

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 Encana, Well Name and Number Lybrook P31-2307#1H

API# 30.043.21229, Section 31, Township 23 N/S, Range 7 E/W

Conditions of Approval:

(See the below checked and handwritten conditions)

- ☒ Notify Aztec OCD 24hrs prior to casing & cement.
- ☒ Hold C-104 for directional survey & "As Drilled" Plat
- ☒ Hold C-104 for NSL NSP, DHC
- ☐ Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned
- ☐ Regarding the use of a pit, closed loop system or below grade tank, the operator must comply with the following as applicable:
 - A pit requires a complete C-144 be submitted and approved prior to the construction or use of the pit, pursuant to 19.15.17.8.A
 - A closed loop system requires notification prior to use, pursuant to 19.15.17.9.A
 - A below grade tank requires a registration be filed prior to the construction or use of the below grade tank, pursuant to 19.15.17.8.C
- ☐ Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
- ☒ Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.

Charles X. Pen
NMOCD Approved by Signature

6-26-2014
Date

FIDENTIAL

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

APPLICATION FOR PERMIT TO DRILL OR REENTER

NOV 01 2014

Lease Serial No.
NM NM 89023

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

1a. Type of work: ☒ DRILL ☐ REENTER

Forming Unit on
Bureau of Land Management

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

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

8. Lease Name and Well No.
Lybrook P31-2307 01H

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

9. API Well No.
30-043-21229

3a. Address 370 17th Street, Suite 1700, Denver, CO
80202

3b. Phone No. (include area code)
303-876-3448

10. Field and Pool, or Exploratory
Basin Mancos

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

At surface 489' FSL and 561' FEL in Section 31, T23N, R7W SESE

11. Sec., T. R. M. or Blk. and Survey or Area
Section 31, T23N, R7W NMPM

At proposed prod. zone 330' FSL and 2230' FEL in Section 6, T22N, R7W SUSE

SHL

BHL

Sec 6, T22N, R7W

14. Distance in miles and direction from nearest town or post office*
+/- 47.7 miles from the intersection of US Hwy 550 and US Hwy 64 in Bloomfield, NM

12. County or Parish
Sandoval

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)
BHL is 330' FSL in Section 6

16. No. of acres in lease
NM NM 89023- 924.88
acres

17. Spacing Unit dedicated to this well
643.40 acres all of Section 6

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
Lybrook P31-2307 03H is +/- 30' SW

19. Proposed Depth
4820' TVD, 11346' MD

20. BLM/BIA Bond No. on file
COB 000235

OIL CONS. DIV DIST. 3

JUN 18 2014

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
GL 6821', KB 6837'

22. Approximate date work will start*
10/08/2014

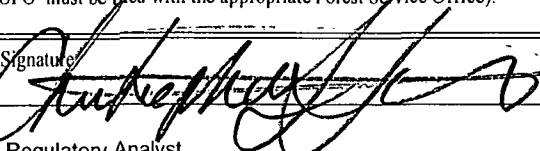
23. Estimated duration
20 Days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, must be attached to this form:

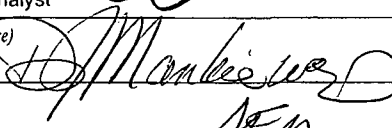
1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).

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 
Title Regulatory Analyst

Name (Printed/Typed)
Christopher Simmons

Date
01/17/14

Approved by (Signature) 
Title AEM

Name (Printed/Typed)
Office PFD

Date
6/12/14

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

BLM'S APPROVAL OR ACCEPTANCE OF THIS

(Continued on page 2)

ACTION DOES NOT RELIEVE THE LESSEE 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"**

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

NMOCDA

District I
1625 N. French Drive, Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

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

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised August 1, 2011

Submit one copy to
Appropriate District Office

OIL CONSERVATION DIVISION

1220 South St. Francis Drive
Santa Fe, NM 87505

AMENDED REPORT
RECEIVED

WELL LOCATION AND ACREAGE DEDICATION PLAT

MAY 01 2014

API Number 30-043-21229	Pool Code 97232	Pool Name BASIN MANCOS
Property Code 313411	Property Name LYBROOK P31-2307	Well Number 01H
GRID No. 282327	Operator Name ENCANA OIL & GAS (USA) INC.	Elevation 6821'

10 Surface Location

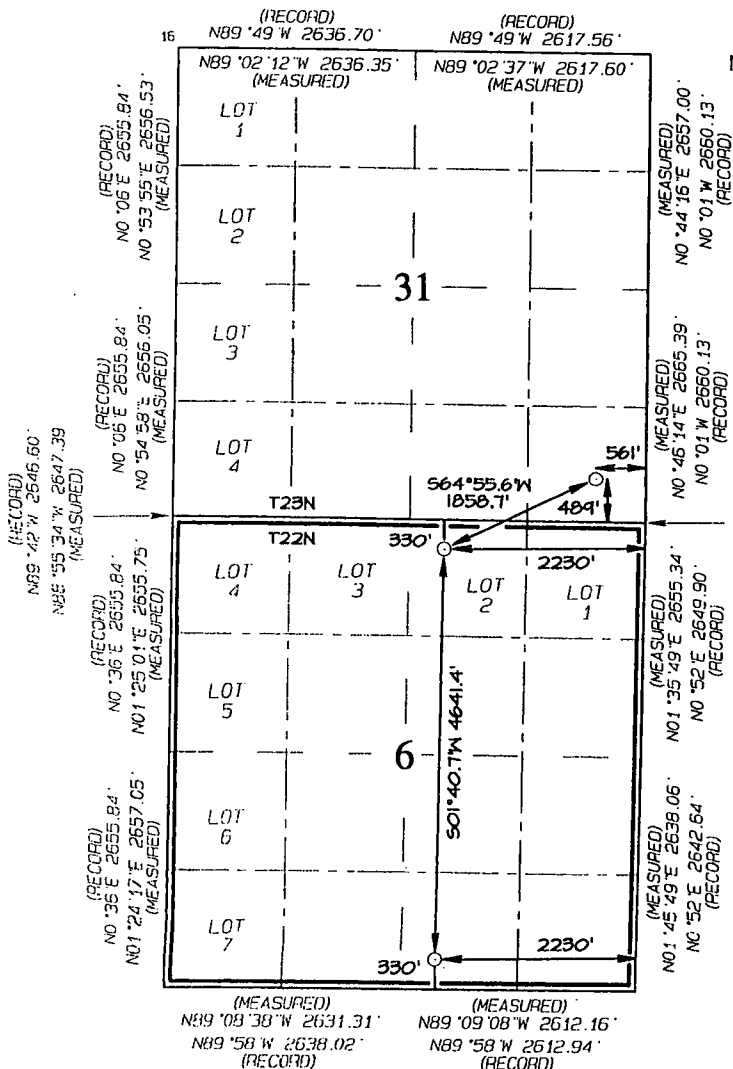
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	31	23N	7W		489	SOUTH	561	EAST	SANDOVAL

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
0	6	22N	7W		330	SOUTH	2230	EAST	SANDOVAL

Dedicated Acres 643.40 Acres Entire Section 6	Joint or Infill	Consolidation Code	Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION
UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A
NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



SURFACE LOCATION
489' FSL 561' FEL
SECTION 31, T23N, R7W
LAT: 36.17731°N
LONG: 107.60781°W
DATUM: NAD1927
LAT: 36.17733°N
LONG: 107.60842°W
DATUM: NAD1983

POINT-OF-ENTRY
330' FSL 2230' FEL
SECTION 6, T22N, R7W
LAT: 36.17508°N
LONG: 107.61348°W
DATUM: NAD1927

END-OF-LATERAL
330' FSL 2230' FEL
SECTION 6, T22N, R7W
LAT: 36.16234°N
LONG: 107.61372°W
DATUM: NAD1927

LAT: 36.16235°N
LONG: 107.61432°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 a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature: Holly Hill Date: 4/17/14
Printed Name: Holly Hill
E-mail Address: Holly.Hill@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.

Survey Date: OCTOBER 3, 2013
Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number: 15269

Lybrook P31-2307 01H
SHL: SESE Sec 31 T23N R7W
489' FSL, 561' FEL
BHL: SWSE Sec 6 T22N R7W
330' FSL, 2230' FEL
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.	716
Kirtland Shale	911
Fruitland Coal	1,177
Pictured Cliffs Ss.	1,301
Lewis Shale	1,417
Cliffhouse Ss.	2,070
Menefee Fn.	2,860
Point Lookout Ss.	3,685
Mancos Shale	3,867
Mancos Silt	4,387
Gallup Fn.	4,640

The referenced surface elevation is 6821', KB 6837'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,177
Oil/Gas	Pictured Cliffs Ss.	1,301
Oil/Gas	Cliffhouse Ss.	2,070
Gas	Menefee Fn.	2,860
Oil/Gas	Point Lookout Ss.	3,685
Oil/Gas	Mancos Shale	3,867
Oil/Gas	Mancos Silt	4,387
Oil/Gas	Gallup Fn.	4,640

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 P31-2307 01H

SHL: SESE Sec 31 T23N R7W

489' FSL, 561' FEL

BHL: SWSE Sec 6 T22N R7W

330' FSL, 2230' FEL

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'-6610'	8 3/4"	7"	26#	J55, LTC New
Production Liner	6410'-11346'	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 P31-2307 01H
SHL: SESE Sec 31 T23N R7W
489' FSL, 561' FEL
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330' FSL, 2230' FEL
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'-6610'	30% open hole excess Stage 1 Lead: 259 sks Stage 1 Tail: 581 sks Stage 2 Lead: 128 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	6410'-11346'	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 4335'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	4820'/11346'	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'-4887'/6610'	Fresh Water LSND	9.5-8.8	40-50	8-10

Lybrook P31-2307 01H

SHL: SESE Sec 31 T23N R7W

489' FSL, 561' FEL

BHL: SWSE Sec 6 T22N R7W

330' FSL, 2230' FEL

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"	4887'/6610'- 4820'/11346'	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 +/- 2292 psi based on a 9.0 ppg at 4897' 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: NW/4 NE/4 Sec 6 T22N R7W, 330' F			Encana Natural Gas			ENG: S Kuykendall 4/14/14		
County: Sandoval			WELL SUMMARY			RIG: Aztec 950		
WELL: Lybrook P31-2307 01H						GLE: 6821		
						RKBE: 6837		
MWD	OPEN HOLE	FORM	DEPTH		HOLE SIZE	CASING	MW	DEVIATION
LWD	LOGGING		TVD	MD		SPECS	MUD TYPE	INFORMATION
			60	60'	30	20" 94# 100sx Type I Neat 16.0ppg cmt	Fresh wtr 8.3-9.2	
Multi-Well pad - take survey every stand and run anti-collision report prior to spud	None	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	716 911 1,177 1,301 1,417 2,070 2,860 3,685 3,867		8 3/4	7" 26ppf J55 LTC TOC @ surface 30% OH excess: 839 sksTotal. Stage 1 Lead: 259 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: 581 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. Stage 2: 128 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	4,335 4,387 4,640 4,887	4,335.2 6,610.0	6 1/8	200' overlap at liner top 4736' Drilled Lateral 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	Horizontal Inclination Horizontal TVD Switch to OBM 8.6-9.0	Horiz Inc/TVD /90.8 deg TD = 11,345.7 MD
Surveys every stand to TD unless directed otherwise by Geologist	No OH Logs	Horizontal Target TD Base Gallup	4,897 4,820 4,971	11,345.7				
MWD Gamma Directional								

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 4335', 8 3/4 inch holesize
- 5) PU directional tools and start curve at 10deg/100' build rate
- 6) Drill to csg point of 6610' MD
- 7) R&C 7" csg, circ cmt to surface, switch to OBM
- 8) Land at 90 deg, drill lateral to 11346' 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

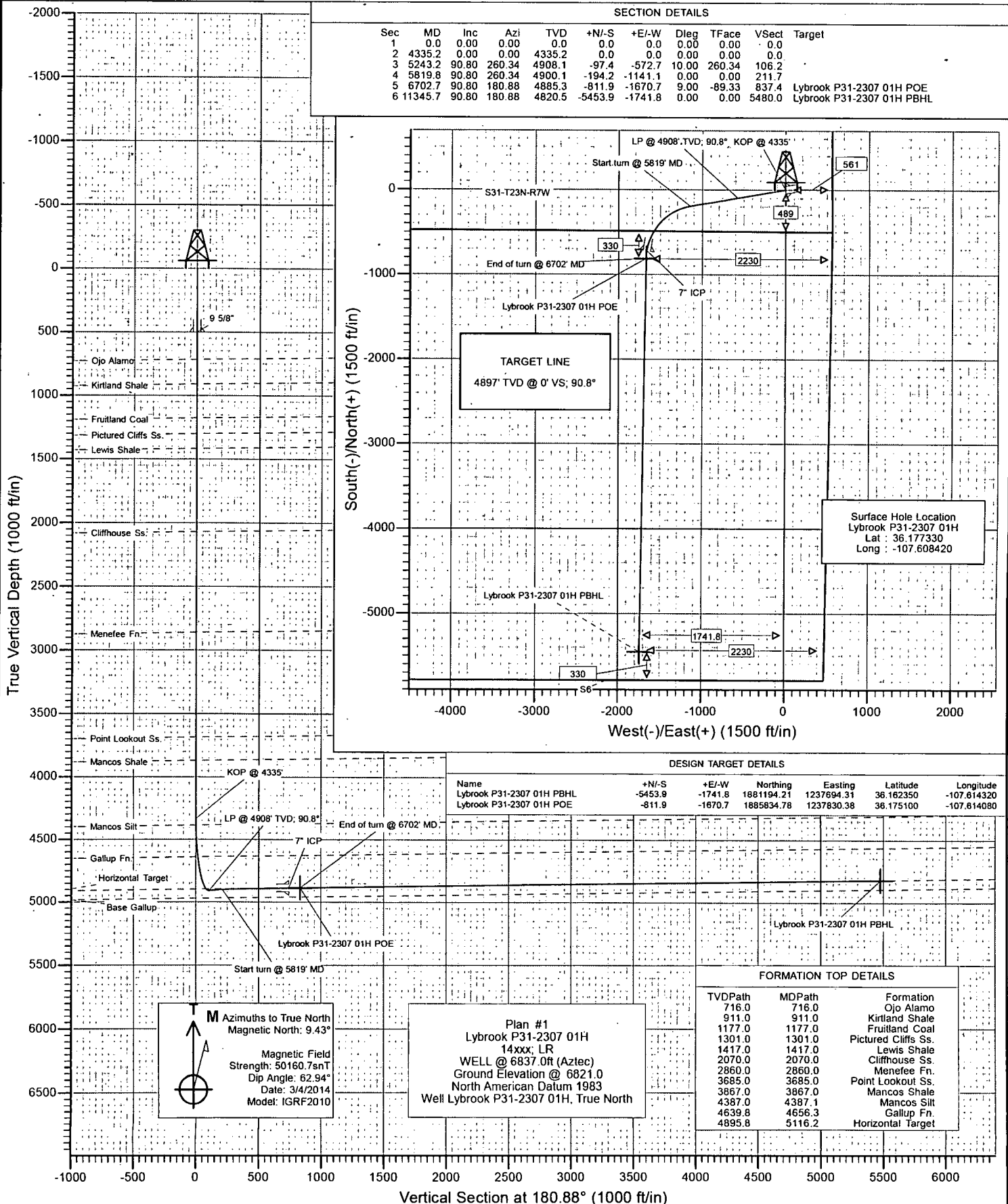
Drilling Mud Weight (ppg)	_____	9.625
Tension Safety Factor	_____	1.80
Maximum Tension Length (ft)	_____	9,630
Internal Yield Safety Factor	_____	1.10
Maximum Depth for Internal Yield (ft)	_____	14,150
Collapse Safety Factor	_____	1.125
Maximum Collapse Depth (ft)	_____	11,290

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



Project: Sandoval County, NM
 Site: S31-T23N-R7W
 Well: Lybrook P31-2307 01H
 Wellbore: Hz
 Design: Plan #1



Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook P31-2307 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD-Reference:	WELL @ 6837.0ft (Aztec)
Project:	Sandoval County, NM	MD Reference:	WELL @ 6837.0ft (Aztec)
Site:	S31-T23N-R7W	North Reference:	True
Well:	Lybrook P31-2307 01H	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 S31-T23N-R7W						
Site Position:		Northing:	1,890,125.34 ft	Latitude:	36.186880	
From:	Lat/Long	Easting:	1,237,740.16 ft	Longitude:	-107.614590	
Position Uncertainty:		0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-0.81 °

Well	Lybrook P31-2307 01H					
Well Position	+N/-S	0.0 ft	Northing:	1,886,623.16 ft	Latitude:	36.177330
	+E/-W	0.0 ft	Easting:	1,239,512.32 ft	Longitude:	-107.608420
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,821.0 ft	

Wellbore	Hz
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/4/2014	9.43	62.94	50,161

Design	Plan #1
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Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	180.88

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,335.2	0.00	0.00	4,335.2	0.0	0.0	0.00	0.00	0.00	0.00	
5,243.2	90.80	260.34	4,908.1	-97.4	-572.7	10.00	10.00	0.00	260.34	
5,819.8	90.80	260.34	4,900.1	-194.2	-1,141.1	0.00	0.00	0.00	0.00	
6,702.7	90.80	180.88	4,885.3	-811.9	-1,670.7	9.00	0.00	-9.00	-89.33	Lybrook P31-2307 01
11,345.7	90.80	180.88	4,820.5	-5,453.9	-1,741.8	0.00	0.00	0.00	0.00	Lybrook P31-2307 01

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook P31-2307 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 6837.0ft (Aztec)
Project:	Sandoval County, NM	MD Reference:	WELL @ 6837.0ft (Aztec)
Site:	S31-T23N-R7W	North Reference:	True
Well:	Lybrook P31-2307 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	9 5/8"
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
716.0	0.00	0.00	716.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	
911.0	0.00	0.00	911.0	0.0	0.0	0.0	0.00	0.00	Kirtland Shale
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	
1,177.0	0.00	0.00	1,177.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
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	
1,301.0	0.00	0.00	1,301.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs Ss.
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	
1,417.0	0.00	0.00	1,417.0	0.0	0.0	0.0	0.00	0.00	Lewis Shale
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	
1,700.0	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	
2,070.0	0.00	0.00	2,070.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss.
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	
2,400.0	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	
2,860.0	0.00	0.00	2,860.0	0.0	0.0	0.0	0.00	0.00	Menefee Fn.
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	
3,685.0	0.00	0.00	3,685.0	0.0	0.0	0.0	0.00	0.00	Point Lookout Ss.
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	
3,867.0	0.00	0.00	3,867.0	0.0	0.0	0.0	0.00	0.00	Mancos Shale
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook P31-2307 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 6837.0ft (Aztec)
Project:	Sandoval County, NM	MD Reference:	WELL @ 6837.0ft (Aztec)
Site:	S31-T23N-R7W	North Reference:	True
Well:	Lybrook P31-2307 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	
4,335.2	0.00	0.00	4,335.2	0.0	0.0	0.0	0.00	0.00	KOP @ 4335'
4,387.1	5.19	260.34	4,387.0	-0.4	-2.3	0.4	10.00	10.00	Mancos Silt
4,400.0	6.48	260.34	4,399.9	-0.6	-3.6	0.7	10.00	10.00	
4,500.0	16.48	260.34	4,497.7	-3.9	-23.2	4.3	10.00	10.00	
4,600.0	26.48	260.34	4,590.7	-10.1	-59.3	11.0	10.00	10.00	
4,656.3	32.11	260.34	4,639.8	-14.7	-86.4	16.0	10.00	10.00	Gallup Fn.
4,700.0	36.48	260.34	4,675.8	-18.8	-110.7	20.5	10.00	10.00	
4,800.0	46.48	260.34	4,750.7	-29.9	-175.9	32.6	10.00	10.00	
4,900.0	56.48	260.34	4,812.9	-43.0	-252.9	46.9	10.00	10.00	
5,000.0	66.48	260.34	4,860.6	-57.8	-339.4	63.0	10.00	10.00	
5,100.0	76.48	260.34	4,892.3	-73.6	-432.8	80.3	10.00	10.00	
5,116.2	78.10	260.34	4,895.8	-76.3	-448.3	83.2	10.00	10.00	Horizontal Target
5,200.0	86.48	260.34	4,907.1	-90.2	-530.2	98.3	10.00	10.00	
5,243.2	90.80	260.34	4,908.1	-97.4	-572.7	106.2	10.00	10.00	LP @ 4908' TVD; 90.8°
5,300.0	90.80	260.34	4,907.3	-107.0	-628.7	116.6	0.00	0.00	
5,400.0	90.80	260.34	4,905.9	-123.8	-727.3	134.9	0.00	0.00	
5,500.0	90.80	260.34	4,904.5	-140.5	-825.9	153.2	0.00	0.00	
5,600.0	90.80	260.34	4,903.1	-157.3	-924.4	171.5	0.00	0.00	
5,700.0	90.80	260.34	4,901.7	-174.1	-1,023.0	189.8	0.00	0.00	
5,800.0	90.80	260.34	4,900.3	-190.8	-1,121.6	208.0	0.00	0.00	
5,819.8	90.80	260.34	4,900.1	-194.2	-1,141.1	211.7	0.00	0.00	Start turn @ 5819' MD
5,900.0	90.88	253.13	4,898.9	-212.6	-1,219.1	231.2	9.00	0.10	
6,000.0	90.95	244.13	4,897.3	-249.0	-1,312.1	269.1	9.00	0.08	
6,100.0	91.01	235.12	4,895.6	-299.5	-1,398.3	320.9	9.00	0.05	
6,200.0	91.03	226.12	4,893.8	-362.8	-1,475.5	385.4	9.00	0.03	
6,300.0	91.04	217.12	4,892.0	-437.5	-1,541.8	461.1	9.00	0.00	
6,400.0	91.02	208.12	4,890.2	-521.6	-1,595.7	546.1	9.00	-0.02	
6,500.0	90.97	199.12	4,888.5	-613.1	-1,635.7	638.2	9.00	-0.05	
6,600.0	90.90	190.12	4,886.8	-709.8	-1,660.9	735.2	9.00	-0.07	
6,610.0	90.89	189.22	4,886.7	-719.6	-1,662.6	745.1	9.00	-0.08	7" ICP
6,700.0	90.80	181.12	4,885.3	-809.2	-1,670.7	834.8	9.00	-0.09	
6,702.7	90.80	180.88	4,885.3	-811.9	-1,670.7	837.4	9.00	-0.10	End of turn @ 6702' MD
6,800.0	90.80	180.88	4,883.9	-909.2	-1,672.2	934.7	0.00	0.00	
6,900.0	90.80	180.88	4,882.5	-1,009.1	-1,673.8	1,034.7	0.00	0.00	
7,000.0	90.80	180.88	4,881.1	-1,109.1	-1,675.3	1,134.7	0.00	0.00	
7,100.0	90.80	180.88	4,879.8	-1,209.1	-1,676.8	1,234.7	0.00	0.00	
7,200.0	90.80	180.88	4,878.4	-1,309.1	-1,678.3	1,334.7	0.00	0.00	
7,300.0	90.80	180.88	4,877.0	-1,409.1	-1,679.9	1,434.7	0.00	0.00	
7,400.0	90.80	180.88	4,875.6	-1,509.0	-1,681.4	1,534.7	0.00	0.00	
7,500.0	90.80	180.88	4,874.2	-1,609.0	-1,682.9	1,634.7	0.00	0.00	
7,600.0	90.80	180.88	4,872.8	-1,709.0	-1,684.5	1,734.7	0.00	0.00	
7,700.0	90.80	180.88	4,871.4	-1,809.0	-1,686.0	1,834.7	0.00	0.00	
7,800.0	90.80	180.88	4,870.0	-1,909.0	-1,687.5	1,934.6	0.00	0.00	
7,900.0	90.80	180.88	4,868.6	-2,008.9	-1,689.1	2,034.6	0.00	0.00	
8,000.0	90.80	180.88	4,867.2	-2,108.9	-1,690.6	2,134.6	0.00	0.00	
8,100.0	90.80	180.88	4,865.8	-2,208.9	-1,692.1	2,234.6	0.00	0.00	
8,200.0	90.80	180.88	4,864.4	-2,308.9	-1,693.7	2,334.6	0.00	0.00	
8,300.0	90.80	180.88	4,863.0	-2,408.8	-1,695.2	2,434.6	0.00	0.00	
8,400.0	90.80	180.88	4,861.6	-2,508.8	-1,696.7	2,534.6	0.00	0.00	
8,500.0	90.80	180.88	4,860.2	-2,608.8	-1,698.3	2,634.6	0.00	0.00	
8,600.0	90.80	180.88	4,858.8	-2,708.8	-1,699.8	2,734.6	0.00	0.00	

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook P31-2307 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 6837.0ft (Aztec)
Project:	Sandoval County, NM	MD Reference:	WELL @ 6837.0ft (Aztec)
Site:	S31-T23N-R7W	North Reference:	True
Well:	Lybrook P31-2307-01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
8,700.0	90.80	180.88	4,857.4	-2,808.8	-1,701.3	2,834.6	0.00	0.00	
8,800.0	90.80	180.88	4,856.0	-2,908.7	-1,702.9	2,934.5	0.00	0.00	
8,900.0	90.80	180.88	4,854.6	-3,008.7	-1,704.4	3,034.5	0.00	0.00	
9,000.0	90.80	180.88	4,853.2	-3,108.7	-1,705.9	3,134.5	0.00	0.00	
9,100.0	90.80	180.88	4,851.8	-3,208.7	-1,707.4	3,234.5	0.00	0.00	
9,200.0	90.80	180.88	4,850.4	-3,308.7	-1,709.0	3,334.5	0.00	0.00	
9,300.0	90.80	180.88	4,849.0	-3,408.6	-1,710.5	3,434.5	0.00	0.00	
9,400.0	90.80	180.88	4,847.6	-3,508.6	-1,712.0	3,534.5	0.00	0.00	
9,500.0	90.80	180.88	4,846.2	-3,608.6	-1,713.6	3,634.5	0.00	0.00	
9,600.0	90.80	180.88	4,844.8	-3,708.6	-1,715.1	3,734.5	0.00	0.00	
9,700.0	90.80	180.88	4,843.4	-3,808.5	-1,716.6	3,834.5	0.00	0.00	
9,800.0	90.80	180.88	4,842.1	-3,908.5	-1,718.2	3,934.5	0.00	0.00	
9,900.0	90.80	180.88	4,840.7	-4,008.5	-1,719.7	4,034.4	0.00	0.00	
10,000.0	90.80	180.88	4,839.3	-4,108.5	-1,721.2	4,134.4	0.00	0.00	
10,100.0	90.80	180.88	4,837.9	-4,208.5	-1,722.8	4,234.4	0.00	0.00	
10,200.0	90.80	180.88	4,836.5	-4,308.4	-1,724.3	4,334.4	0.00	0.00	
10,300.0	90.80	180.88	4,835.1	-4,408.4	-1,725.8	4,434.4	0.00	0.00	
10,400.0	90.80	180.88	4,833.7	-4,508.4	-1,727.4	4,534.4	0.00	0.00	
10,500.0	90.80	180.88	4,832.3	-4,608.4	-1,728.9	4,634.4	0.00	0.00	
10,600.0	90.80	180.88	4,830.9	-4,708.4	-1,730.4	4,734.4	0.00	0.00	
10,700.0	90.80	180.88	4,829.5	-4,808.3	-1,732.0	4,834.4	0.00	0.00	
10,800.0	90.80	180.88	4,828.1	-4,908.3	-1,733.5	4,934.4	0.00	0.00	
10,900.0	90.80	180.88	4,826.7	-5,008.3	-1,735.0	5,034.3	0.00	0.00	
11,000.0	90.80	180.88	4,825.3	-5,108.3	-1,736.5	5,134.3	0.00	0.00	
11,100.0	90.80	180.88	4,823.9	-5,208.2	-1,738.1	5,234.3	0.00	0.00	
11,200.0	90.80	180.88	4,822.5	-5,308.2	-1,739.6	5,334.3	0.00	0.00	
11,300.0	90.80	180.88	4,821.1	-5,408.2	-1,741.1	5,434.3	0.00	0.00	
11,345.7	90.80	180.88	4,820.5	-5,453.9	-1,741.8	5,480.0	0.00	0.00	TD at 11345.7

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Lybrook P31-2307 01H f - hit/miss target - Shape - Point	0.00	0.00	4,820.5	-5,453.9	-1,741.8	1,881,194.21	1,237,694.31	36.162350	-107.614320
Lybrook P31-2307 01H f - plan hits target center - Point	0.00	0.00	4,885.3	-811.9	-1,670.7	1,885,834.78	1,237,830.38	36.175100	-107.614080

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
500.0	500.0	9 5/8"	0.000	0.000	
6,610.0	4,886.7	7" ICP	0.000	0.000	

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook P31-2307 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 6837.0ft (Aztec)
Project:	Sandoval County, NM	MD Reference:	WELL @ 6837.0ft (Aztec)
Site:	S31-T23N-R7W	North Reference:	True
Well:	Lybrook P31-2307 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan.#1		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
716.0	716.0	Ojo Alamo		-0.80	180.88	
911.0	911.0	Kirtland Shale		-0.80	180.88	
1,177.0	1,177.0	Fruitland Coal		-0.80	180.88	
1,301.0	1,301.0	Pictured Cliffs Ss.		-0.80	180.88	
1,417.0	1,417.0	Lewis Shale		-0.80	180.88	
2,070.0	2,070.0	Cliffhouse Ss.		-0.80	180.88	
2,860.0	2,860.0	Menefee Fn.		-0.80	180.88	
3,685.0	3,685.0	Point Lookout Ss.		-0.80	180.88	
3,867.0	3,867.0	Mancos Shale		-0.80	180.88	
4,387.1	4,387.0	Mancos Silt		-0.80	180.88	
4,656.3	4,640.0	Gallup Fn.		-0.80	180.88	
5,116.2	4,897.0	Horizontal Target		-0.80	180.88	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
4,335.2	4,335.2	0.0	0.0	KOP @ 4335'	
5,243.2	4,908.1	-97.4	-572.7	LP @ 4908' TVD; 90.8°	
5,819.8	4,900.1	-194.2	-1,141.1	Start turn @ 5819' MD	
6,702.7	4,885.3	-811.9	-1,670.7	End of turn @ 6702' MD	
11,345.7	4,820.5	-5,453.9	-1,741.8	TD at 11345.7	

EnCana Oil & Gas (USA) Inc

Sandoval County, NM

S31-T23N-R7W

Lybrook P31-2307 01H

Hz

Plan #1

Anticollision Report

05 March, 2014

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook P31-2307 01H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 6837.0ft (Aztec)
Reference Site:	S31-T23N-R7W	MD Reference:	WELL @ 6837.0ft (Aztec)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook P31-2307 01H	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:	GLOBAL FILTER APPLIED: All wellpaths within 200' + 100/1000 of reference		
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 1,334.6ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date	3/5/2014
From (ft)	To (ft)	Survey (Wellbore)
0.0	11,345.5	Plan #1 (Hz)
		Tool Name
		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						
S30-T23N-R7W						
Lybrook O30-2307 01H - Hz - Plan #1	6,190.7	10,433.7	278.6	167.3	2.505	CC
Lybrook O30-2307 01H - Hz - Plan #1	6,200.0	10,433.7	278.8	166.8	2.489	ES, SF
Lybrook O30-2307 02H - Hz - Plan #1	5,422.8	10,289.9	3.7	19.6	0.160	Level 1, CC, ES, SF
Lybrook O30-2307 03H - Hz - Plan #1	4,600.0	10,337.2	389.7	297.0	4.205	SF
Lybrook O30-2307 03H - Hz - Plan #1	4,700.0	10,344.6	360.3	276.3	4.287	ES
Lybrook O30-2307 03H - Hz - Plan #1	4,718.4	10,346.2	359.6	277.4	4.375	CC
S31-T23N-R7W						
Lybrook P31-2307 03H - Hz - Plan #1	3,299.9	3,301.1	18.0	6.5	1.568	CC
Lybrook P31-2307 03H - Hz - Plan #1	3,300.0	3,301.2	18.0	6.5	1.568	ES, SF

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	Local Co-ordinate Reference:	Well Lybrook P31-2307 01H
Project:	Sandoval County, NM.	TVD Reference:	WELL @ 6837.0ft (Aztec)
Reference Site:	S31-T23N-R7W	MD Reference:	WELL @ 6837.0ft (Aztec)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook P31-2307 01H	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 : S30-T23N-R7W - Lybrook O30-2307 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		Reference	Offset	Highside	Offset Wellbore Centre		Distance		Total	Separation	Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	(ft)	(ft)	Toolface (°)	N-S (ft)	E-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Factor			
5,000.0	4,860.6	10,339.8	5,097.6	11.6	96.3	24.31	-59.1	-1,658.9	1,320.0	1,264.4	55.60	23.740			
5,100.0	4,892.3	10,355.2	5,097.3	13.4	96.5	36.23	-74.4	-1,658.9	1,226.1	1,178.2	47.98	25.556			
5,200.0	4,907.1	10,371.5	5,097.1	15.3	96.8	66.97	-90.7	-1,658.9	1,128.8	1,079.6	49.22	22.935			
5,300.0	4,907.3	10,388.2	5,096.8	17.5	97.1	90.55	-107.4	-1,658.9	1,030.3	977.0	53.30	19.328			
5,400.0	4,905.9	10,404.9	5,096.6	19.7	97.4	90.53	-124.1	-1,658.9	931.7	876.1	55.55	16.771			
5,500.0	4,904.5	10,421.6	5,096.3	21.9	97.7	90.50	-140.8	-1,658.9	833.1	775.2	57.86	14.400			
5,600.0	4,903.1	10,433.7	5,096.1	24.2	97.9	90.47	-152.9	-1,658.9	734.5	674.3	60.18	12.205			
5,700.0	4,901.7	10,433.7	5,096.1	26.5	97.9	90.47	-152.9	-1,658.9	636.3	573.8	62.51	10.180			
5,800.0	4,900.3	10,433.7	5,096.1	28.9	97.9	90.47	-152.9	-1,658.9	538.7	473.8	64.85	8.307			
5,900.0	4,898.9	10,433.7	5,096.1	31.2	97.9	90.43	-152.9	-1,658.9	443.8	366.8	77.06	5.760			
6,000.0	4,897.3	10,433.7	5,096.1	33.4	97.9	90.31	-152.9	-1,658.9	359.9	269.2	90.69	3.968			
6,100.0	4,895.6	10,433.7	5,096.1	35.5	97.9	90.17	-152.9	-1,658.9	299.0	196.5	102.49	2.917			
6,190.7	4,894.0	10,433.7	5,096.1	37.2	97.9	90.03	-152.9	-1,658.9	278.6	167.3	111.21	2.505 CC			
6,200.0	4,893.8	10,433.7	5,096.1	37.4	97.9	90.01	-152.9	-1,658.9	278.8	166.8	111.99	2.489 ES, SF			
6,300.0	4,892.0	10,433.7	5,096.1	39.0	97.9	89.85	-152.9	-1,658.9	307.8	188.9	118.87	2.589			
6,400.0	4,890.2	10,433.7	5,096.1	40.4	97.9	89.67	-152.9	-1,658.9	374.1	251.2	122.92	3.044			
6,500.0	4,888.5	10,433.7	5,096.1	41.6	97.9	89.48	-152.9	-1,658.9	460.9	336.8	124.05	3.715			
6,600.0	4,886.8	10,433.7	5,096.1	42.4	97.9	89.22	-152.9	-1,658.9	557.0	434.7	122.29	4.555			
6,700.0	4,885.3	10,433.7	5,096.1	43.1	97.9	86.50	-152.9	-1,658.9	656.5	547.2	109.29	6.007			
6,800.0	4,883.9	10,433.7	5,096.1	43.7	97.9	-77.01	-152.9	-1,658.9	756.5	640.7	115.83	6.531			
6,900.0	4,882.5	10,433.7	5,096.1	44.4	97.9	-77.01	-152.9	-1,658.9	856.5	739.2	117.25	7.305			
7,000.0	4,881.1	10,433.7	5,096.1	45.1	97.9	-77.01	-152.9	-1,658.9	956.5	837.8	118.70	8.058			
7,100.0	4,879.8	10,433.7	5,096.1	45.8	97.9	-77.01	-152.9	-1,658.9	1,056.5	936.3	120.18	8.791			
7,200.0	4,878.4	10,433.7	5,096.1	46.6	97.9	-77.01	-152.9	-1,658.9	1,156.5	1,034.8	121.69	9.503			
7,300.0	4,877.0	10,433.7	5,096.1	47.5	97.9	-77.01	-152.9	-1,658.9	1,256.5	1,133.3	123.23	10.196			

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	Local Co-ordinate Reference:	Well Lybrook P31-2307 01H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 6837.0ft (Aztec)
Reference Site:	S31-T23N-R7W	MD Reference:	WELL @ 6837.0ft (Aztec)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook P31-2307 01H	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 S30-T23N-R7W - Lybrook O30-2307 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		
3,800.0	3,800.0	10,180.2	5,105.6	6.6	93.7	-91.36	-17.8	-749.8	1,334.3	1,306.5	27.88	47.867		
3,900.0	3,900.0	10,178.6	5,105.6	6.8	93.7	-91.24	-16.2	-749.8	1,252.9	1,224.7	28.17	44.473		
4,000.0	4,000.0	10,177.1	5,105.6	7.0	93.6	-91.12	-14.6	-749.8	1,174.3	1,145.8	28.47	41.250		
4,100.0	4,100.0	10,175.5	5,105.7	7.1	93.6	-91.00	-13.1	-749.8	1,099.2	1,070.5	28.77	38.213		
4,200.0	4,200.0	10,173.9	5,105.7	7.3	93.6	-90.88	-11.5	-749.8	1,028.4	999.3	29.06	35.383		
4,300.0	4,300.0	10,172.3	5,105.7	7.5	93.5	-90.76	-9.9	-749.8	962.7	933.3	29.36	32.786		
4,400.0	4,399.9	10,171.4	5,105.7	7.7	93.5	9.82	-9.0	-749.8	900.4	799.9	100.58	8.952		
4,500.0	4,497.7	10,173.2	5,105.7	7.8	93.6	11.37	-10.8	-749.8	832.4	734.8	97.52	8.535		
4,600.0	4,590.7	10,177.8	5,105.6	8.1	93.6	13.22	-15.4	-749.8	758.2	666.4	91.80	8.260		
4,700.0	4,675.8	10,185.2	5,105.5	8.5	93.8	15.53	-22.8	-749.8	678.5	594.9	83.64	8.112		
4,800.0	4,750.7	10,195.1	5,105.3	9.2	93.9	18.53	-32.7	-749.8	593.9	520.4	73.47	8.084		
4,900.0	4,812.9	10,207.2	5,105.2	10.2	94.2	22.68	-44.8	-749.8	505.0	443.1	61.90	8.159		
5,000.0	4,860.6	10,221.1	5,104.9	11.6	94.4	28.98	-58.7	-749.8	412.6	362.6	50.01	8.250		
5,100.0	4,892.3	10,236.4	5,104.7	13.4	94.7	40.00	-74.0	-749.8	317.2	277.3	39.83	7.963		
5,200.0	4,907.1	10,252.7	5,104.4	15.3	95.0	64.02	-90.3	-749.8	219.7	183.7	35.95	6.111		
5,300.0	4,907.3	10,269.4	5,104.2	17.5	95.2	80.32	-107.0	-749.8	121.2	82.5	38.71	3.130		
5,400.0	4,905.9	10,286.1	5,103.9	19.7	95.5	45.98	-123.7	-749.8	22.8	-9.9	32.68	0.699 Level 1		
5,422.8	4,905.6	10,289.9	5,103.9	20.2	95.6	0.77	-127.5	-749.8	3.7	-19.6	23.32	0.160 Level 1, CC, ES, SF		
5,500.0	4,904.5	10,302.9	5,103.7	21.9	95.8	-72.84	-140.4	-749.8	76.2	32.3	43.84	1.737		
5,600.0	4,903.1	10,319.0	5,103.4	24.2	96.1	-81.77	-156.5	-749.7	174.7	128.0	46.67	3.743		
5,700.0	4,901.7	10,319.0	5,103.4	26.5	96.1	-81.77	-156.5	-749.7	273.8	224.9	48.97	5.592		
5,800.0	4,900.3	10,319.0	5,103.4	28.9	96.1	-81.77	-156.5	-749.7	373.4	322.1	51.29	7.281		
5,900.0	4,898.9	10,319.0	5,103.4	31.2	96.1	-86.81	-156.5	-749.7	472.7	410.2	62.52	7.561		
6,000.0	4,897.3	10,319.0	5,103.4	33.4	96.1	-88.24	-156.5	-749.7	569.9	493.6	76.37	7.463		
6,100.0	4,895.6	10,319.0	5,103.4	35.5	96.1	-88.88	-156.5	-749.7	664.1	575.0	89.15	7.449		
6,200.0	4,893.8	10,319.0	5,103.4	37.4	96.1	-89.29	-156.5	-749.7	754.5	654.4	100.10	7.538		
6,300.0	4,892.0	10,319.0	5,103.4	39.0	96.1	-89.59	-156.5	-749.7	840.5	731.7	108.77	7.727		
6,400.0	4,890.2	10,319.0	5,103.4	40.4	96.1	-89.84	-156.5	-749.7	921.4	806.5	114.89	8.020		
6,500.0	4,888.5	10,319.0	5,103.4	41.6	96.1	-90.06	-156.5	-749.7	996.8	878.5	118.29	8.426		
6,600.0	4,886.8	10,319.0	5,103.4	42.4	96.1	-90.25	-156.5	-749.7	1,066.1	947.1	118.95	8.962		
6,700.0	4,885.3	10,319.0	5,103.4	43.1	96.1	-90.42	-156.5	-749.7	1,128.9	1,011.9	116.99	9.649		
6,800.0	4,883.9	10,319.0	5,103.4	43.7	96.1	-90.42	-156.5	-749.7	1,190.7	1,072.4	118.26	10.068		
6,900.0	4,882.5	10,319.0	5,103.4	44.4	96.1	-90.42	-156.5	-749.7	1,257.4	1,137.7	119.70	10.504		
7,000.0	4,881.1	10,319.0	5,103.4	45.1	96.1	-90.42	-156.5	-749.7	1,328.3	1,207.1	121.19	10.961		

Anticollision Report

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Project:	Sandoval County, NM	TVD Reference:	WELL @ 6837.0ft (Aztec)
Reference Site:	S31-T23N-R7W	MD Reference:	WELL @ 6837.0ft (Aztec)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook P31-2307 01H	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 S30-T23N-R7W - Lybrook O30-2307 03H - 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		Reference		Highside	Offset Wellbore Centre		Distance		Total	Separation	Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	(ft)	(ft)	Toolface (°)	+N-S (ft)	+E-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Factor			
3,600.0	3,600.0	10,342.8	5,113.2	6.3	95.8	97.17	-20.4	162.2	1,321.3	1,268.5	52.80	25.027			
3,700.0	3,700.0	10,341.2	5,113.2	6.4	95.8	96.62	-18.8	162.2	1,222.2	1,170.0	52.22	23.403			
3,800.0	3,800.0	10,339.7	5,113.2	6.6	95.7	96.08	-17.3	162.2	1,123.1	1,071.5	51.65	21.746			
3,900.0	3,900.0	10,338.1	5,113.3	6.8	95.7	95.53	-15.7	162.2	1,024.3	973.2	51.07	20.057			
4,000.0	4,000.0	10,336.5	5,113.3	7.0	95.7	94.98	-14.1	162.2	925.7	875.2	50.49	18.334			
4,100.0	4,100.0	10,334.9	5,113.3	7.1	95.7	94.42	-12.5	162.2	827.5	777.6	49.91	16.579			
4,200.0	4,200.0	10,333.4	5,113.3	7.3	95.6	93.87	-11.0	162.2	729.7	680.3	49.33	14.792			
4,300.0	4,300.0	10,331.8	5,113.4	7.5	95.6	93.32	-9.4	162.2	632.6	583.8	48.75	12.977			
4,400.0	4,399.9	10,330.8	5,113.4	7.7	95.6	-170.78	-8.4	162.2	537.8	436.5	101.23	5.312			
4,500.0	4,497.7	10,332.6	5,113.4	7.8	95.6	-172.72	-10.2	162.2	453.3	354.8	98.55	4.600			
4,600.0	4,590.7	10,337.2	5,113.3	8.1	95.7	-172.94	-14.8	162.2	389.7	297.0	92.67	4.205 SF			
4,700.0	4,675.8	10,344.6	5,113.2	8.5	95.8	-172.15	-22.2	162.2	360.3	276.3	84.04	4.287 ES			
4,718.4	4,690.4	10,346.2	5,113.1	8.6	95.9	-171.90	-23.8	162.2	359.6	277.4	82.19	4.375 CC			
4,800.0	4,750.7	10,354.4	5,113.0	9.2	96.0	-170.35	-32.0	162.2	374.2	301.2	73.02	5.124			
4,900.0	4,812.9	10,366.5	5,112.8	10.2	96.2	-167.07	-44.0	162.2	426.5	366.5	60.06	7.102			
5,000.0	4,860.6	10,380.3	5,112.6	11.6	96.4	-160.89	-57.9	162.2	504.1	458.2	45.93	10.976			
5,100.0	4,892.3	10,395.6	5,112.4	13.4	96.7	-147.30	-73.2	162.2	595.3	562.4	32.90	18.096			
5,200.0	4,907.1	10,411.8	5,112.1	15.3	97.0	-111.29	-89.4	162.3	692.4	661.2	31.18	22.207			
5,300.0	4,907.3	10,428.4	5,111.9	17.5	97.3	-86.38	-106.0	162.3	791.0	755.4	35.57	22.238			
5,400.0	4,905.9	10,445.1	5,111.6	19.7	97.6	-86.70	-122.7	162.3	889.6	851.8	37.77	23.553			
5,500.0	4,904.5	10,461.8	5,111.3	21.9	97.8	-86.95	-139.3	162.3	988.2	948.2	40.03	24.687			
5,600.0	4,903.1	10,478.4	5,111.1	24.2	98.1	-87.15	-156.0	162.3	1,086.8	1,044.5	42.33	25.675			
5,700.0	4,901.7	10,482.6	5,111.0	26.5	98.2	-87.20	-160.2	162.3	1,185.5	1,140.8	44.65	26.550			
5,800.0	4,900.3	10,482.6	5,111.0	28.9	98.2	-87.20	-160.2	162.3	1,284.3	1,237.3	46.99	27.331			

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	Local Co-ordinate Reference:	Well Lybrook P31-2307 01H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 6837.0ft (Aztec)
Reference Site:	S31-T23N-R7W	MD Reference:	WELL @ 6837.0ft (Aztec)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook P31-2307 01H	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 S31-T23N-R7W - Lybrook P31-2307 03H - 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	82.97	3.6	29.5	29.7						
100.0	100.0	100.0	100.0	0.1	0.1	82.97	3.6	29.5	29.7	29.4	0.29	101.431			
200.0	200.0	200.0	200.0	0.3	0.3	82.97	3.6	29.5	29.7	29.1	0.64	46.305			
300.0	300.0	300.0	300.0	0.5	0.5	82.97	3.6	29.5	29.7	28.7	0.99	30.001			
400.0	400.0	400.0	400.0	0.7	0.7	82.97	3.6	29.5	29.7	28.4	1.34	22.188			
500.0	500.0	500.0	500.0	0.8	0.8	82.97	3.6	29.5	29.7	28.1	1.69	17.604			
600.0	600.0	600.0	600.0	1.0	1.0	82.97	3.6	29.5	29.7	27.7	2.04	14.589			
700.0	700.0	700.0	700.0	1.2	1.2	82.97	3.6	29.5	29.7	27.4	2.39	12.456			
800.0	800.0	800.0	800.0	1.4	1.4	82.97	3.6	29.5	29.7	27.0	2.74	10.868			
900.0	900.0	900.0	900.0	1.5	1.5	82.97	3.6	29.5	29.7	26.7	3.09	9.638			
1,000.0	1,000.0	1,000.0	1,000.0	1.7	1.7	82.97	3.6	29.5	29.7	26.3	3.43	8.659			
1,100.0	1,100.0	1,100.0	1,100.0	1.9	1.9	82.97	3.6	29.5	29.7	26.0	3.78	7.860			
1,200.0	1,200.0	1,200.0	1,200.0	2.1	2.1	82.97	3.6	29.5	29.7	25.6	4.13	7.196			
1,300.0	1,300.0	1,300.0	1,300.0	2.2	2.2	82.97	3.6	29.5	29.7	25.3	4.48	6.636			
1,400.0	1,400.0	1,400.0	1,400.0	2.4	2.4	82.97	3.6	29.5	29.7	24.9	4.83	6.156			
1,500.0	1,500.0	1,500.0	1,500.0	2.6	2.6	82.97	3.6	29.5	29.7	24.6	5.18	5.741			
1,600.0	1,600.0	1,600.0	1,600.0	2.8	2.8	82.97	3.6	29.5	29.7	24.2	5.53	5.379			
1,700.0	1,700.0	1,700.0	1,700.0	2.9	2.9	82.97	3.6	29.5	29.7	23.9	5.88	5.059			
1,800.0	1,800.0	1,800.0	1,800.0	3.1	3.1	82.97	3.6	29.5	29.7	23.5	6.23	4.776			
1,900.0	1,900.0	1,900.0	1,900.0	3.3	3.3	82.97	3.6	29.5	29.7	23.2	6.58	4.522			
2,000.0	2,000.0	2,000.0	2,000.0	3.5	3.5	82.97	3.6	29.5	29.7	22.8	6.93	4.294			
2,100.0	2,100.0	2,100.0	2,100.0	3.6	3.6	82.97	3.6	29.5	29.7	22.5	7.27	4.088			
2,200.0	2,200.0	2,200.0	2,200.0	3.8	3.8	82.97	3.6	29.5	29.7	22.1	7.62	3.901			
2,300.0	2,300.0	2,300.0	2,300.0	4.0	4.0	82.97	3.6	29.5	29.7	21.8	7.97	3.730			
2,400.0	2,400.0	2,400.0	2,400.0	4.2	4.2	82.97	3.6	29.5	29.7	21.4	8.32	3.574			
2,500.0	2,500.0	2,500.0	2,500.0	4.3	4.3	82.97	3.6	29.5	29.7	21.1	8.67	3.430			
2,600.0	2,600.0	2,600.0	2,600.0	4.5	4.5	82.97	3.6	29.5	29.7	20.7	9.02	3.297			
2,700.0	2,700.0	2,700.0	2,700.0	4.7	4.7	82.97	3.6	29.5	29.7	20.4	9.37	3.174			
2,800.0	2,800.0	2,800.0	2,800.0	4.9	4.9	82.97	3.6	29.5	29.7	20.0	9.72	3.060			
2,900.0	2,900.0	2,900.0	2,900.0	5.0	5.0	82.97	3.6	29.5	29.7	19.7	10.07	2.954			
3,000.0	3,000.0	3,000.0	3,000.0	5.2	5.2	82.97	3.6	29.5	29.7	19.3	10.42	2.855			
3,100.0	3,100.0	3,101.2	3,101.1	5.4	5.4	86.32	1.8	27.6	27.7	16.9	10.77	2.570			
3,200.0	3,200.0	3,201.8	3,201.4	5.6	5.6	99.81	-3.8	21.9	22.3	11.1	11.12	2.002			
3,299.9	3,299.9	3,301.1	3,299.9	5.7	5.8	135.78	-12.9	12.5	18.0	6.5	11.47	1.568 CC			
3,300.0	3,300.0	3,301.2	3,300.0	5.7	5.8	135.83	-12.9	12.5	18.0	6.5	11.47	1.568 ES, SF			
3,400.0	3,400.0	3,399.1	3,396.2	5.9	6.0	-179.41	-25.3	-0.3	25.6	13.8	11.86	2.161			
3,500.0	3,500.0	3,494.9	3,489.4	6.1	6.2	-158.38	-40.8	-16.2	45.2	32.9	12.29	3.676			
3,600.0	3,600.0	3,588.4	3,579.1	6.3	6.5	-149.41	-59.1	-34.9	71.7	59.0	12.76	5.623			
3,700.0	3,700.0	3,683.7	3,670.1	6.4	6.8	-144.94	-79.1	-55.5	101.1	87.9	13.25	7.630			
3,800.0	3,800.0	3,779.1	3,761.0	6.6	7.2	-142.49	-99.1	-76.0	130.8	117.1	13.77	9.499			
3,900.0	3,900.0	3,874.5	3,852.0	6.8	7.5	-140.95	-119.1	-96.6	160.7	146.4	14.31	11.225			
4,000.0	4,000.0	3,969.9	3,942.9	7.0	7.9	-139.89	-139.1	-117.1	190.6	175.7	14.87	12.814			
4,100.0	4,100.0	4,065.2	4,033.9	7.1	8.3	-139.12	-159.1	-137.7	220.5	205.1	15.45	14.275			
4,200.0	4,200.0	4,160.6	4,124.8	7.3	8.7	-138.53	-179.1	-158.3	250.5	234.5	16.04	15.620			
4,300.0	4,300.0	4,256.0	4,215.8	7.5	9.2	-138.07	-199.1	-178.8	280.5	263.9	16.64	16.859			
4,400.0	4,399.9	4,352.1	4,307.5	7.7	9.6	-37.42	-219.3	-199.5	307.8	292.6	15.21	20.233			
4,500.0	4,497.7	4,450.4	4,401.2	7.8	10.1	-38.35	-239.9	-220.7	322.5	307.1	15.42	20.916			
4,600.0	4,590.7	4,537.4	4,484.0	8.1	10.5	-41.37	-258.6	-239.5	325.0	309.4	15.56	20.881			
4,700.0	4,675.8	4,600.0	4,542.2	8.5	10.9	-45.53	-277.5	-252.7	324.0	308.1	15.83	20.467			
4,728.3	4,698.1	4,617.0	4,557.6	8.7	11.0	-46.97	-283.8	-256.3	323.9	307.9	16.00	20.247			
4,800.0	4,750.7	4,650.0	4,587.0	9.2	11.2	-50.02	-297.2	-263.0	325.3	308.9	16.46	19.760			
4,900.0	4,812.9	4,700.0	4,629.9	10.2	11.6	-55.03	-320.9	-273.0	333.3	315.5	17.74	18.787			

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	Local Co-ordinate Reference:	Well Lybrook P31-2307 01H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 6837.0ft (Aztec)
Reference Site:	S31-T23N-R7W	MD Reference:	WELL @ 6837.0ft (Aztec)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook P31-2307 01H	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: S31-T23N-R7W - Lybrook P31-2307 03H - 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 Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,000.0	4,860.6	4,750.0	4,670.6	11.6	12.0	-59.95		-348.3	-348.3	-282.5	351.7	332.1	19.68	17.872	
5,100.0	4,892.3	4,776.0	4,690.8	13.4	12.3	-60.78		-364.0	-364.0	-287.3	382.1	360.6	21.50	17.773	
5,200.0	4,907.1	4,800.0	4,708.8	15.3	12.5	-60.15		-379.2	-379.2	-291.6	424.0	400.6	23.41	18.112	
5,300.0	4,907.3	4,816.8	4,721.1	17.5	12.7	-60.45		-390.4	-390.4	-294.5	476.1	450.6	25.49	18.680	
5,400.0	4,905.9	4,833.3	4,732.7	19.7	12.8	-62.72		-401.6	-401.6	-297.3	540.5	512.5	27.94	19.344	
5,500.0	4,904.5	4,850.0	4,744.2	21.9	13.0	-64.96		-413.4	-413.4	-300.1	613.7	583.2	30.49	20.130	
5,600.0	4,903.1	4,866.1	4,755.0	24.2	13.2	-67.04		-425.1	-425.1	-302.7	693.0	659.9	33.07	20.954	
5,700.0	4,901.7	4,882.3	4,765.5	26.5	13.3	-69.05		-437.2	-437.2	-305.2	776.5	740.8	35.71	21.748	
5,800.0	4,900.3	4,900.0	4,776.6	28.9	13.5	-71.12		-450.7	-450.7	-307.9	863.1	824.7	38.40	22.475	
5,900.0	4,898.9	4,916.8	4,786.7	31.2	13.7	-76.15		-463.9	-463.9	-310.4	949.4	907.5	41.96	22.629	
6,000.0	4,897.3	4,950.0	4,805.6	33.4	14.1	-80.88		-490.7	-490.7	-315.1	1,030.0	985.1	44.86	22.962	
6,100.0	4,895.6	4,973.8	4,818.2	35.5	14.4	-83.45		-510.7	-510.7	-318.3	1,103.2	1,056.7	46.51	23.721	
6,200.0	4,893.8	5,013.1	4,837.2	37.4	14.9	-85.74		-544.7	-544.7	-323.1	1,168.0	1,120.7	47.32	24.685	
6,300.0	4,892.0	5,059.7	4,856.7	39.0	15.5	-87.49		-586.7	-586.7	-328.2	1,223.3	1,176.1	47.21	25.909	
6,400.0	4,890.2	5,113.4	4,875.0	40.4	16.2	-88.83		-637.0	-637.0	-333.2	1,267.8	1,221.6	46.24	27.420	
6,500.0	4,888.5	5,173.5	4,889.9	41.6	17.0	-89.80		-695.0	-695.0	-337.6	1,300.7	1,256.3	44.44	29.269	
6,600.0	4,886.8	5,238.3	4,899.2	42.4	18.0	-90.41		-759.0	-759.0	-340.8	1,321.1	1,279.2	41.90	31.529	
6,700.0	4,885.3	5,309.1	4,901.3	43.1	19.0	-90.68		-829.7	-829.7	-342.6	1,328.4	1,289.6	38.81	34.225	
6,800.0	4,883.9	5,409.1	4,899.9	43.7	20.5	-90.69		-929.7	-929.7	-344.1	1,328.4	1,286.7	41.64	31.900	
6,900.0	4,882.5	5,509.1	4,898.5	44.4	22.0	-90.69		-1,029.7	-1,029.7	-345.6	1,328.4	1,283.7	44.70	29.718	
7,000.0	4,881.1	5,609.1	4,897.1	45.1	23.6	-90.69		-1,129.7	-1,129.7	-347.2	1,328.4	1,280.6	47.82	27.780	
7,100.0	4,879.8	5,709.1	4,895.7	45.8	25.2	-90.69		-1,229.6	-1,229.6	-348.7	1,328.4	1,277.4	50.98	26.055	
7,200.0	4,878.4	5,809.1	4,894.3	46.6	26.8	-90.69		-1,329.6	-1,329.6	-350.2	1,328.4	1,274.2	54.19	24.512	
7,300.0	4,877.0	5,909.1	4,892.9	47.5	28.4	-90.69		-1,429.6	-1,429.6	-351.7	1,328.4	1,271.0	57.44	23.128	
7,400.0	4,875.6	6,009.1	4,891.5	48.3	30.1	-90.69		-1,529.6	-1,529.6	-353.3	1,328.4	1,267.7	60.71	21.882	
7,500.0	4,874.2	6,109.1	4,890.1	49.3	31.7	-90.69		-1,629.6	-1,629.6	-354.8	1,328.4	1,264.4	64.00	20.755	
7,600.0	4,872.8	6,209.1	4,888.7	50.2	33.4	-90.69		-1,729.5	-1,729.5	-356.3	1,328.4	1,261.1	67.32	19.732	
7,700.0	4,871.4	6,309.1	4,887.3	51.2	35.1	-90.69		-1,829.5	-1,829.5	-357.9	1,328.4	1,257.7	70.66	18.801	
7,800.0	4,870.0	6,409.1	4,885.9	52.3	36.8	-90.69		-1,929.5	-1,929.5	-359.4	1,328.4	1,254.4	74.01	17.949	
7,900.0	4,868.6	6,509.1	4,884.5	53.4	38.5	-90.69		-2,029.5	-2,029.5	-360.9	1,328.4	1,251.0	77.37	17.169	
8,000.0	4,867.2	6,609.1	4,883.1	54.5	40.1	-90.69		-2,129.4	-2,129.4	-362.5	1,328.4	1,247.7	80.75	16.451	
8,100.0	4,865.8	6,709.1	4,881.7	55.6	41.8	-90.69		-2,229.4	-2,229.4	-364.0	1,328.4	1,244.3	84.14	15.788	
8,200.0	4,864.4	6,809.1	4,880.3	56.8	43.5	-90.69		-2,329.4	-2,329.4	-365.5	1,328.4	1,240.9	87.53	15.176	
8,300.0	4,863.0	6,909.1	4,878.9	58.0	45.3	-90.69		-2,429.4	-2,429.4	-367.0	1,328.4	1,237.5	90.94	14.608	
8,400.0	4,861.6	7,009.1	4,877.5	59.3	47.0	-90.69		-2,529.4	-2,529.4	-368.6	1,328.4	1,234.1	94.35	14.079	
8,500.0	4,860.2	7,109.1	4,876.1	60.6	48.7	-90.69		-2,629.3	-2,629.3	-370.1	1,328.4	1,230.6	97.77	13.587	
8,600.0	4,858.8	7,209.1	4,874.7	61.9	50.4	-90.69		-2,729.3	-2,729.3	-371.6	1,328.4	1,227.2	101.20	13.127	
8,700.0	4,857.4	7,309.1	4,873.3	63.2	52.1	-90.69		-2,829.3	-2,829.3	-373.2	1,328.4	1,223.8	104.63	12.697	
8,800.0	4,856.0	7,409.1	4,871.9	64.6	53.8	-90.69		-2,929.3	-2,929.3	-374.7	1,328.4	1,220.4	108.06	12.293	
8,900.0	4,854.6	7,509.1	4,870.5	65.9	55.6	-90.69		-3,029.3	-3,029.3	-376.2	1,328.4	1,216.9	111.50	11.914	
9,000.0	4,853.2	7,609.1	4,869.2	67.3	57.3	-90.69		-3,129.2	-3,129.2	-377.7	1,328.4	1,213.5	114.95	11.557	
9,100.0	4,851.8	7,709.1	4,867.8	68.7	59.0	-90.69		-3,229.2	-3,229.2	-379.3	1,328.4	1,210.0	118.40	11.220	
9,200.0	4,850.4	7,809.1	4,866.4	70.2	60.7	-90.69		-3,329.2	-3,329.2	-380.8	1,328.4	1,206.6	121.85	10.902	
9,300.0	4,849.0	7,909.1	4,865.0	71.6	62.5	-90.69		-3,429.2	-3,429.2	-382.3	1,328.4	1,203.1	125.30	10.602	
9,400.0	4,847.6	8,009.1	4,863.6	73.1	64.2	-90.69		-3,529.1	-3,529.1	-383.9	1,328.4	1,199.7	128.76	10.317	
9,500.0	4,846.2	8,109.1	4,862.2	74.6	65.9	-90.69		-3,629.1	-3,629.1	-385.4	1,328.4	1,196.2	132.22	10.047	
9,600.0	4,844.8	8,209.1	4,860.8	76.1	67.7	-90.69		-3,729.1	-3,729.1	-386.9	1,328.4	1,192.8	135.68	9.791	
9,700.0	4,843.4	8,309.1	4,859.4	77.6	69.4	-90.69		-3,829.1	-3,829.1	-388.4	1,328.4	1,189.3	139.15	9.547	
9,800.0	4,842.1	8,409.1	4,858.0	79.1	71.1	-90.69		-3,929.1	-3,929.1	-390.0	1,328.4	1,185.8	142.61	9.315	
9,900.0	4,840.7	8,509.1	4,856.6	80.6	72.9	-90.69		-4,029.0	-4,029.0	-391.5	1,328.4	1,182.4	146.08	9.094	
10,000.0	4,839.3	8,609.1	4,855.2	82.1	74.6	-90.69		-4,129.0	-4,129.0	-393.0	1,328.4	1,178.9	149.55	8.883	
10,100.0	4,837.9	8,709.1	4,853.8	83.7	76.3	-90.69		-4,229.0	-4,229.0	-394.6	1,328.4	1,175.4	153.03	8.681	

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	Local Co-ordinate Reference:	Well Lybrook P31-2307 01H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 6837.0ft (Aztec)
Reference Site:	S31-T23N-R7W	MD Reference:	WELL @ 6837.0ft (Aztec)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook P31-2307 01H	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 S31-T23N-R7W - Lybrook P31-2307 03H - Hz - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error:	0.0 ft
Reference	Vertical	Offset	Vertical	Semi Major Axis			Distance			Total	Separation	Warning		
Measured	Depth	Measured	Depth	Reference	Offset	Highside	Offset Wellbore Centre	Between	Between	Uncertainty	Factor			
Depth	(ft)	Depth	(ft)	(ft)	(ft)	Toolface	+N/-S	Centres	Ellipses	Axis				
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)				
10,200.0	4,836.5	8,809.1	4,852.4	85.3	78.1	-90.69	-4,329.0	-396.1	1,328.5	1,172.0	156.50	8.488		
10,300.0	4,835.1	8,909.1	4,851.0	86.8	79.8	-90.69	-4,429.0	-397.6	1,328.5	1,168.5	159.98	8.304		
10,400.0	4,833.7	9,009.1	4,849.6	88.4	81.6	-90.69	-4,528.9	-399.2	1,328.5	1,165.0	163.45	8.127		
10,500.0	4,832.3	9,109.1	4,848.2	90.0	83.3	-90.69	-4,628.9	-400.7	1,328.5	1,161.5	166.93	7.958		
10,600.0	4,830.9	9,209.1	4,846.8	91.6	85.0	-90.69	-4,728.9	-402.2	1,328.5	1,158.1	170.41	7.796		
10,700.0	4,829.5	9,309.1	4,845.4	93.2	86.8	-90.69	-4,828.9	-403.7	1,328.5	1,154.6	173.89	7.640		
10,800.0	4,828.1	9,409.1	4,844.0	94.8	88.5	-90.69	-4,928.8	-405.3	1,328.5	1,151.1	177.37	7.490		
10,900.0	4,826.7	9,509.1	4,842.6	96.4	90.3	-90.69	-5,028.8	-406.8	1,328.5	1,147.6	180.85	7.346		
11,000.0	4,825.3	9,609.1	4,841.2	98.0	92.0	-90.69	-5,128.8	-408.3	1,328.5	1,144.1	184.34	7.207		
11,100.0	4,823.9	9,709.1	4,839.8	99.6	93.8	-90.69	-5,228.8	-409.9	1,328.5	1,140.6	187.82	7.073		
11,200.0	4,822.5	9,809.1	4,838.4	101.3	95.5	-90.69	-5,328.8	-411.4	1,328.5	1,137.2	191.31	6.944		
11,300.0	4,821.1	9,909.1	4,837.1	102.9	97.2	-90.69	-5,428.7	-412.9	1,328.5	1,133.7	194.79	6.820		
11,312.4	4,820.9	9,921.5	4,836.9	103.1	97.5	-90.69	-5,441.1	-413.1	1,328.5	1,133.3	195.23	6.805		
11,345.7	4,820.5	9,934.3	4,836.7	103.6	97.7	-90.69	-5,453.9	-413.3	1,328.6	1,132.6	196.03	6.778		

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc.
 Project: Sandoval County, NM
 Reference Site: S31-T23N-R7W
 Site Error: 0.0ft
 Reference Well: Lybrook P31-2307.01H
 Well Error: 0.0ft
 Reference Wellbore: Hz
 Reference Design: Plan #1

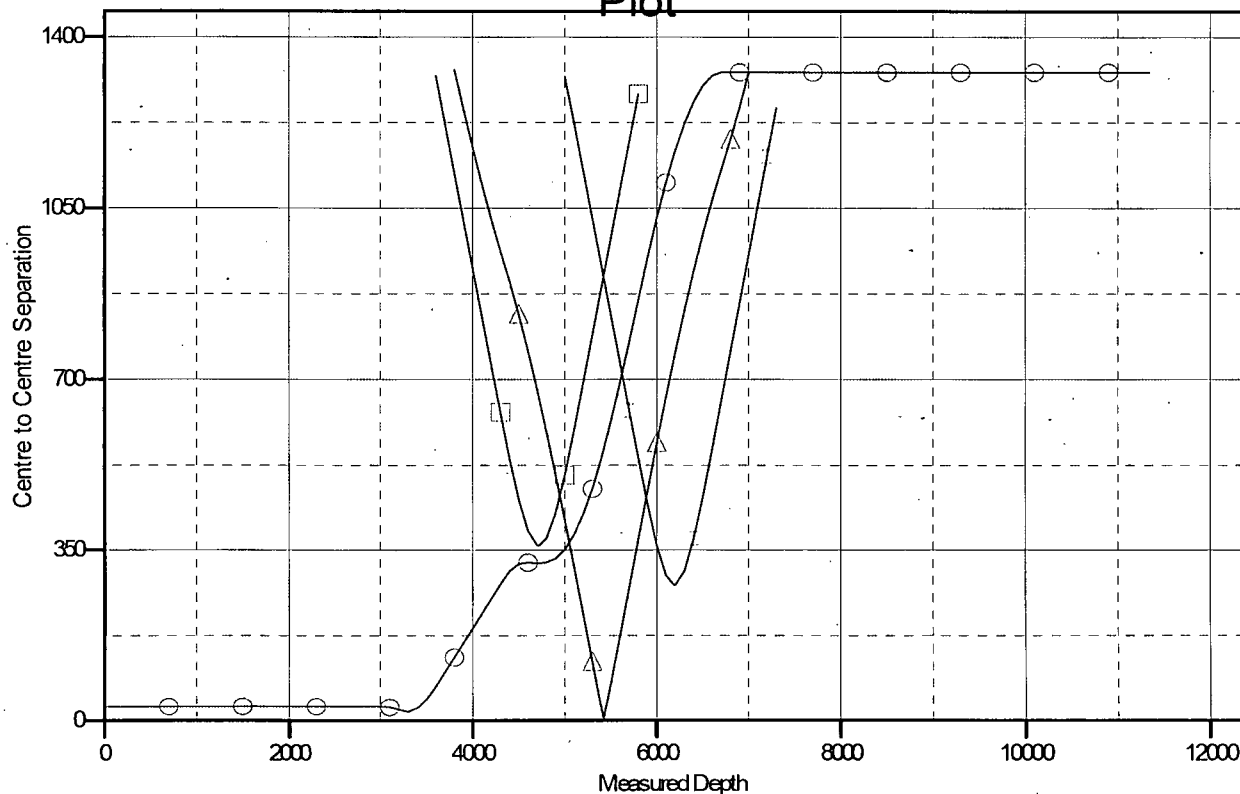
Local Co-ordinate Reference:
 TVD Reference:
 MD Reference:
 North Reference:
 Survey Calculation Method:
 Output errors are at
 Database:
 Offset TVD Reference:

Well Lybrook P31-2307 01H
 WELL @ 6837.0ft (Aztec)
 WELL @ 6837.0ft (Aztec)
 True
 Minimum Curvature
 2.00 sigma
 USA EDM 5000 Multi Users DB
 Offset Datum

Reference Depths are relative to WELL @ 6837.0ft (Aztec)
 Offset Depths are relative to Offset Datum
 Central Meridian is -106.250000°

Coordinates are relative to: Lybrook P31-2307 01H
 Coordinate System is US State Plane 1983, New Mexico Central Zone
 Grid Convergence at Surface is: -0.80°

Ladder Plot



LEGEND

- Lybrook C30-2307 01H, Hz, Plan #1 V0
- Lybrook C30-2307 03H, Hz, Plan #1 V0
- Lybrook C30-2307 02H, Hz, Plan #1 V0
- Lybrook P31-2307 03H, 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 P31-2307 01H

489' FSL & 561' FEL, Section 31, T23N, R7W, N.M.P.M., Sandoval County, NM

Latitude: 36.17733°N Longitude: 107.60842°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 0.9 miles to new access on right-hand side of existing roadway which continues for 54' to staked Encana Lybrook P31-2307 01H 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

BETH GEIGER 2 STATE J 3

**LYBROOK
GALLUP
POOL**

SAPP A 1

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

FEDERAL 16
FEDERAL 16
FEDERAL 18

24

KENC OIL GAS INC 22

19

20

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

KITE ACA FEDERAL 1

23N
8W

25

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

HENRY AGC FEDERAL 1

23N
7W

29

30

Lybrook L29-2307 01H

Lybrook L29-2307 02H
Lybrook L29-2307 03H
Lybrook L29-2307 04H

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

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

ALAMITO
UNIT 3
C

ALAMITO
UNIT 4
C

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

LITTLE B 2
LITTLE B 1

36

**ALAMITO
GALLUP
POOL**

STATE K 1
C

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

FEDERAL C 2
C

32

Lybrook L33-2307 01H

FEDERAL-13
C

FULTON 1

ALAMITO UNIT 2

ALAMITO 1

ALAMITO 1

FEDERAL C 3
C

FULTON 1
Lybrook P31-2307 01H
Lybrook P31-2307 02H
Lybrook P31-2307 03H
Lybrook P31-2307 04H

Lybrook
P32-2307 01H

SOUTH CHACO 5
SOUTH CHACO 5

0 0.125 0.25 0.5 Miles

SOUTH SEAS 1

FEDERAL 1-5

WELLHEAD BLOWOUT CONTROL SYSTEM

encana

Well Name and Number:
Lybrook P31-2307 01H

