

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: 4/17/14

Well information;

Operator ENCONA, Well Name and Number Lybrook 229-2307 0314

API# 30-643-21230, 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
- ☒ 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 Herr
NMOCD Approved by Signature

6-20-14
Date

CONFIDENTIAL RECEIVED

Form 3160-3
(March 2012)

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

MAY 01 2014

APPLICATION FOR PERMIT TO DRILL OR REENTER

BUREAU OF LAND MANAGEMENT
BLOOMFIELD, NM

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		8. Lease Name and Well No. Lybrook L29-2307 03H	
3b. Phone No. (include area code) 720-876-3448		9. API Well No. 30-043-21230	
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface 1701' FSL and 784' FWL in Section 29, T23N, R7W NWSW At proposed prod. zone 620 FSL and 330' FWL in Section 30, T23N, R7W SWSW		10. Field and Pool, or Exploratory Basin Mancos	
14. Distance in miles and direction from nearest town or post office* +/- 49.1 miles from the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM		11. Sec., T. R. M. or Blk. and Survey or Area Section 29, T23N, R7W NMPM Sec 30, T23N, R7W	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) BHL is 330 FWL in Section 30	16. No. of acres in lease NM 36943- 1402.64 acres	17. Spacing Unit dedicated to this well 321.26 S/2 of Section 30	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. Lybrook L29-2307 02H is +/- 20' NW of SHL	19. Proposed Depth 5038' TVD, 10509' MD	20. BLM/BIA Bond No. on file COB 000235	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) GL 6869', KB 6885'	22. Approximate date work will start* 10/07/2014	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:

- | | |
|---|---|
| 1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
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). | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM. |
|---|---|

25. Signature 	Name (Printed/Typed) Christopher Simmons	Date 9/17/14
Title Regulatory Analyst		
Approved by (Signature) 	Name (Printed/Typed) AFM	Date 6/12/14
Title AFM		
Office FPO		

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.

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

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

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

NMCCD
W

District II
811 S. First Street, Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

District IV
1220 S. St. Francis Drive, Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

OIL CONSERVATION DIVISION

1220 South St. Francis Drive
Santa Fe, NM 87505

Submit one copy to
Appropriate District Office

☐ AMENDED REPORT

12/01/2014

WELL LOCATION AND ACREAGE DEDICATION PLAT

Fanning on Field Office

Bureau of [redacted] [redacted]

'API Number'	'Pool Code'	'Pool Name'	'Buttress Offset'
30-043-21230	97232	BASIN MANCOS	
'Property Code'	'Property Name'	'Well Number'	
313379	LYBROOK L29-2307	03H	
'OGRIID No.'	'Operator Name'	'Elevation'	
282327	ENCANA OIL & GAS (USA) INC.	6869'	

¹⁰ Surface Location

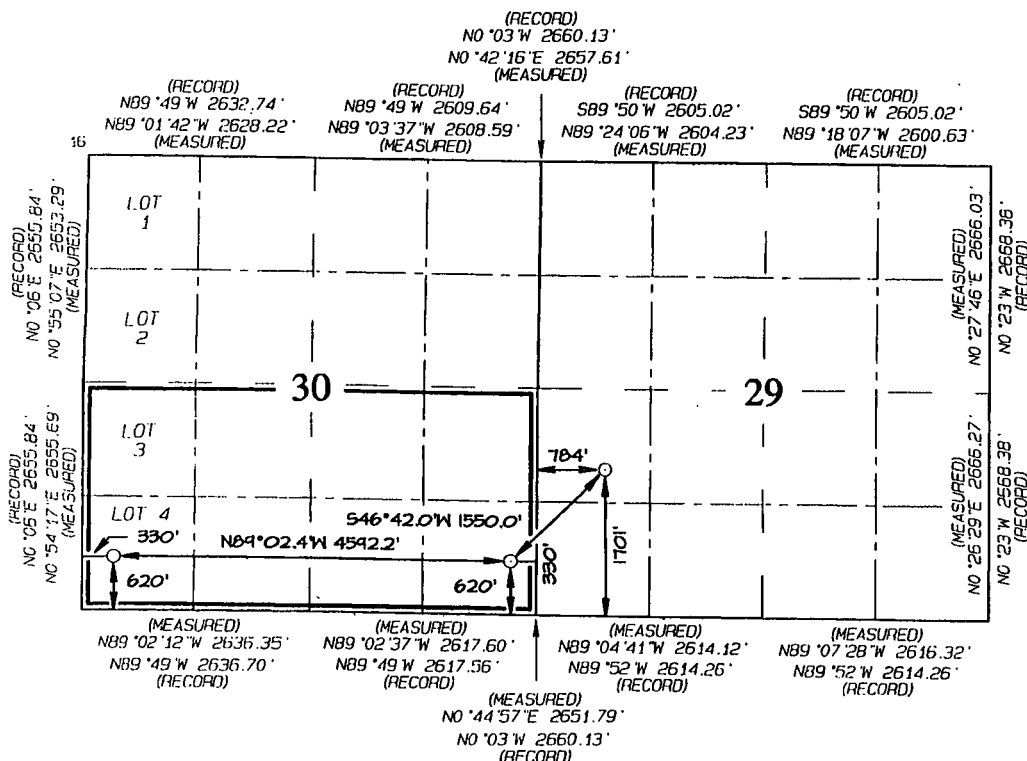
U/L or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	29	23N	7W		1701	SOUTH	784	WEST	SANDOVAL

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	620	SOUTH	330	WEST	SANDOVAL

¹² Dedicated Acres	321.26 Acres S/2 - Section 30	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



END-OF-LATERAL
620' FSL 330' FWL
SECTION 30, T23N, R7W
LAT: 36.19232°N
LONG: 107.62260°W
DATUM: NAD1927

LAT: 36.19234°N
LONG: 107.62321°W
DATE: NA01983

POINT-OF-ENTRY
620' FSL 330' FEL
SECTION 30, T23N, R7W
LAT: 36.19229°N
LONG: 107.60704°W
DATUM: NAD1927

LAT: 36.19230 'N
LONG: 107.60765 'W
DATUM: NAD1983

SURFACE LOCATION
1701' FSL 784' FWL
SECTION 29, T23N, R7W
LAT: 36.19525°N
LONG: 107.60327°W
DATUM: NAD1927

LAT: 36.19527 'N
LONG: 107.60388 'W
DATUM: NAD1983

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 an operating agreement, an owner of such a mineral or working interest, or a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature Holly Hill Date 4/17/14
Holly Hill

Printed Name
Holly.Hill@encana.com

E-mail Address

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.

Date Revised: FEBRUARY 6, 2014
Survey Date: JANUARY 9, 2014

Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number 15269

Lybrook L29-2307 03H
 SHL: NWSW Sec 29 T23N R7W
 170' FSL, 784' FWL
 BHL: SWSW Sec 30 T23N R7W
 620' FSL, 330' FWL
 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
Ojo Alamo Ss.	882
Kirtland Shale	1,092
Fruitland Coal	1,360
Pictured Cliffs Ss.	1,478
Lewis Shale	1,600
Cliffhouse Ss.	2,294
Menefee Fn.	3,002
Point Lookout Ss.	3,836
Mancos Shale	4,040
Mancos Silt	4,559
Gallup Fn.	4,813

The referenced surface elevation is 6869', KB 6885'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,360
Oil/Gas	Pictured Cliffs Ss.	1,478
Oil/Gas	Cliffhouse Ss.	2,294
Gas	Menefee Fn.	3,002
Oil/Gas	Point Lookout Ss.	3,836
Oil/Gas	Mancos Shale	4,040
Oil/Gas	Mancos Silt	4,559
Oil/Gas	Gallup Fn.	4,813

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 L29-2307 03H

SHL: NWSW Sec 29 T23N R7W

170' FSL, 784' FWL

BHL: SWSW Sec 30 T23N R7W

620' FSL, 330' FWL

Sandoval, 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'-5820'	8 3/4"	7"	26#	J55, LTC New
Production Liner	5620'-10509'	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 L29-2307 03H
SHL: NWSW Sec 29 T23N R7W
170' FSL, 784' FWL
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620' FSL, 330' FWL
Sandoval, 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'-5820'	30% open hole excess Stage 1 Lead: 292 sks Stage 1 Tail: 424 sks Stage 2 Lead: 145 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	5620'-10509'	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 3500'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5038'/10509'	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'-5081'/5820	Fresh Water LSND	9.5-8.8	40-50	8-10

Lybrook L29-2307 03H

SHL: NWSW Sec 29 T23N R7W

170' FSL, 784' FWL

BHL: SWSW Sec 30 T23N R7W

620' FSL, 330' FWL

Sandoval, 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"	5081'/5820'- 5038'/10509'	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

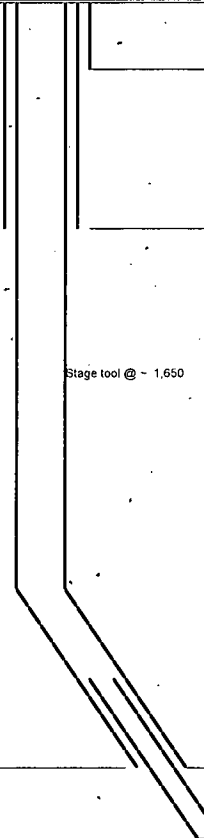
The anticipated bottom hole pressure is +/- 2386 psi based on a 9.0 ppg at 5098' TVD of the horizontal lateral target. No abnormal pressure or temperatures are anticipated.

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 January 1, 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: SE/4 SE/4 Sec 30 T23N R7W, 620'			Encana Natural Gas				ENG: S Kuykendall		4/14/14	
County: Sandoval			WELL SUMMARY				RIG: Aztec 950			
WELL: Lybrook L29-2307 03H							GLE: 6869			
							RKBE: 6885			
MWD	OPEN HOLE	FORM	DEPTH			HOLE	CASING	MW	DEVIATION	
LWD	LOGGING		TVD	MD						SIZE
			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	Nacimiento 9 5/8" Csg	0 500	-500.00		12 1/4	9 5/8" 36ppf J55 STC TOC Surface - 201 sks of Type III Cement	Fresh wtr 8.4-8.6	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	882- 1,092 1,360 1,478 1,600 2,294 3,002 3,836 4,040			Stage tool @ ~ 1,650	8 3/4	7" 26ppf J55 LTC TOC @ Surface 30% OH excess: 716 sksTotal Stage 1 Lead: 292 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: 424 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. 145 Stage 2: 168 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.	Fresh Wtr 8.5-8.8	Vertical <1°
Surveys every 30' through the curve	Mud logger -onsite	KOP Mancos Silt Gallup Fn. 7" Csg	3,500 4,559 4,813 5,081	3,500						
Surveys every stand to TD unless directed otherwise by Geologist	No OH Logs	Horizontal Target TD Base Gallup	5,098 5,038 5,127	10,509		6 1/8	200' overlap at liner top 4689' Drilled Lateral	Horizontal Inclination Horizontal TVD 8.6-9.0 OBM	Horz Inc/TVD /90.6 deg TD = 10509.4 MD	
MWD Gamma Directional							4 1/2" 11.6ppf SB80 LTC Running external swellable csg packers for isolation of prod string Plan on setting top packer within 100' of intermediate casing shoe	Switch to OBM 8.6-9.0		

NOTES:

- 1) Drill with 30" bit to 60', set 20" 94# conductor pipe
- 2) Drill surface to 500', R&C 9 5/8" casing
- 3) N/U BOP and surface equipment
- 4) Drill to KOP of 3500', 8 3/4 inch holesize
- 5) PU directional tools and start curve at 10deg/100' build rate
- 6) Drill to csg point of 5820' MD
- 7) R&C 7" csg, circ cmt to surface, switch to OBM
- 8) Land at 90 deg, drill lateral to 10509' run 4 1/2 inch liner with external swellable csg packers



Boomerang Tube LLC

CASING (OR) TUBING DESCRIPTION AND PERFORMANCE PROPERTIES

Pipe Outside Diameter (ins)	4.500
Pipe Wall Thickness (ins)	0.250
Nominal Weight Per Foot (lbs)	11.60
Thread Name	Long Thread CSG
Grade Name	SB-80
Pipe Minimum Yield (psi)	80,000
Pipe Minimum Ultimate (psi)	90,000
Coupling Minimum Yield (psi)	80,000
Coupling Minimum Ultimate (psi)	100,000
Coupling or Joint Outside Diameter (ins)	5.000
Drift Diameter (ins)	3.875
Plain End Weight per Foot (lbs)	11.36
Joint Strength (lbs)	201,000
Internal Yield (psi)	7,780
Collapse Rating (psi)	6,350

MAXIMUM DEPTH/LENGTH BASED ON MUD WTS & SAFETY FACTORS

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

API RELATED VALUES and INTERMEDIATE CALCULATION RESULTS

Coupling Thread Fracture Strength	464,000
Pipe Thread Fracture Strength (lbs)	201,000
Pipe Body Plain End Yield (lbs)	267,000
Round Thread Pull-Out (lbs)	219,000
Minimum Make-up Torque (ft-lbs)	1,640
Nominal Make-up Torque (ft-lbs)	2,190
Maximum Make-up Torque (ft-lbs)	2,740
Coupling Internal Yield (psi)	10,660
Pipe Body Internal Yield (psi)	7,780
Leak @ E1 or E7 plane (psi)	17,920
Pipe Hydrostatic Test Pressure @ 80 % SMYS	7,100

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook L29-2307 03H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 6885.0ft (Original Well Elev)
Project:	Sandoval County, NM	MD Reference:	WELL @ 6885.0ft (Original Well Elev)
Site:	S29-T23N-R7W	North Reference:	True
Well:	Lybrook L29-2307 03H	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 03H					
Well Position	+N/-S	0.0 ft	Northing:	1,893,135.40 ft	Latitude:	36.195270
	+E/-W	0.0 ft	Easting:	1,240,943.41 ft	Longitude:	-107.603880
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,869.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/20/2014	9.43	62.96	50,174

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	270.19

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	
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,309.6	48.58	214.52	4,216.0	-266.2	-183.1	6.00	6.00	0.00	214.52	
5,262.9	48.58	214.52	4,846.8	-855.2	-588.3	0.00	0.00	0.00	0.00	
5,917.1	90.60	270.19	5,086.4	-1,081.3	-1,112.6	10.00	6.42	8.51	65.23	Lybrook L29-2307 03H
10,509.4	90.60	270.19	5,038.3	-1,066.2	-5,704.6	0.00	0.00	0.00	0.00	Lybrook L29-2307 03H

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook L29-2307 03H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 6885.0ft (Original Well Elev)
Project:	Sandoval County, NM	MD Reference:	WELL @ 6885.0ft (Original Well Elev)
Site:	S29-T23N-R7W	North Reference:	True
Well:	Lybrook L29-2307 03H	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	
882.0	0.00	0.00	882.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo
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	
1,092.0	0.00	0.00	1,092.0	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	
1,360.0	0.00	0.00	1,360.0	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	
1,478.0	0.00	0.00	1,478.0	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	Lewis Shale
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	
2,294.0	0.00	0.00	2,294.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss.
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	
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	
3,002.0	0.00	0.00	3,002.0	0.0	0.0	0.0	0.00	0.00	Menefee Fn.
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	KOP @ 3500'
3,600.0	6.00	214.52	3,599.8	-4.3	-3.0	3.0	6.00	6.00	
3,700.0	12.00	214.52	3,698.5	-17.2	-11.8	11.8	6.00	6.00	
3,800.0	18.00	214.52	3,795.1	-38.5	-26.5	26.4	6.00	6.00	
3,843.0	20.58	214.52	3,835.6	-50.2	-34.5	34.4	6.00	6.00	Point Lookout Ss.
3,900.0	24.00	214.52	3,888.4	-68.0	-46.8	46.6	6.00	6.00	
4,000.0	30.00	214.52	3,977.5	-105.4	-72.5	72.2	6.00	6.00	
4,072.7	34.36	214.52	4,039.0	-137.3	-94.5	94.0	6.00	6.00	Mancos Shale
4,100.0	36.00	214.52	4,061.3	-150.3	-103.4	102.9	6.00	6.00	
4,200.0	42.00	214.52	4,139.0	-202.1	-139.0	138.3	6.00	6.00	
4,300.0	48.00	214.52	4,209.7	-260.3	-179.1	178.2	6.00	6.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook L29-2307 03H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 6885.0ft (Original Well Elev)
Project:	Sandoval County, NM	MD Reference:	WELL @ 6885.0ft (Original Well Elev)
Site:	S29-T23N-R7W	North Reference:	True
Well:	Lybrook L29-2307 03H	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
4,309.6	48.58	214.52	4,216.0	-266.2	-183.1	182.3	6.00	6.00	EOB; Inc=48.58°
4,400.0	48.58	214.52	4,275.8	-322.1	-221.5	220.5	0.00	0.00	
4,500.0	48.58	214.52	4,342.0	-383.8	-264.0	262.8	0.00	0.00	
4,600.0	48.58	214.52	4,408.2	-445.6	-306.5	305.1	0.00	0.00	
4,700.0	48.58	214.52	4,474.3	-507.4	-349.0	347.4	0.00	0.00	
4,800.0	48.58	214.52	4,540.5	-569.2	-391.5	389.6	0.00	0.00	
4,821.7	48.58	214.52	4,554.8	-582.6	-400.7	398.8	0.00	0.00	Mancos Silt
4,900.0	48.58	214.52	4,606.7	-631.0	-434.0	431.9	0.00	0.00	
5,000.0	48.58	214.52	4,672.8	-692.7	-476.5	474.2	0.00	0.00	
5,100.0	48.58	214.52	4,739.0	-754.5	-519.0	516.5	0.00	0.00	
5,200.0	48.58	214.52	4,805.1	-816.3	-561.5	558.8	0.00	0.00	
5,203.0	48.58	214.52	4,807.1	-818.2	-562.8	560.1	0.00	0.00	Gallup Fn.
5,262.9	48.58	214.52	4,846.8	-855.2	-588.3	585.4	0.00	0.00	Start build/turn @ 5262' MD
5,300.0	50.21	218.90	4,870.9	-877.7	-605.1	602.2	10.00	4.42	
5,400.0	55.37	229.68	4,931.5	-934.4	-660.7	657.6	10.00	5.15	
5,500.0	61.35	239.11	4,984.0	-983.7	-729.9	726.7	10.00	5.98	
5,600.0	67.91	247.47	5,026.9	-1,024.0	-810.6	807.2	10.00	6.56	
5,700.0	74.86	255.06	5,058.8	-1,054.3	-900.2	896.7	10.00	6.95	
5,800.0	82.04	262.17	5,078.9	-1,073.6	-996.2	992.6	10.00	7.19	
5,820.0	83.50	263.55	5,081.4	-1,076.0	-1,015.9	1,012.3	10.00	7.27	7" ICP
5,900.0	89.35	269.02	5,086.4	-1,081.2	-1,095.5	1,091.9	10.00	7.31	
5,917.1	90.60	270.19	5,086.4	-1,081.3	-1,112.6	1,109.0	10.00	7.32	LP @5086' TVD; 90.6°
6,000.0	90.60	270.19	5,085.5	-1,081.0	-1,195.5	1,191.9	0.00	0.00	
6,100.0	90.60	270.19	5,084.5	-1,080.7	-1,295.5	1,291.9	0.00	0.00	
6,200.0	90.60	270.19	5,083.4	-1,080.4	-1,395.4	1,391.9	0.00	0.00	
6,300.0	90.60	270.19	5,082.4	-1,080.0	-1,495.4	1,491.8	0.00	0.00	
6,400.0	90.60	270.19	5,081.3	-1,079.7	-1,595.4	1,591.8	0.00	0.00	
6,500.0	90.60	270.19	5,080.3	-1,079.4	-1,695.4	1,691.8	0.00	0.00	
6,600.0	90.60	270.19	5,079.2	-1,079.1	-1,795.4	1,791.8	0.00	0.00	
6,700.0	90.60	270.19	5,078.2	-1,078.7	-1,895.4	1,891.8	0.00	0.00	
6,800.0	90.60	270.19	5,077.1	-1,078.4	-1,995.4	1,991.8	0.00	0.00	
6,900.0	90.60	270.19	5,076.1	-1,078.1	-2,095.4	2,091.8	0.00	0.00	
7,000.0	90.60	270.19	5,075.0	-1,077.7	-2,195.4	2,191.8	0.00	0.00	
7,100.0	90.60	270.19	5,074.0	-1,077.4	-2,295.4	2,291.8	0.00	0.00	
7,200.0	90.60	270.19	5,072.9	-1,077.1	-2,395.4	2,391.8	0.00	0.00	
7,300.0	90.60	270.19	5,071.9	-1,076.8	-2,495.4	2,491.8	0.00	0.00	
7,400.0	90.60	270.19	5,070.9	-1,076.4	-2,595.4	2,591.8	0.00	0.00	
7,500.0	90.60	270.19	5,069.8	-1,076.1	-2,695.4	2,691.8	0.00	0.00	
7,600.0	90.60	270.19	5,068.8	-1,075.8	-2,795.4	2,791.8	0.00	0.00	
7,700.0	90.60	270.19	5,067.7	-1,075.4	-2,895.4	2,891.8	0.00	0.00	
7,800.0	90.60	270.19	5,066.7	-1,075.1	-2,995.3	2,991.8	0.00	0.00	
7,900.0	90.60	270.19	5,065.6	-1,074.8	-3,095.3	3,091.8	0.00	0.00	
8,000.0	90.60	270.19	5,064.6	-1,074.5	-3,195.3	3,191.8	0.00	0.00	
8,100.0	90.60	270.19	5,063.5	-1,074.1	-3,295.3	3,291.7	0.00	0.00	
8,200.0	90.60	270.19	5,062.5	-1,073.8	-3,395.3	3,391.7	0.00	0.00	
8,300.0	90.60	270.19	5,061.4	-1,073.5	-3,495.3	3,491.7	0.00	0.00	
8,400.0	90.60	270.19	5,060.4	-1,073.1	-3,595.3	3,591.7	0.00	0.00	
8,500.0	90.60	270.19	5,059.3	-1,072.8	-3,695.3	3,691.7	0.00	0.00	
8,600.0	90.60	270.19	5,058.3	-1,072.5	-3,795.3	3,791.7	0.00	0.00	
8,700.0	90.60	270.19	5,057.2	-1,072.1	-3,895.3	3,891.7	0.00	0.00	
8,800.0	90.60	270.19	5,056.2	-1,071.8	-3,995.3	3,991.7	0.00	0.00	
8,900.0	90.60	270.19	5,055.1	-1,071.5	-4,095.3	4,091.7	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook L29-2307 03H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 6885.0ft (Original Well Elev)
Project:	Sandoval County, NM	MD Reference:	WELL @ 6885.0ft (Original Well Elev)
Site:	S29-T23N-R7W	North Reference:	True
Well:	Lybrook L29-2307 03H	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
9,000.0	90.60	270.19	5,054.1	-1,071.2	-4,195.3	4,191.7	0.00	0.00	
9,100.0	90.60	270.19	5,053.0	-1,070.8	-4,295.3	4,291.7	0.00	0.00	
9,200.0	90.60	270.19	5,052.0	-1,070.5	-4,395.3	4,391.7	0.00	0.00	
9,300.0	90.60	270.19	5,051.0	-1,070.2	-4,495.3	4,491.7	0.00	0.00	
9,400.0	90.60	270.19	5,049.9	-1,069.8	-4,595.3	4,591.7	0.00	0.00	
9,500.0	90.60	270.19	5,048.9	-1,069.5	-4,695.2	4,691.7	0.00	0.00	
9,600.0	90.60	270.19	5,047.8	-1,069.2	-4,795.2	4,791.7	0.00	0.00	
9,700.0	90.60	270.19	5,046.8	-1,068.9	-4,895.2	4,891.7	0.00	0.00	
9,800.0	90.60	270.19	5,045.7	-1,068.5	-4,995.2	4,991.7	0.00	0.00	
9,900.0	90.60	270.19	5,044.7	-1,068.2	-5,095.2	5,091.7	0.00	0.00	
10,000.0	90.60	270.19	5,043.6	-1,067.9	-5,195.2	5,191.6	0.00	0.00	
10,100.0	90.60	270.19	5,042.6	-1,067.5	-5,295.2	5,291.6	0.00	0.00	
10,200.0	90.60	270.19	5,041.5	-1,067.2	-5,395.2	5,391.6	0.00	0.00	
10,300.0	90.60	270.19	5,040.5	-1,066.9	-5,495.2	5,491.6	0.00	0.00	
10,400.0	90.60	270.19	5,039.4	-1,066.6	-5,595.2	5,591.6	0.00	0.00	
10,500.0	90.60	270.19	5,038.4	-1,066.2	-5,695.2	5,691.6	0.00	0.00	
10,509.4	90.60	270.19	5,038.3	-1,066.2	-5,704.6	5,701.1	0.00	0.00	TD at 10509.4

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Lybrook L29-2307 03H F - hit/miss target - Shape - plan hits target center - Point	0.00	0.00	5,086.4	-1,081.3	-1,112.6	1,892,069.73	1,239,815.83	36.192300	-107.607650
Lybrook L29-2307 03H F - plan hits target center - Point	0.00	0.00	5,038.3	-1,066.2	-5,704.6	1,892,148.92	1,235,224.45	36.192340	-107.623210

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
5,820.0	5,081.4	7" ICP	0.000	0.000	
500.0	500.0	9 5/8"	0.000	0.000	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook L29-2307 03H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 6885.0ft (Original Well Elev)
Project:	Sandoval County, NM	MD Reference:	WELL @ 6885.0ft (Original Well Elev)
Site:	S29-T23N-R7W	North Reference:	True
Well:	Lybrook L29-2307 03H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
882.0	882.0	Ojo Alamo		-0.60	270.19	
1,092.0	1,092.0	Kirtland Shale		-0.60	270.19	
1,360.0	1,360.0	Fruitland Coal		-0.60	270.19	
1,478.0	1,478.0	Pictured Cliffs Ss.		-0.60	270.19	
1,600.0	1,600.0	Lewis Shale		-0.60	270.19	
2,294.0	2,294.0	Cliffhouse Ss.		-0.60	270.19	
3,002.0	3,002.0	Menefee Fn.		-0.60	270.19	
3,843.0	3,836.0	Point Lookout Ss.		-0.60	270.19	
4,072.7	4,040.0	Mancos Shale		-0.60	270.19	
4,821.7	4,559.0	Mancos Silt		-0.60	270.19	
5,203.0	4,813.0	Gallup Fn.		-0.60	270.19	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
3,500.0	3,500.0	0.0	0.0	KOP @ 3500'	
4,309.6	4,216.0	-266.2	-183.1	EOB; Inc=48.58°	
5,262.9	4,846.8	-855.2	-588.3	Start build/turn @ 5262' MD	
5,917.1	5,086.4	-1,081.3	-1,112.6	LP @5086' TVD; 90.6°	
10,509.4	5,038.3	-1,066.2	-5,704.6	TD at 10509.4	

EnCana Oil & Gas (USA) Inc

Sandoval County, NM

S29-T23N-R7W

Lybrook L29-2307 03H

Hz

Plan #1

Anticollision Report

20 February, 2014

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook L29-2307 03H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 6885.0ft (Original Well Elev)
Reference Site:	S29-T23N-R7W	MD Reference:	WELL @ 6885.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook L29-2307 03H	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 2/20/2014		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name
0.0	10,509.4	Plan #1 (Hz)	Geolink MWD
			Description
			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	3,500.0	3,500.0	39.3	27.1	3.230	CC, ES, SF
Lybrook L29-2307 02H - Hz - Plan #1	3,500.0	3,500.0	20.2	8.1	1.664	CC, ES, SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook L29-2307 03H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 6885.0ft (Original Well Elev)
Reference Site:	S29-T23N-R7W	MD Reference:	WELL @ 6885.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook L29-2307 03H	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

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		Distance		Between		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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Factor			
0.0	0.0	0.0	0.0	0.0	0.0	-22.06	36.4	-14.8	39.3	39.0	0.29	133.978			
100.0	100.0	100.0	100.0	0.1	0.1	-22.06	36.4	-14.8	39.3	38.6	0.64	61.164			
200.0	200.0	200.0	200.0	0.3	0.3	-22.06	36.4	-14.8	39.3	38.3	0.99	39.627			
300.0	300.0	300.0	300.0	0.5	0.5	-22.06	36.4	-14.8	39.3	37.9	1.34	29.308			
400.0	400.0	400.0	400.0	0.7	0.7	-22.06	36.4	-14.8	39.3	37.6	1.69	23.252			
500.0	500.0	500.0	500.0	0.8	0.8	-22.06	36.4	-14.8	39.3	37.2	2.04	19.271			
600.0	600.0	600.0	600.0	1.0	1.0	-22.06	36.4	-14.8	39.3	36.9	2.39	16.453			
700.0	700.0	700.0	700.0	1.2	1.2	-22.06	36.4	-14.8	39.3	36.5	2.74	14.355			
800.0	800.0	800.0	800.0	1.4	1.4	-22.06	36.4	-14.8	39.3	36.2	3.09	12.731			
900.0	900.0	900.0	900.0	1.5	1.5	-22.06	36.4	-14.8	39.3	35.8	3.43	11.437			
1,000.0	1,000.0	1,000.0	1,000.0	1.7	1.7	-22.06	36.4	-14.8	39.3	35.5	3.78	10.382			
1,100.0	1,100.0	1,100.0	1,100.0	1.9	1.9	-22.06	36.4	-14.8	39.3	35.2	4.13	9.505			
1,200.0	1,200.0	1,200.0	1,200.0	2.1	2.1	-22.06	36.4	-14.8	39.3	34.8	4.48	8.765			
1,300.0	1,300.0	1,300.0	1,300.0	2.2	2.2	-22.06	36.4	-14.8	39.3	34.5	4.83	8.132			
1,400.0	1,400.0	1,400.0	1,400.0	2.4	2.4	-22.06	36.4	-14.8	39.3	34.1	5.18	7.584			
1,500.0	1,500.0	1,500.0	1,500.0	2.6	2.6	-22.06	36.4	-14.8	39.3	33.8	5.53	7.105			
1,600.0	1,600.0	1,600.0	1,600.0	2.8	2.8	-22.06	36.4	-14.8	39.3	33.4	5.88	6.683			
1,700.0	1,700.0	1,700.0	1,700.0	2.9	2.9	-22.06	36.4	-14.8	39.3	33.1	6.23	6.308			
1,800.0	1,800.0	1,800.0	1,800.0	3.1	3.1	-22.06	36.4	-14.8	39.3	32.7	6.58	5.974			
1,900.0	1,900.0	1,900.0	1,900.0	3.3	3.3	-22.06	36.4	-14.8	39.3	32.4	6.93	5.672			
2,000.0	2,000.0	2,000.0	2,000.0	3.5	3.5	-22.06	36.4	-14.8	39.3	32.0	7.27	5.400			
2,100.0	2,100.0	2,100.0	2,100.0	3.6	3.6	-22.06	36.4	-14.8	39.3	31.7	7.62	5.153			
2,200.0	2,200.0	2,200.0	2,200.0	3.8	3.8	-22.06	36.4	-14.8	39.3	31.3	7.97	4.927			
2,300.0	2,300.0	2,300.0	2,300.0	4.0	4.0	-22.06	36.4	-14.8	39.3	31.0	8.32	4.721			
2,400.0	2,400.0	2,400.0	2,400.0	4.2	4.2	-22.06	36.4	-14.8	39.3	30.6	8.67	4.531			
2,500.0	2,500.0	2,500.0	2,500.0	4.3	4.3	-22.06	36.4	-14.8	39.3	30.3	9.02	4.355			
2,600.0	2,600.0	2,600.0	2,600.0	4.5	4.5	-22.06	36.4	-14.8	39.3	29.9	9.37	4.193			
2,700.0	2,700.0	2,700.0	2,700.0	4.7	4.7	-22.06	36.4	-14.8	39.3	29.6	9.72	4.042			
2,800.0	2,800.0	2,800.0	2,800.0	4.9	4.9	-22.06	36.4	-14.8	39.3	29.2	10.07	3.902			
2,900.0	2,900.0	2,900.0	2,900.0	5.0	5.0	-22.06	36.4	-14.8	39.3	28.9	10.42	3.772			
3,000.0	3,000.0	3,000.0	3,000.0	5.2	5.2	-22.06	36.4	-14.8	39.3	28.5	10.77	3.649			
3,100.0	3,100.0	3,100.0	3,100.0	5.4	5.4	-22.06	36.4	-14.8	39.3	28.2	11.11	3.535			
3,200.0	3,200.0	3,200.0	3,200.0	5.6	5.6	-22.06	36.4	-14.8	39.3	27.8	11.46	3.427			
3,300.0	3,300.0	3,300.0	3,300.0	5.7	5.7	-22.06	36.4	-14.8	39.3	27.5	11.81	3.326			
3,400.0	3,400.0	3,400.0	3,400.0	5.9	5.9	-22.06	36.4	-14.8	39.3	27.1	12.16	3.230 CC, ES, SF			
3,500.0	3,500.0	3,500.0	3,500.0	6.1	6.1	-22.06	36.4	-14.8	39.3	26.6	12.66	38.603			
3,600.0	3,599.8	3,599.8	3,599.8	6.3	6.3	129.17	36.4	-14.8	42.4	29.9	12.49	3.393			
3,700.0	3,698.5	3,698.5	3,698.5	6.4	6.4	141.73	36.4	-14.8	53.7	40.9	12.75	4.210			
3,800.0	3,795.1	3,795.1	3,795.1	6.7	6.6	153.24	36.4	-14.8	75.8	62.9	12.88	5.885			
3,900.0	3,888.4	3,888.4	3,888.4	7.0	6.8	160.99	36.4	-14.8	109.2	96.3	12.90	8.466			
4,000.0	3,977.5	3,977.5	3,977.5	7.4	6.9	165.79	36.4	-14.8	153.1	140.3	12.82	11.941			
4,100.0	4,061.3	4,061.3	4,061.3	8.0	7.1	168.76	36.4	-14.8	206.6	194.0	12.66	16.320			
4,200.0	4,139.0	4,139.0	4,139.0	8.7	7.2	170.61	36.4	-14.8	268.9	256.5	12.43	21.638			
4,300.0	4,209.7	4,209.7	4,209.7	9.6	7.3	171.74	36.4	-14.8	339.2	327.0	12.14	27.931			
4,400.0	4,275.8	4,275.8	4,275.8	10.7	7.4	173.15	36.4	-14.8	413.8	401.5	12.37	33.458			
4,500.0	4,342.0	4,342.0	4,342.0	11.9	7.6	174.20	36.4	-14.8	488.6	476.0	12.66	38.603			
4,600.0	4,408.2	4,408.2	4,408.2	13.1	7.7	174.96	36.4	-14.8	563.5	550.5	12.95	43.512			
4,700.0	4,474.3	4,474.3	4,474.3	14.3	7.8	175.55	36.4	-14.8	638.3	625.1	13.24	48.203			
4,800.0	4,540.5	4,540.7	4,540.7	15.6	7.9	176.02	36.4	-14.8	713.2	699.7	13.54	52.689			
4,900.0	4,606.7	4,610.7	4,610.5	16.9	8.0	175.90	38.8	-18.9	788.0	774.1	13.86	56.867			
5,000.0	4,672.8	4,680.1	4,678.6	18.2	8.2	174.97	45.2	-30.2	862.4	848.2	14.23	60.623			
5,100.0	4,739.0	4,747.0	4,742.3	19.6	8.3	173.49	55.3	-47.9	936.9	922.2	14.67	63.851			

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

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook L29-2307 03H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 6885.0ft (Original Well Elev)
Reference Site:	S29-T23N-R7W	MD Reference:	WELL @ 6885.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook L29-2307 03H	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

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook L29-2307 03H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 6885.0ft (Original Well Elev)
Reference Site:	S29-T23N-R7W	MD Reference:	WELL @ 6885.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook L29-2307 03H	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

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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre	Between Centres	Between Ellipses	Total Uncertainty	Separation Factor	Warning		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)			
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-25.94	18.2	-8.9	20.2					
100.0	100.0	100.0	100.0	0.1	0.1	0.1	-25.94	18.2	-8.9	20.2	19.9	0.29	69.037		
200.0	200.0	200.0	200.0	0.3	0.3	0.3	-25.94	18.2	-8.9	20.2	19.6	0.64	31.517		
300.0	300.0	300.0	300.0	0.5	0.5	0.5	-25.94	18.2	-8.9	20.2	19.3	0.99	20.419		
400.0	400.0	400.0	400.0	0.7	0.7	0.7	-25.94	18.2	-8.9	20.2	18.9	1.34	15.102		
500.0	500.0	500.0	500.0	0.8	0.8	0.8	-25.94	18.2	-8.9	20.2	18.6	1.69	11.982		
600.0	600.0	600.0	600.0	1.0	1.0	1.0	-25.94	18.2	-8.9	20.2	18.2	2.04	9.930		
700.0	700.0	700.0	700.0	1.2	1.2	1.2	-25.94	18.2	-8.9	20.2	17.9	2.39	8.478		
800.0	800.0	800.0	800.0	1.4	1.4	1.4	-25.94	18.2	-8.9	20.2	17.5	2.74	7.397		
900.0	900.0	900.0	900.0	1.5	1.5	1.5	-25.94	18.2	-8.9	20.2	17.2	3.09	6.560		
1,000.0	1,000.0	1,000.0	1,000.0	1.7	1.7	1.7	-25.94	18.2	-8.9	20.2	16.8	3.43	5.893		
1,100.0	1,100.0	1,100.0	1,100.0	1.9	1.9	1.9	-25.94	18.2	-8.9	20.2	16.5	3.78	5.350		
1,200.0	1,200.0	1,200.0	1,200.0	2.1	2.1	2.1	-25.94	18.2	-8.9	20.2	16.1	4.13	4.898		
1,300.0	1,300.0	1,300.0	1,300.0	2.2	2.2	2.2	-25.94	18.2	-8.9	20.2	15.8	4.48	4.516		
1,400.0	1,400.0	1,400.0	1,400.0	2.4	2.4	2.4	-25.94	18.2	-8.9	20.2	15.4	4.83	4.190		
1,500.0	1,500.0	1,500.0	1,500.0	2.6	2.6	2.6	-25.94	18.2	-8.9	20.2	15.1	5.18	3.908		
1,600.0	1,600.0	1,600.0	1,600.0	2.8	2.8	2.8	-25.94	18.2	-8.9	20.2	14.7	5.53	3.661		
1,700.0	1,700.0	1,700.0	1,700.0	2.9	2.9	2.9	-25.94	18.2	-8.9	20.2	14.4	5.88	3.444		
1,800.0	1,800.0	1,800.0	1,800.0	3.1	3.1	3.1	-25.94	18.2	-8.9	20.2	14.0	6.23	3.251		
1,900.0	1,900.0	1,900.0	1,900.0	3.3	3.3	3.3	-25.94	18.2	-8.9	20.2	13.7	6.58	3.078		
2,000.0	2,000.0	2,000.0	2,000.0	3.5	3.5	3.5	-25.94	18.2	-8.9	20.2	13.3	6.93	2.923		
2,100.0	2,100.0	2,100.0	2,100.0	3.6	3.6	3.6	-25.94	18.2	-8.9	20.2	13.0	7.27	2.783		
2,200.0	2,200.0	2,200.0	2,200.0	3.8	3.8	3.8	-25.94	18.2	-8.9	20.2	12.6	7.62	2.655		
2,300.0	2,300.0	2,300.0	2,300.0	4.0	4.0	4.0	-25.94	18.2	-8.9	20.2	12.3	7.97	2.539		
2,400.0	2,400.0	2,400.0	2,400.0	4.2	4.2	4.2	-25.94	18.2	-8.9	20.2	11.9	8.32	2.433		
2,500.0	2,500.0	2,500.0	2,500.0	4.3	4.3	4.3	-25.94	18.2	-8.9	20.2	11.6	8.67	2.335		
2,600.0	2,600.0	2,600.0	2,600.0	4.5	4.5	4.5	-25.94	18.2	-8.9	20.2	11.2	9.02	2.244		
2,700.0	2,700.0	2,700.0	2,700.0	4.7	4.7	4.7	-25.94	18.2	-8.9	20.2	10.9	9.37	2.161		
2,800.0	2,800.0	2,800.0	2,800.0	4.9	4.9	4.9	-25.94	18.2	-8.9	20.2	10.5	9.72	2.083		
2,900.0	2,900.0	2,900.0	2,900.0	5.0	5.0	5.0	-25.94	18.2	-8.9	20.2	10.2	10.07	2.011		
3,000.0	3,000.0	3,000.0	3,000.0	5.2	5.2	5.2	-25.94	18.2	-8.9	20.2	9.8	10.42	1.943		
3,100.0	3,100.0	3,100.0	3,100.0	5.4	5.4	5.4	-25.94	18.2	-8.9	20.2	9.5	10.77	1.880		
3,200.0	3,200.0	3,200.0	3,200.0	5.6	5.6	5.6	-25.94	18.2	-8.9	20.2	9.1	11.11	1.821		
3,300.0	3,300.0	3,300.0	3,300.0	5.7	5.7	5.7	-25.94	18.2	-8.9	20.2	8.8	11.46	1.766		
3,400.0	3,400.0	3,400.0	3,400.0	5.9	5.9	5.9	-25.94	18.2	-8.9	20.2	8.4	11.81	1.714		
3,500.0	3,500.0	3,500.0	3,500.0	6.1	6.1	6.1	-25.94	18.2	-8.9	20.2	8.1	12.16	1.664 CC, ES, SF		
3,600.0	3,599.8	3,599.8	3,599.8	6.3	6.3	6.3	130.66	18.2	-8.9	23.3	10.8	12.49	1.863		
3,700.0	3,698.5	3,698.5	3,698.5	6.4	6.4	6.4	149.73	18.2	-8.9	35.5	22.8	12.72	2.792		
3,800.0	3,795.1	3,795.1	3,795.1	6.7	6.6	6.6	161.92	18.2	-8.9	59.4	46.6	12.83	4.628		
3,900.0	3,888.4	3,888.4	3,888.4	7.0	6.8	6.8	168.23	18.2	-8.9	94.2	81.4	12.84	7.336		
4,000.0	3,977.5	3,977.5	3,977.5	7.4	6.9	6.9	171.61	18.2	-8.9	139.0	126.3	12.76	10.898		
4,100.0	4,061.3	4,061.3	4,061.3	8.0	7.1	7.1	173.54	18.2	-8.9	193.2	180.6	12.59	15.339		
4,200.0	4,139.0	4,139.0	4,139.0	8.7	7.2	7.2	174.70	18.2	-8.9	255.9	243.5	12.35	20.711		
4,300.0	4,209.7	4,209.7	4,209.7	9.6	7.3	7.3	175.38	18.2	-8.9	326.4	314.4	12.06	27.071		
4,400.0	4,275.8	4,275.8	4,275.8	10.7	7.4	7.4	176.20	18.2	-8.9	401.3	389.0	12.30	32.637		
4,500.0	4,342.0	4,342.0	4,342.0	11.9	7.6	7.6	176.80	18.2	-8.9	476.2	463.6	12.59	37.815		
4,600.0	4,408.2	4,408.2	4,408.2	13.1	7.7	7.7	177.23	18.2	-8.9	551.1	538.2	12.89	42.754		
4,700.0	4,474.3	4,474.3	4,474.3	14.3	7.8	7.8	177.56	18.2	-8.9	626.1	612.9	13.19	47.472		
4,800.0	4,540.5	4,717.7	4,714.3	15.6	8.2	8.2	176.38	9.1	-38.1	699.6	685.8	13.79	50.723		
4,900.0	4,606.7	5,460.1	5,102.1	16.9	16.8	16.8	145.62	-161.8	-585.1	698.9	673.8	25.04	27.912		
5,000.0	4,672.8	5,518.6	5,101.6	18.2	18.0	18.0	141.69	-179.2	-640.8	688.9	661.1	27.82	24.767		
5,055.1	4,709.2	5,550.7	5,101.3	19.0	18.7	18.7	139.52	-188.8	-671.5	687.4	658.0	29.43	23.357		

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

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook L29-2307 03H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 6885.0ft (Original Well Elev)
Reference Site:	S29-T23N-R7W	MD Reference:	WELL @ 6885.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook L29-2307 03H	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

Offset Design S29-T23N-R7W Lybrook L29-2307 02H - Hz - Plan #1														Offset Site Error:
Survey Program: 0-Geolink.MWD														Offset Well Error:
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		
5,100.0	4,739.0	5,577.0	5,101.1	19.6	19.3	137.74	-196.6	-696.6	688.4	657.6	30.78	22.363		
5,200.0	4,805.1	5,635.4	5,100.6	20.9	20.5	133.81	-214.0	-752.3	-697.4	663.5	33.89	20.582		
5,300.0	4,870.9	5,694.7	5,100.1	22.3	21.8	126.39	-231.7	-809.0	715.1	677.5	37.56	19.041		
5,400.0	4,931.5	5,741.8	5,099.7	23.8	22.9	115.34	-245.3	-854.1	735.2	693.6	41.52	17.708		
5,500.0	4,984.0	5,786.4	5,099.3	25.5	23.9	106.58	-256.3	-897.3	755.2	710.2	45.05	16.765		
5,600.0	5,026.9	5,834.7	5,098.9	27.2	25.0	99.77	-265.9	-944.7	773.3	725.2	48.11	16.075		
5,700.0	5,058.8	5,885.9	5,098.4	28.9	26.2	94.90	-273.4	-995.3	787.7	737.2	50.51	15.595		
5,800.0	5,078.9	5,950.0	5,097.8	30.7	27.6	91.81	-279.0	-1,059.1	797.3	744.9	52.46	15.199		
5,900.0	5,086.4	6,003.5	5,097.4	32.4	28.9	90.78	-280.3	-1,112.6	801.1	747.7	53.43	14.994		
6,000.0	5,085.5	6,084.5	5,096.7	34.2	30.7	90.80	-280.1	-1,193.6	801.0	743.9	57.12	14.024		
6,100.0	5,084.5	6,184.5	5,095.8	36.0	33.0	90.81	-279.9	-1,293.5	800.9	739.1	61.80	12.960		
6,200.0	5,083.4	6,284.5	5,094.9	37.9	35.4	90.82	-279.6	-1,393.5	800.8	734.3	66.52	12.039		
6,300.0	5,082.4	6,384.5	5,094.0	39.9	37.7	90.84	-279.4	-1,493.5	800.8	729.5	71.27	11.236		
6,400.0	5,081.3	6,484.5	5,093.2	41.9	40.1	90.85	-279.1	-1,593.5	800.7	724.6	76.05	10.529		
6,500.0	5,080.3	6,584.5	5,092.3	44.0	42.5	90.86	-278.9	-1,693.5	800.6	719.8	80.84	9.903		
6,600.0	5,079.2	6,684.5	5,091.4	46.1	44.9	90.87	-278.6	-1,793.5	800.5	714.9	85.66	9.346		
6,700.0	5,078.2	6,784.5	5,090.6	48.3	47.3	90.89	-278.4	-1,893.5	800.5	710.0	90.49	8.846		
6,800.0	5,077.1	6,884.5	5,089.7	50.4	49.7	90.90	-278.1	-1,993.5	800.4	705.0	95.33	8.396		
6,900.0	5,076.1	6,984.5	5,088.8	52.6	52.1	90.91	-277.9	-2,093.5	800.3	700.1	100.18	7.989		
7,000.0	5,075.0	7,084.5	5,087.9	54.9	54.5	90.92	-277.6	-2,193.5	800.2	695.2	105.04	7.618		
7,100.0	5,074.0	7,184.5	5,087.1	57.1	56.9	90.94	-277.4	-2,293.5	800.1	690.2	109.91	7.280		
7,200.0	5,072.9	7,284.5	5,086.2	59.4	59.4	90.95	-277.1	-2,393.5	800.1	685.3	114.78	6.970		
7,300.0	5,071.9	7,384.5	5,085.3	61.7	61.8	90.96	-276.9	-2,493.5	800.0	680.3	119.66	6.685		
7,400.0	5,070.9	7,484.5	5,084.4	64.0	64.2	90.97	-276.6	-2,593.5	799.9	675.4	124.55	6.422		
7,500.0	5,069.8	7,584.5	5,083.6	66.3	66.7	90.99	-276.4	-2,693.5	799.8	670.4	129.44	6.179		
7,600.0	5,068.8	7,684.5	5,082.7	68.6	69.1	91.00	-276.1	-2,793.5	799.8	665.4	134.34	5.953		
7,700.0	5,067.7	7,784.5	5,081.8	70.9	71.5	91.01	-275.9	-2,893.5	799.7	660.5	139.24	5.743		
7,800.0	5,066.7	7,884.5	5,081.0	73.3	74.0	91.02	-275.6	-2,993.5	799.6	655.5	144.14	5.548		
7,900.0	5,065.6	7,984.5	5,080.1	75.6	76.4	91.04	-275.4	-3,093.5	799.5	650.5	149.04	5.364		
8,000.0	5,064.6	8,084.5	5,079.2	78.0	78.9	91.05	-275.1	-3,193.5	799.5	645.5	153.95	5.193		
8,100.0	5,063.5	8,184.5	5,078.3	80.4	81.3	91.06	-274.9	-3,293.5	799.4	640.5	158.86	5.032		
8,200.0	5,062.5	8,284.5	5,077.5	82.8	83.8	91.08	-274.6	-3,393.5	799.3	635.5	163.77	4.881		
8,300.0	5,061.4	8,384.5	5,076.6	85.1	86.2	91.09	-274.4	-3,493.5	799.2	630.5	168.69	4.738		
8,400.0	5,060.4	8,484.5	5,075.7	87.5	88.7	91.10	-274.1	-3,593.5	799.2	625.6	173.60	4.603		
8,500.0	5,059.3	8,584.5	5,074.8	89.9	91.2	91.11	-273.9	-3,693.4	799.1	620.6	178.52	4.476		
8,600.0	5,058.3	8,684.5	5,074.0	92.3	93.6	91.13	-273.6	-3,793.4	799.0	615.6	183.44	4.356		
8,700.0	5,057.2	8,784.5	5,073.1	94.7	96.1	91.14	-273.4	-3,893.4	798.9	610.6	188.36	4.241		
8,800.0	5,056.2	8,884.5	5,072.2	97.1	98.5	91.15	-273.1	-3,993.4	798.9	605.6	193.28	4.133		
8,900.0	5,055.1	8,984.5	5,071.4	99.5	101.0	91.16	-272.9	-4,093.4	798.8	600.6	198.21	4.030		
9,000.0	5,054.1	9,084.5	5,070.5	101.9	103.4	91.18	-272.6	-4,193.4	798.7	595.6	203.13	3.932		
9,100.0	5,053.0	9,184.5	5,069.6	104.3	105.9	91.19	-272.4	-4,293.4	798.6	590.6	208.06	3.839		
9,200.0	5,052.0	9,284.5	5,068.7	106.8	108.4	91.20	-272.1	-4,393.4	798.6	585.6	212.98	3.749		
9,300.0	5,051.0	9,384.5	5,067.9	109.2	110.8	91.21	-271.9	-4,493.4	798.5	580.6	217.91	3.664		
9,400.0	5,049.9	9,484.5	5,067.0	111.6	113.3	91.23	-271.6	-4,593.4	798.4	575.6	222.84	3.583		
9,500.0	5,048.9	9,584.5	5,066.1	114.0	115.7	91.24	-271.4	-4,693.4	798.3	570.6	227.77	3.505		
9,600.0	5,047.8	9,684.5	5,065.3	116.4	118.2	91.25	-271.1	-4,793.4	798.2	565.6	232.69	3.430		
9,700.0	5,046.8	9,784.5	5,064.4	118.9	120.7	91.26	-270.9	-4,893.4	798.2	560.5	237.62	3.359		
9,800.0	5,045.7	9,884.5	5,063.5	121.3	123.1	91.28	-270.6	-4,993.4	798.1	555.5	242.55	3.290		
9,900.0	5,044.7	9,984.5	5,062.6	123.7	125.6	91.29	-270.4	-5,093.4	798.0	550.5	247.49	3.225		
10,000.0	5,043.6	10,084.5	5,061.8	126.2	128.1	91.30	-270.1	-5,193.4	797.9	545.5	252.42	3.161		
10,100.0	5,042.6	10,184.5	5,060.9	128.6	130.5	91.32	-269.9	-5,293.4	797.9	540.5	257.35	3.100		
10,200.0	5,041.5	10,284.5	5,060.0	131.0	133.0	91.33	-269.6	-5,393.4	797.8	535.5	262.28	3.042		

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

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook L29-2307 03H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 6885.0ft (Original Well Elev)
Reference Site:	S29-T23N-R7W	MD Reference:	WELL @ 6885.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook L29-2307 03H	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

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		Between		Between		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)	Centres (ft)	Ellipses (ft)	Uncertainty Axis			
10,300.0	5,040.5	10,384.5	5,059.1	133.5	135.5	91.34	-269.4	-5,493.4	797.7	530.5	267.22	2.985		
10,400.0	5,039.4	10,484.5	5,058.3	135.9	137.9	91.35	-269.1	-5,593.4	797.6	525.5	272.15	2.931		
10,500.0	5,038.4	10,584.5	5,057.4	138.4	140.4	91.37	-268.9	-5,693.4	797.6	520.5	277.08	2.878		
10,509.4	-5,038.3	10,593.9	5,057.3	138.6	140.6	91.37	-268.9	-5,702.8	797.6	520.0	277.55	2.874		

Cathedral Energy Services

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 03H
 Well Error: 0.0ft
 Reference Wellbore: Hz
 Reference Design: Plan #1

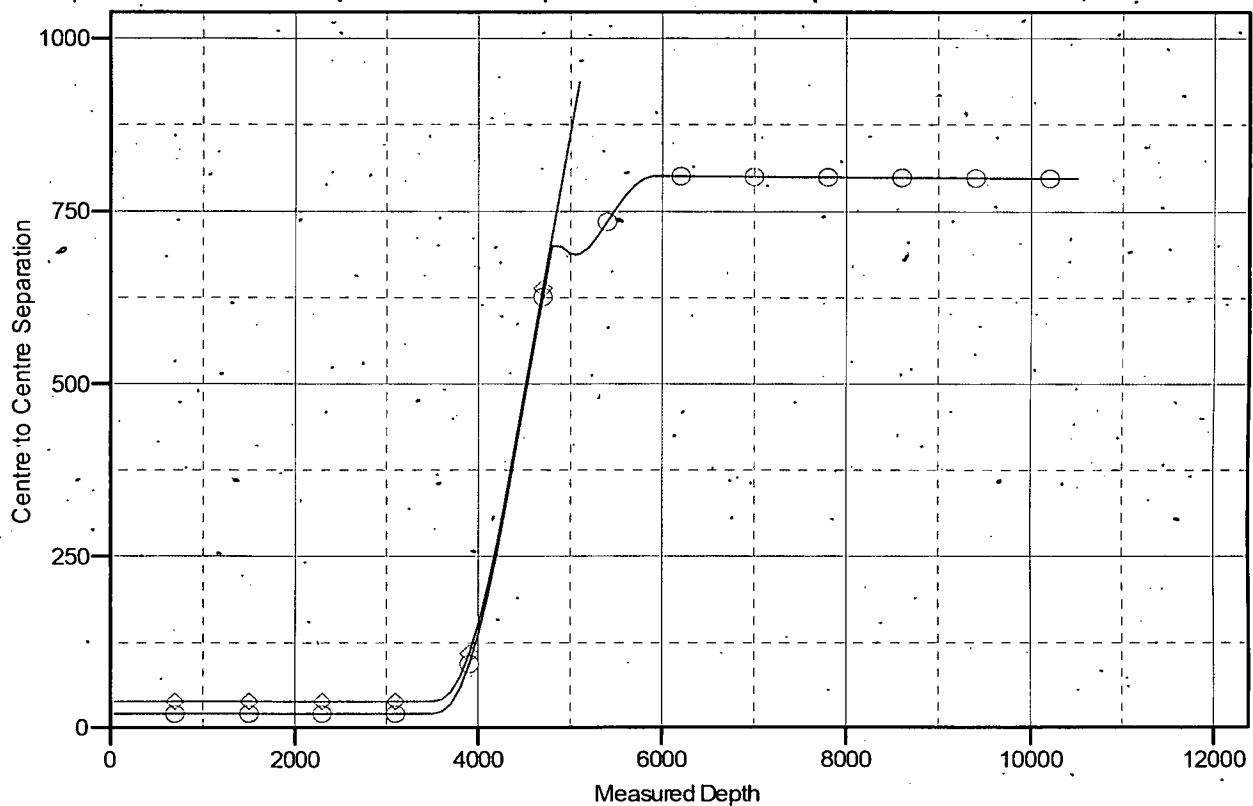
Local Co-ordinate Reference:
 TVD Reference:
 MD Reference:
 North Reference:
 Survey Calculation Method:
 Output errors are at:
 Database:
 Offset TVD Reference:

Well Lybrook L29-2307 03H
 WELL @ 6885.0ft (Original Well Elev)
 WELL @ 6885.0ft (Original Well Elev)
 True
 Minimum Curvature
 2.00 sigma
 USA EDM 5000 Multi-Users DB
 Offset Datum

Reference Depths are relative to WELL @ 6885.0ft (Original Well Elev)
 Offset Depths are relative to Offset Datum
 Central Meridian is -106.250000°

Coordinates are relative to: Lybrook L29-2307 03H
 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

Directions from the Intersection of US Hwy 550 & US Hwy 64

in Bloomfield, NM to Encana Oil & Gas (USA) Inc. Lybrook L29-2307 03H

1701' FSL & 784' FWL, Section 29, T23N, R7W, N.M.P.M., Sandoval County, NM

Latitude: 36.19527°N Longitude: 107.60388°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 03H location.

encana

SANDOVAL COUNTY,
NEW MEXICO

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

KENC OIL GAS INC 32

18

17

**LYBROOK
GALLUP
POOL**

23N
7W

SAPPA 1

FEDERAL 16

FEDERAL 16
FEDERAL 18

Lybrook E20-2307 01H
Lybrook E20-2307 02H

KENC OIL GAS INC 22

19

20

23N
8W

24

Lybrook O20-2307 01H
Lybrook O20-2307 02H

KITE ACA FEDERAL 1

HENRY AGC FEDERAL 1

Lybrook G30-2307 01H
Lybrook G30-2307 02H
Lybrook G30-2307 03H
Lybrook G30-2307 04H

25

30

29

Lybrook L29-2307 01H
Lybrook L29-2307 03H
Lybrook L29-2307 04H

Lybrook O30-2307 01H
Lybrook O30-2307 03H
Lybrook O30-2307 02H

Lybrook G31-2307 01H
Lybrook G31-2307 03H

LITTLE B 2
LITTLE B 1

36

**ALAMITO
GALLUP
POOL**

Lybrook J31-2307 01H
Lybrook J31-2307 02H

FEDERAL C 2

ALAMITO
UNIT 4

FEDERAL-1 4
Lybrook E33-2307 01H
Lybrook E33-2307 02H

32

Lybrook L33-2307 01H

ALAMITO 1
ALAMITO 1

FEDERAL-1 3

Lybrook P32-2307 01H

FULTON 1
FULTON 1

ALAMITO UNIT 2

STATE K 1

FEDERAL C 3

Lybrook P31-2307 01H
Lybrook P31-2307 02H
Lybrook P31-2307 03H
Lybrook P31-2307 04H

SOUTH SEAS 1

FEDERAL 1-5

SOUTH CHACO 5

SOUTH CHACO 5

0 0.125 0.25 0.5 Miles

6

5

WELLHEAD BLOWOUT CONTROL SYSTEM

encana

Well Name and Number:
Lybrook L29-2307 03H

