	140.6	9.41	15.953			
2,900.0	2,880.7	2,873.7	2,873.7	5.8	5.0	169.65	40.4	-16.5	184.5	174.9	9.64	19.134			
3,000.0	2,972.5	2,965.5	2,965.5	6.4	5.1	171.29	40.4	-16.5	223.5	213.7	9.86	22.669			
3,100.0	3,062.4	3,055.4	3,055.4	7.0	5.3	172.54	40.4	-16.5	267.0	257.0	10.06	26.541			
3,200.0	3,150.1	3,143.1	3,143.1	7.7	5.5	173.54	40.4	-16.5	314.8	304.5	10.27	30.651			
3,300.0	3,237.1	3,230.1	3,230.1	8.5	5.6	174.42	40.4	-16.5	363.9	353.4	10.59	34.363			
3,400.0	3,324.0	3,317.0	3,317.0	9.3	5.8	175.08	40.4	-16.5	413.2	402.3	10.91	37.859			
3,500.0	3,411.0	3,404.0	3,404.0	10.1	5.9	175.61	40.4	-16.5	462.5	451.2	11.24	41.156			
3,600.0	3,497.9	3,490.9	3,490.9	10.9	6.1	176.03	40.4	-16.5	511.8	500.2	11.56	44.272			
3,700.0	3,584.9	3,577.9	3,577.9	11.7	6.2	176.38	40.4	-16.5	561.1	549.2	11.88	47.220			
3,800.0	3,671.8	3,664.8	3,664.8	12.5	6.4	176.67	40.4	-16.5	610.4	598.2	12.21	50.014			
3,900.0	3,758.7	3,751.7	3,751.7	13.4	6.5	176.92	40.4	-16.5	659.8	647.2	12.53	52.665			
4,000.0	3,845.7	3,838.7	3,838.7	14.2	6.7	177.13	40.4	-16.5	709.1	696.3	12.85	55.185			
4,100.0	3,932.6	3,925.6	3,925.6	15.1	6.8	177.32	40.4	-16.5	758.5	745.3	13.17	57.583			
4,200.0	4,019.6	4,012.6	4,012.6	15.9	7.0	177.48	40.4	-16.5	807.8	794.3	13.49	59.867			
4,300.0	4,106.5	4,099.5	4,099.5	16.8	7.1	177.63	40.4	-16.5	857.2	843.4	13.82	62.046			
4,400.0	4,193.5	4,186.5	4,186.5	17.7	7.3	177.76	40.4	-16.5	906.6	892.4	14.14	64.126			
4,500.0	4,280.4	4,273.4	4,273.4	18.5	7.4	177.87	40.4	-16.5	955.9	941.5	14.46	66.115			
5,300.0	4,914.1	5,776.1	5,099.4	26.6	23.7	103.15	-231.7	-894.9	999.5	957.0	42.55	23.493			
5,350.6	4,941.2	5,800.0	5,099.2	27.3	24.2	101.00	-237.0	-918.2	999.4	955.6	43.84	22.797			
5,400.0	4,965.1	5,817.9	5,099.0	27.9	24.6	99.31	-240.6	-935.8	999.6	954.7	44.87	22.275			

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S29-T23N-R7W
Site Error: 0.0ft
Reference Well: Lybrook L29-2307 04H
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #1

Local Co-ordinate Reference: Well Lybrook L29-2307 04H
TVD Reference: 18' KB @ 6892.0ft (A1099)
MD Reference: 18' KB @ 6892.0ft (A1099)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Offset Design S29-T23N-R7W - Lybrook L29-2307 03H - Hz - Plan #3													Offset Site Error: 0.0 ft	
Survey Program: 0-Geolink MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-21.67	18.6	-7.4	20.0					
100.0	100.0	100.0	100.0	0.1	0.1	-21.67	18.6	-7.4	20.0	19.7	0.29	69.803		
200.0	200.0	200.0	200.0	0.3	0.3	-21.67	18.6	-7.4	20.0	19.3	0.64	31.450		
300.0	300.0	300.0	300.0	0.5	0.5	-21.67	18.6	-7.4	20.0	19.0	0.98	20.297		
400.0	400.0	400.0	400.0	0.7	0.7	-21.67	18.6	-7.4	20.0	18.6	1.33	14.984		
500.0	500.0	500.0	500.0	0.8	0.8	-21.67	18.6	-7.4	20.0	18.3	1.68	11.875		
600.0	600.0	600.0	600.0	1.0	1.0	-21.67	18.6	-7.4	20.0	17.9	2.03	9.835		
700.0	700.0	700.0	700.0	1.2	1.2	-21.67	18.6	-7.4	20.0	17.6	2.38	8.393		
800.0	800.0	800.0	800.0	1.4	1.4	-21.67	18.6	-7.4	20.0	17.3	2.73	7.320		
900.0	900.0	900.0	900.0	1.5	1.5	-21.67	18.6	-7.4	20.0	16.9	3.08	6.490		
1,000.0	1,000.0	1,000.0	1,000.0	1.7	1.7	-21.67	18.6	-7.4	20.0	16.6	3.43	5.829		
1,100.0	1,100.0	1,100.0	1,100.0	1.9	1.9	-21.67	18.6	-7.4	20.0	16.2	3.78	5.290		
1,200.0	1,200.0	1,200.0	1,200.0	2.1	2.1	-21.67	18.6	-7.4	20.0	15.9	4.13	4.843		
1,300.0	1,300.0	1,300.0	1,300.0	2.2	2.2	-21.67	18.6	-7.4	20.0	15.5	4.48	4.465		
1,400.0	1,400.0	1,400.0	1,400.0	2.4	2.4	-21.67	18.6	-7.4	20.0	15.2	4.82	4.142		
1,500.0	1,500.0	1,500.0	1,500.0	2.6	2.6	-21.67	18.6	-7.4	20.0	14.8	5.17	3.862		
1,600.0	1,600.0	1,600.0	1,600.0	2.8	2.8	-21.67	18.6	-7.4	20.0	14.5	5.52	3.618		
1,700.0	1,700.0	1,700.0	1,700.0	2.9	2.9	-21.67	18.6	-7.4	20.0	14.1	5.87	3.403		
1,800.0	1,800.0	1,800.0	1,800.0	3.1	3.1	-21.67	18.6	-7.4	20.0	13.8	6.22	3.212		
1,900.0	1,900.0	1,900.0	1,900.0	3.3	3.3	-21.67	18.6	-7.4	20.0	13.4	6.57	3.041		
2,000.0	2,000.0	2,000.0	2,000.0	3.5	3.5	-21.67	18.6	-7.4	20.0	13.1	6.92	2.888		
2,100.0	2,100.0	2,100.0	2,100.0	3.6	3.6	-21.67	18.6	-7.4	20.0	12.7	7.27	2.749 CC, ES		
2,200.0	2,200.0	2,200.0	2,200.0	3.8	3.8	140.02	18.6	-7.4	21.8	14.1	7.61	2.857		
2,300.0	2,299.7	2,299.7	2,299.7	4.0	4.0	149.52	18.6	-7.4	27.6	19.7	7.95	3.475		
2,400.0	2,399.0	2,399.0	2,399.0	4.2	4.2	158.46	18.6	-7.4	38.4	30.1	8.27	4.640		
2,500.0	2,497.6	2,497.6	2,497.6	4.4	4.3	164.81	18.6	-7.4	54.2	45.6	8.57	6.323		
2,600.0	2,595.3	2,595.3	2,595.3	4.7	4.5	168.97	18.6	-7.4	75.0	66.2	8.86	8.467		
2,700.0	2,691.8	2,691.8	2,691.8	5.0	4.7	171.69	18.6	-7.4	100.7	91.5	9.13	11.023		
2,800.0	2,787.0	2,787.0	2,787.0	5.4	4.8	173.52	18.6	-7.4	131.0	121.6	9.38	13.957		
2,900.0	2,880.7	2,887.6	2,887.6	5.8	5.0	174.59	17.1	-8.7	164.2	154.5	9.63	17.045		
3,000.0	2,972.5	2,990.9	2,990.6	6.4	5.2	174.77	11.4	-13.7	197.3	187.4	9.88	19.978		
3,100.0	3,062.4	3,096.2	3,095.0	7.0	5.4	174.40	1.3	-22.5	230.2	220.1	10.12	22.752		
3,200.0	3,150.1	3,203.4	3,200.4	7.7	5.6	173.68	-13.4	-35.3	262.7	252.3	10.39	25.278		
3,300.0	3,237.1	3,313.5	3,307.4	8.5	5.9	172.70	-33.1	-52.5	291.8	281.0	10.81	26.982		
3,400.0	3,324.0	3,426.7	3,415.5	9.3	6.3	171.37	-58.1	-74.4	315.9	304.6	11.28	27.992		
3,500.0	3,411.0	3,542.1	3,523.6	10.1	6.8	169.69	-88.6	-101.1	334.9	323.0	11.83	28.315		
3,600.0	3,497.9	3,659.0	3,630.4	10.9	7.4	167.64	-124.4	-132.4	348.8	336.3	12.48	27.956		
3,700.0	3,584.9	3,776.6	3,734.6	11.7	8.1	165.17	-165.3	-168.2	357.9	344.6	13.29	26.929		
3,800.0	3,671.8	3,884.0	3,827.1	12.5	8.9	162.55	-206.4	-204.1	363.0	348.8	14.24	25.498		
3,900.0	3,758.7	3,982.6	3,911.7	13.4	9.7	160.16	-244.6	-237.4	368.3	353.0	15.27	24.113		
4,000.0	3,845.7	4,081.3	3,996.4	14.2	10.5	157.84	-282.8	-270.8	374.2	357.8	16.44	22.766		
4,100.0	3,932.6	4,180.0	4,081.0	15.1	11.3	155.59	-320.9	-304.2	380.7	363.0	17.72	21.484		
4,200.0	4,019.6	4,278.6	4,165.6	15.9	12.1	153.42	-359.1	-337.6	387.8	368.7	19.11	20.288		
4,300.0	4,106.5	4,377.3	4,250.3	16.8	13.0	151.33	-397.3	-371.0	395.4	374.8	20.61	19.187		
4,400.0	4,193.5	4,476.0	4,334.9	17.7	13.8	149.32	-435.5	-404.3	403.6	381.4	22.19	18.187		
4,500.0	4,280.4	4,574.6	4,419.5	18.5	14.7	147.39	-473.7	-437.7	412.2	388.3	23.85	17.284		
4,600.0	4,367.4	4,663.0	4,494.2	19.4	15.5	145.28	-507.3	-470.8	422.2	396.6	25.66	16.454		
4,700.0	4,454.3	4,744.4	4,559.2	20.3	16.4	142.23	-536.7	-509.9	436.4	408.4	27.94	15.616		
4,800.0	4,541.3	4,819.3	4,615.2	21.2	17.3	138.64	-561.9	-552.7	456.0	425.4	30.54	14.930		
4,900.0	4,626.8	4,889.6	4,663.7	22.1	18.3	121.92	-583.8	-598.5	479.7	445.7	33.96	14.125		
5,000.0	4,708.4	4,958.1	4,706.9	23.1	19.2	108.32	-603.2	-648.1	503.9	466.7	37.14	13.567		
5,100.0	4,784.5	5,025.3	4,744.9	24.2	20.3	97.80	-620.3	-700.8	527.3	487.4	39.92	13.210		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S29-T23N-R7W
Site Error: 0.0ft
Reference Well: Lybrook L29-2307 04H
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #1

Local Co-ordinate Reference: Well Lybrook L29-2307 04H
TVD Reference: 18' KB @ 6892.0ft (A1099)
MD Reference: 18' KB @ 6892.0ft (A1099)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Offset Design S29-T23N-R7W - Lybrook L29-2307 03H - Hz - Plan #3														Offset Site Error: 0.0 ft
Survey Program: O-Geolink MWD														Offset Well Error: 0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)				Between Centres (ft)	Between Ellipses (ft)	
5,200.0	4,853.5	5,091.4	4,777.7	25.4	21.3	89.75	-635.0	-756.2	549.1	506.9	42.23	13.004		
5,300.0	4,914.1	5,150.0	4,802.7	26.6	22.4	83.76	-646.3	-807.9	568.6	524.7	43.92	12.947		
5,400.0	4,965.1	5,221.2	4,827.9	27.9	23.6	79.09	-657.6	-873.6	585.1	539.6	45.46	12.871		
5,500.0	5,005.6	5,285.3	4,845.3	29.4	24.8	75.80	-665.4	-934.7	598.2	551.7	46.46	12.876		
5,600.0	5,034.8	5,350.0	4,857.9	30.8	26.1	73.59	-671.0	-997.9	607.6	560.5	47.16	12.884		
5,700.0	5,052.0	5,412.5	4,864.9	32.4	27.3	72.35	-674.1	-1,059.9	613.2	565.6	47.60	12.884		
5,800.0	5,057.1	5,477.3	4,867.1	33.9	28.6	72.00	-675.0	-1,124.7	614.8	566.7	48.15	12.770		
5,900.0	5,056.7	5,577.3	4,866.7	35.6	30.7	72.00	-674.7	-1,224.7	614.8	562.3	52.53	11.703		
6,000.0	5,056.4	5,677.3	4,866.4	37.3	32.8	72.00	-674.4	-1,324.7	614.8	557.8	56.97	10.792		
6,100.0	5,056.0	5,777.3	4,866.0	39.2	34.9	72.00	-674.2	-1,424.7	614.8	553.4	61.44	10.006		
6,200.0	5,055.7	5,877.3	4,865.7	41.1	37.1	72.00	-673.9	-1,524.7	614.8	548.9	65.95	9.322		
6,300.0	5,055.3	5,977.3	4,865.3	43.0	39.4	72.00	-673.6	-1,624.7	614.8	544.3	70.49	8.722		
6,400.0	5,055.0	6,077.3	4,865.0	45.0	41.6	72.00	-673.3	-1,724.7	614.8	539.8	75.04	8.193		
6,500.0	5,054.6	6,177.3	4,864.6	47.1	43.9	72.00	-673.1	-1,824.7	614.8	535.2	79.62	7.722		
6,600.0	5,054.3	6,277.3	4,864.3	49.2	46.2	72.00	-672.8	-1,924.7	614.8	530.6	84.20	7.301		
6,700.0	5,053.9	6,377.3	4,863.9	51.3	48.6	72.00	-672.5	-2,024.7	614.8	526.0	88.81	6.923		
6,800.0	5,053.6	6,477.3	4,863.6	53.5	50.9	72.00	-672.2	-2,124.7	614.8	521.4	93.42	6.581		
6,900.0	5,053.2	6,577.3	4,863.3	55.7	53.2	72.00	-672.0	-2,224.7	614.8	516.8	98.04	6.271		
7,000.0	5,052.9	6,677.3	4,862.9	57.9	55.6	72.00	-671.7	-2,324.7	614.8	512.1	102.67	5.988		
7,100.0	5,052.5	6,777.3	4,862.6	60.2	58.0	72.00	-671.4	-2,424.7	614.8	507.5	107.30	5.730		
7,200.0	5,052.2	6,877.3	4,862.2	62.4	60.4	72.00	-671.1	-2,524.7	614.8	502.9	111.94	5.492		
7,300.0	5,051.8	6,977.3	4,861.9	64.7	62.7	72.00	-670.9	-2,624.7	614.8	498.2	116.59	5.273		
7,400.0	5,051.5	7,077.3	4,861.5	67.0	65.1	72.00	-670.6	-2,724.7	614.8	493.6	121.24	5.071		
7,500.0	5,051.1	7,177.3	4,861.2	69.3	67.5	72.00	-670.3	-2,824.7	614.8	488.9	125.90	4.883		
7,600.0	5,050.8	7,277.3	4,860.8	71.6	69.9	72.00	-670.1	-2,924.7	614.8	484.2	130.56	4.709		
7,700.0	5,050.4	7,377.3	4,860.5	73.9	72.4	72.00	-669.8	-3,024.7	614.8	479.6	135.22	4.547		
7,800.0	5,050.1	7,477.3	4,860.1	76.3	74.8	72.00	-669.5	-3,124.7	614.8	474.9	139.89	4.395		
7,900.0	5,049.7	7,577.3	4,859.8	78.6	77.2	72.00	-669.2	-3,224.7	614.8	470.2	144.56	4.253		
8,000.0	5,049.4	7,677.3	4,859.4	81.0	79.6	72.00	-669.0	-3,324.7	614.8	465.6	149.23	4.120		
8,100.0	5,049.0	7,777.3	4,859.1	83.4	82.0	72.00	-668.7	-3,424.7	614.8	460.9	153.90	3.995		
8,200.0	5,048.7	7,877.3	4,858.7	85.7	84.5	72.00	-668.4	-3,524.7	614.8	456.2	158.58	3.877		
8,300.0	5,048.3	7,977.3	4,858.4	88.1	86.9	72.00	-668.1	-3,624.7	614.8	451.5	163.26	3.766		
8,400.0	5,048.0	8,077.3	4,858.0	90.5	89.3	72.00	-667.9	-3,724.7	614.8	446.9	167.94	3.661		
8,500.0	5,047.6	8,177.3	4,857.7	92.9	91.8	72.00	-667.6	-3,824.7	614.8	442.2	172.62	3.562		
8,600.0	5,047.3	8,277.3	4,857.3	95.3	94.2	72.00	-667.3	-3,924.7	614.8	437.5	177.30	3.468		
8,700.0	5,046.9	8,377.3	4,857.0	97.7	96.6	72.00	-667.0	-4,024.7	614.8	432.8	181.98	3.378		
8,800.0	5,046.6	8,477.3	4,856.6	100.1	99.1	72.00	-666.8	-4,124.7	614.8	428.1	186.67	3.294		
8,900.0	5,046.3	8,577.3	4,856.3	102.5	101.5	72.00	-666.5	-4,224.7	614.8	423.4	191.35	3.213		
9,000.0	5,045.9	8,677.3	4,855.9	104.9	104.0	72.00	-666.2	-4,324.6	614.8	418.8	196.04	3.136		
9,100.0	5,045.6	8,777.3	4,855.6	107.3	106.4	72.00	-666.0	-4,424.6	614.8	414.1	200.73	3.063		
9,200.0	5,045.2	8,877.3	4,855.2	109.7	108.9	72.00	-665.7	-4,524.6	614.8	409.4	205.42	2.993		
9,300.0	5,044.9	8,977.3	4,854.9	112.1	111.3	72.00	-665.4	-4,624.6	614.8	404.7	210.11	2.926		
9,400.0	5,044.5	9,077.3	4,854.5	114.5	113.8	72.00	-665.1	-4,724.6	614.8	400.0	214.80	2.862		
9,500.0	5,044.2	9,177.3	4,854.2	117.0	116.2	72.00	-664.9	-4,824.6	614.8	395.3	219.49	2.801		
9,600.0	5,043.8	9,277.3	4,853.8	119.4	118.7	72.00	-664.6	-4,924.6	614.8	390.6	224.18	2.742		
9,700.0	5,043.5	9,377.3	4,853.5	121.8	121.1	72.00	-664.3	-5,024.6	614.8	385.9	228.87	2.686		
9,800.0	5,043.1	9,477.3	4,853.1	124.2	123.6	72.00	-664.0	-5,124.6	614.8	381.2	233.57	2.632		
9,900.0	5,042.8	9,577.3	4,852.8	126.7	126.0	72.00	-663.8	-5,224.6	614.8	376.5	238.26	2.580		
10,000.0	5,042.4	9,677.3	4,852.4	129.1	128.5	72.00	-663.5	-5,324.6	614.8	371.8	242.96	2.531		
10,100.0	5,042.1	9,777.3	4,852.1	131.5	130.9	72.00	-663.2	-5,424.6	614.8	367.2	247.65	2.483		
10,200.0	5,041.7	9,877.3	4,851.7	134.0	133.4	72.00	-662.9	-5,524.6	614.8	362.5	252.35	2.436		
10,300.0	5,041.4	9,977.3	4,851.4	136.4	135.9	72.00	-662.7	-5,624.6	614.8	357.8	257.04	2.392		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S29-T23N-R7W
Site Error: 0.0ft
Reference Well: Lybrook L29-2307 04H
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #1

Local Co-ordinate Reference: Well Lybrook L29-2307 04H
TVD Reference: 18' KB @ 6892.0ft (A1099)
MD Reference: 18' KB @ 6892.0ft (A1099)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Offset Design													Offset Site Error: 0.0 ft	
S29-T23N-R7W - Lybrook L29-2307 03H - Hz - Plan #3													Offset Well Error: 0.0 ft	
Survey Program: 0-Geolink MWD														
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre		Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning	
							+N-S (ft)	+E-W (ft)						
10,386.3	5,041.1	10,063.6	4,851.1	138.5	138.0	72.00	-662.4	-5,711.0	614.8	353.7	261.10	2.355 SF		

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S29-T23N-R7W
Site Error: 0.0ft
Reference Well: Lybrook L29-2307 04H
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #1

Local Co-ordinate Reference: Well Lybrook L29-2307 04H
TVD Reference: 18' KB @ 6892.0ft (A1099)
MD Reference: 18' KB @ 6892.0ft (A1099)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Reference Depths are relative to 18' KB @ 6892.0ft (A1099)

Offset Depths are relative to Offset Datum

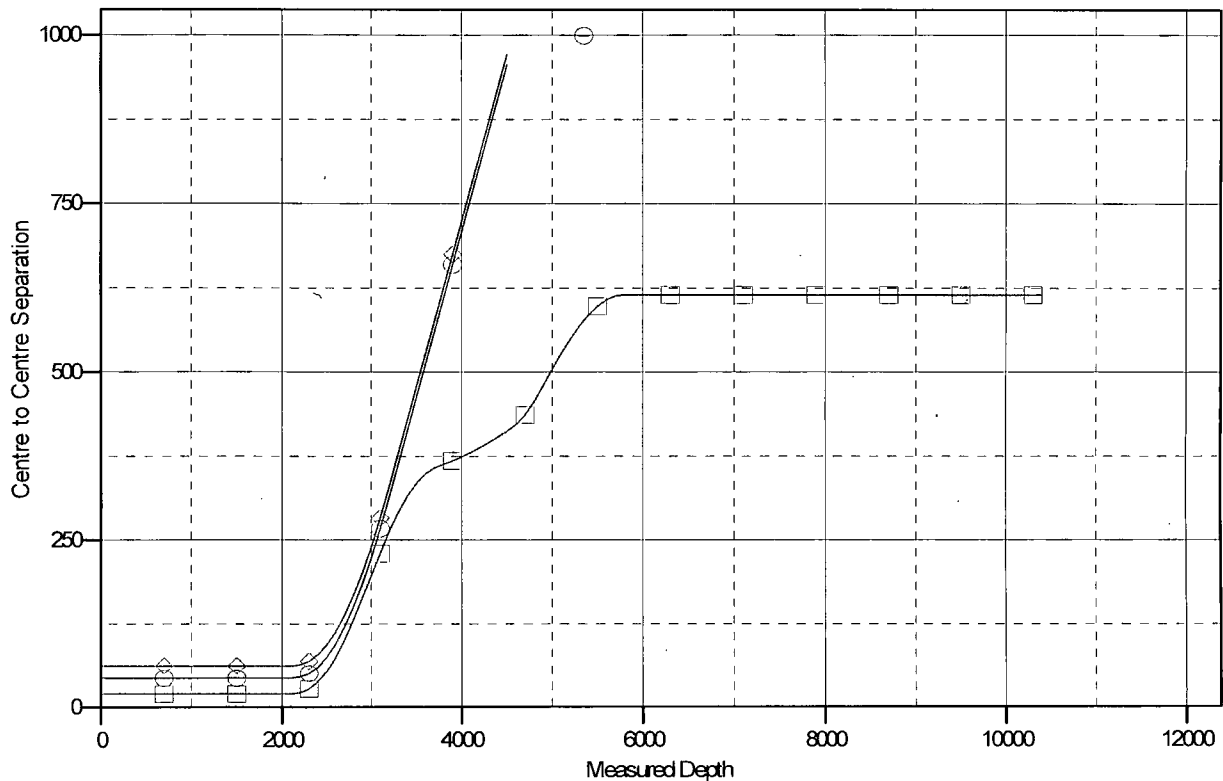
Central Meridian is -106.250000 °

Coordinates are relative to: Lybrook L29-2307 04H

Coordinate System is US State Plane 1983, New Mexico Central Zone

Grid Convergence at Surface is: -0.80°

Ladder Plot



LEGEND

— Lybrook L29-2307 01H, Hz, Plan #1 V0 — Lybrook L29-2307 02H, Hz, Plan #1 V0 — Lybrook L29-2307 03H, Hz, Plan #3 V0

Lybrook L29-2307 04H

SHL: NWSW Section 29, T23N, R7W
1683 FSL and 792 FWL

BHL: SWSW Section 30, T23N, R7W
420 FSL and 330 FWL

Sandoval County, New Mexico

Lease Number: NM 36943

5. Construction equipment may include chain saws, a brush hog, scraper, maintainer, excavator, and dozer. Construction for the access road and well pad will take approximately 3-4 weeks.

C. Pipeline

See the Plan of Development submitted with the final Standard SF-299 Application for authorization to construct, operate, maintain and terminate a 7,938 foot, up to 6-inch outside diameter, buried steel well connect pipeline that was submitted to the BLM concurrently with the APD.

7. METHODS FOR HANDLING WASTE

A. Cuttings

- ✓ 1. A closed-loop system will be used. Cuttings will be moved through a shaker system on the drill rig that separates drilling fluids from the cuttings. Cuttings will be stored onsite in above-ground storage tanks. Cuttings will be pulled from the storage tanks, mixed with saw dust or similar absorbent material, and disposed of at the Envirotech, Inc. and/or Industrial Ecosystem, Inc. waste disposal facilities.
- 2. The closed-loop system storage tanks will be adequately sized to ensure confinement of all fluids and will provide sufficient freeboard to prevent uncontrolled releases.
- 3. A 20-mil liner will be installed under tanks, pumps, ancillary facilities, and truck loading/unloading areas associated with the closed-loop system.

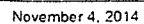
B. Drilling Fluids

1. A closed-loop system will be used. Drilling fluids will be stored onsite in above-ground storage tanks. Upon termination of drilling operations, the drilling fluids will be recycled and transferred to other permitted closed-loop systems or returned to the vendor for reuse, as practical. Residual fluids will be vacuumed from the storage tanks and disposed of at Basin Disposal, Inc. and/or Industrial Ecosystem, Inc. waste disposal facilities.
2. The closed-loop system storage tanks will be adequately sized to ensure confinement of all fluids and will provide sufficient freeboard to prevent uncontrolled releases.
3. The closed-loop system storage tanks will be placed in bermed secondary containment sized to accommodate a minimum of 110 percent of the volume of the largest storage tank.
4. A 20-mil liner will be installed under tanks, pumps, ancillary facilities, and truck loading/unloading areas associated with the closed-loop system.

C. Flowback Water

1. The water-based solution that flows back to the surface during and after completion operations will be placed in storage tanks on the location.
2. Flowback water will be confined to a storage tank for a period not to exceed 90 days after initial production and will be disposed of at Basin Disposal, Inc. and/or Industrial Ecosystem, Inc. waste disposal facilities.

- D. Spills – any spills of non-freshwater fluids will be immediately cleaned up and removed to an approved disposal site.



Directions from the Intersection of US Hwy 550 & US Hwy 64
in Bloomfield, NM to Encana Oil & Gas (USA) Inc. Lybrook L29-2307 04H
1683' FSL & 792' FWL, Section 29, T23N, R7W, N.M.P.M., Sandoval County, NM

Latitude: 36.19521°N Longitude: 107.60385°W Datum: NAD1983

From the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM, travel Southerly on US Hwy 550 for 38.7 miles to Mile Marker 112.7;

Go right (Southerly) on County Road #7900 for 4.9 miles to fork in road;

Go straight (South-easterly) remaining on County Road #7900 for 0.2 miles to fork in road;

Go left (North-easterly) exiting County Road #7900 for 2.8 miles to three-way intersection;

Go straight (Easterly) for 0.2 miles to fork in road at gate;

Go straight (Easterly) for 1.0 miles to fork in road;

Go left (Northerly) for 1.3 miles to new access on left-hand side of existing roadway which continues for 1075' to staked Encana Lybrook L29-2307 04H location.

WELLHEAD BLOWOUT CONTROL SYSTEM

encana

Well Name and Number:
Lybrook L29-2307 04H

