

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#3H

API# 30043-21228, Section 31, Township 23N, Range 7E 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 Lee

NMOCD Approved by Signature

6-26-2014
Date

CONFIDENTIAL
RECEIVED

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

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NM NM 89023	
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 P31-2307 03H	
3b. Phone No. (include area code) 303-876-3448		9. API Well No. 30-043-21228	
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface 494' FSL and 532' FEL in Section 31, T23N, R7W SESE SH At proposed prod. zone 330' FSL and 900' FEL in Section 6, T22N, R7W SESE BHL Sec 6, T22N, R7W		10. Field and Pool, or Exploratory Basin Mancos	
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		11. Sec., T. R. M. or Blk. and Survey or Area Section 31, T23N, R7W NMPM	
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		12. County or Parish Sandoval	
16. No. of acres in lease NM NM 89023- 924.88 acres 924.87		13. State NM	
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 01H is +/- 30' NE	
19. Proposed Depth 4837' TVD, 9934' MD		20. BLM/BIA Bond No. on file COB 000235	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) GL 6821', KB 6837'		22. Approximate date work will start* 10/14/2014	
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:

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

25. Signature 	Name (Printed/Typed) Christopher Simmons	Date 09/17/14
Title Regulatory Analyst		
Approved by (Signature) 	Name (Printed/Typed) J. Markiewicz	Date 6/12/14
Title AFM	Office FFO	

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

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

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

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

*(Instructions on page 2)

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

NMCOA

District I
1525 N. French Drive, Hobbs, NM 88240
Phone: (575) 393-6151 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

FILED

MAY 01 2014

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30-043-21228		*Pool Code 97232	*Pool Name BASIN MANCOS
*Property Code 313411	*Property Name LYBROOK P31-2307		*Well Number 03H
*GRID No. 282327	*Operator Name ENCANA OIL & GAS (USA) INC.		*Elevation 6821'

10 Surface Location

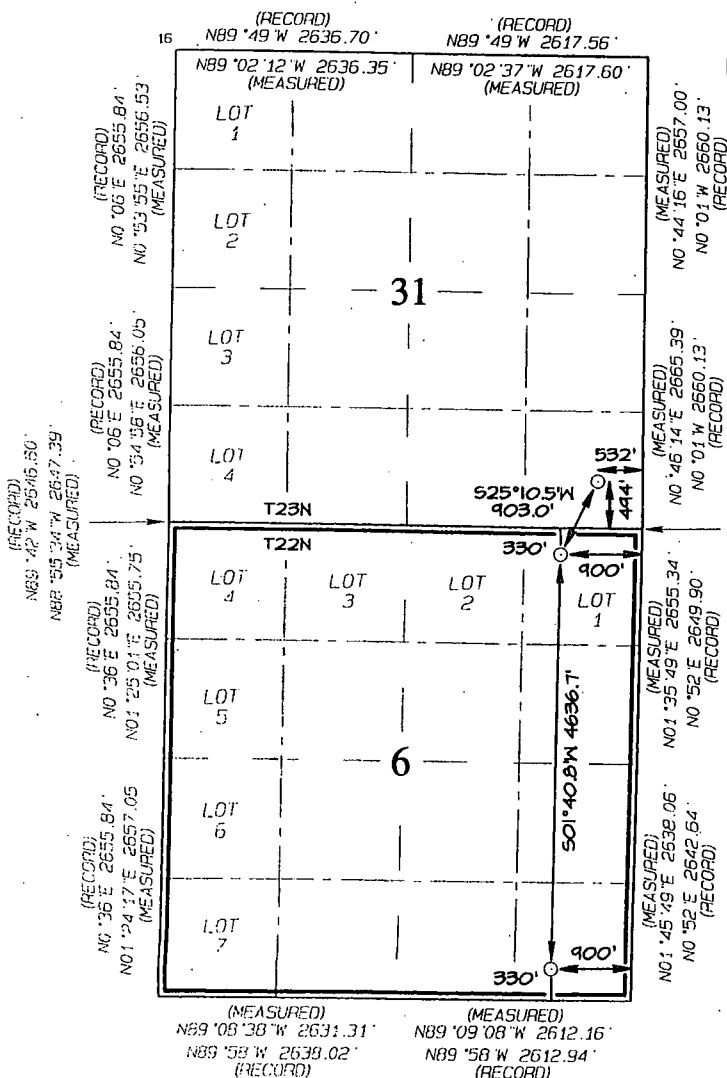
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	31	23N	7W		494	SOUTH	532	EAST	SANDOVAL

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
P	6	22N	7W		330	SOUTH	900	EAST	SANDOVAL

*Dedicated Acres 643.40 Acres Entire Section 6	*Joint or Infill	*Consolidation Code	*Order No.
--	------------------	---------------------	------------

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
494' FSL 532' FEL
SECTION 31, T23N, R7W
LAT: 36.17733°N
LONG: 107.60771°W
DATUM: NAD1927

LAT: 36.17734°N
LONG: 107.60832°W
DATUM: NAD1983

POINT-OF-ENTRY
330' FNL 900' FEL
SECTION 6, T22N, R7W
LAT: 36.17507°N
LONG: 107.60897°W
DATUM: NAD1927

LAT: 36.17508°N
LONG: 107.60958°W
DATUM: NAD1983

END-OF-LATERAL
330' FSL 900' FEL
SECTION 6, T22N, R7W
LAT: 36.16233°N
LONG: 107.60921°W
DATUM: NAD1927

LAT: 36.16235°N
LONG: 107.60982°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
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.

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
 494' FSL, 532' FEL
 BHL: SESE Sec 6 T22N R7W
 330' FSL, 900' 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	4,390
Gallup Fn.	4,649

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	4,390
Oil/Gas	Gallup Fn.	4,649

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
494' FSL, 532' FEL
BHL: SESE Sec 6 T22N R7W
330' FSL, 900' 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'-5201'	8 3/4"	7"	26#	J55, LTC New
Production Liner	5001'-9934'	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
494' FSL, 532' FEL
BHL: SESE Sec 6 T22N R7W
330' FSL, 900' 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'-5201'	30% open hole excess Stage 1 Lead: 259 sks Stage 1 Tail: 381 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	5001'-9934'	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 3000'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	4837'/9934'	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'-4895'/5201'	Fresh Water LSND	9.5-8.8	40-50	8-10

Lybrook P31-2307 01H
SHL: SESE Sec 31 T23N R7W
494' FSL, 532' FEL
BHL: SESE Sec 6 T22N R7W
330' FSL, 900' 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"	4895'/5201'- 4837'/9934'	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

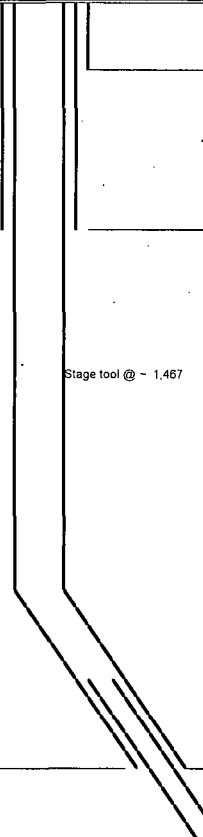
The anticipated bottom hole pressure is +/- 2299 psi based on a 9.0 ppg at 4913' TVD of the horizontal lateral target. No abnormal pressure or temperatures are anticipated.

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.

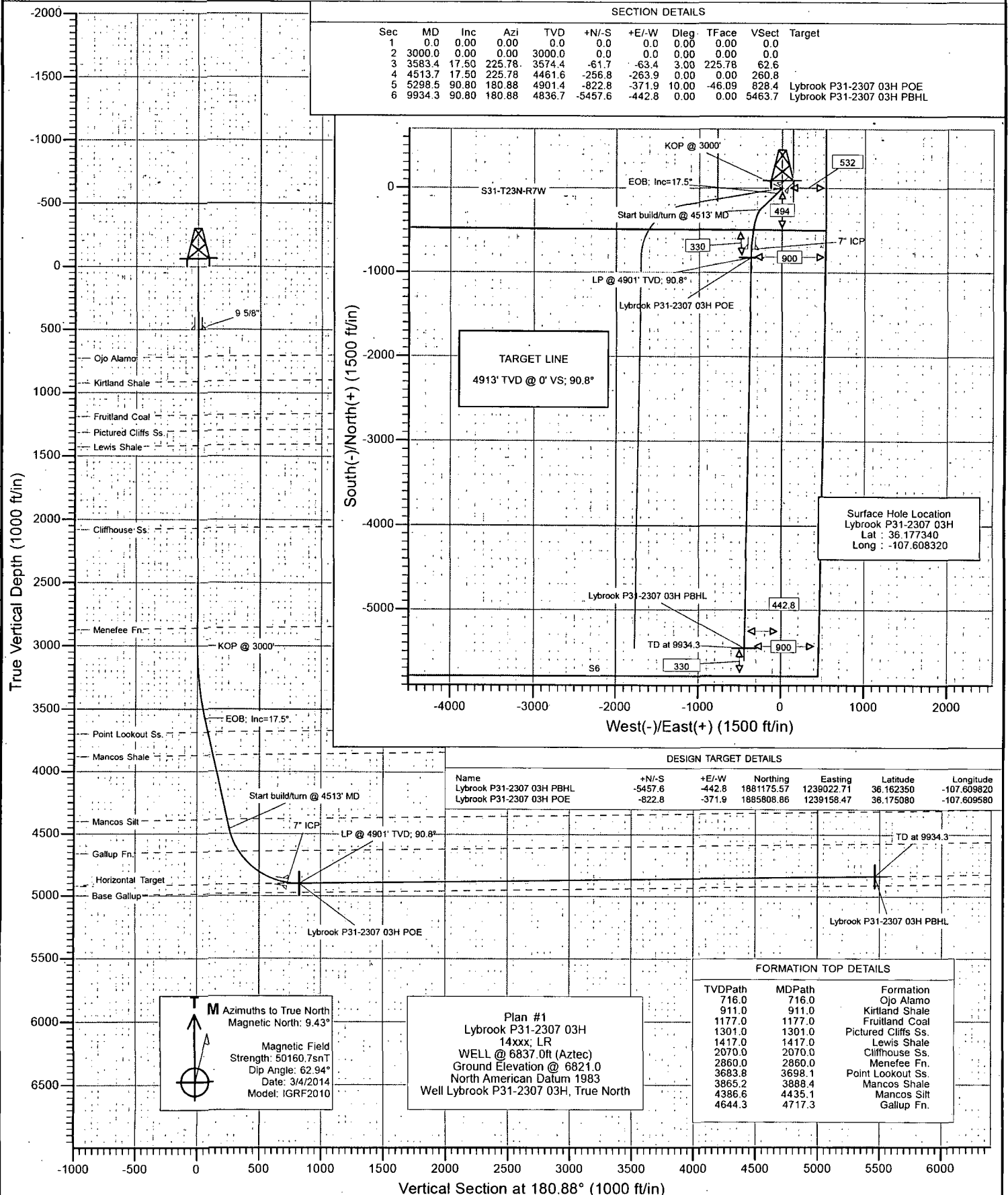
LOC: NE/4 NE/4 Sec 6 T22N R7W, 330' F			Encana Natural Gas				ENG: S Kuykendall RIG: Aztec 950 GLE: 6821 RKBE: 6837		4/14/14		
County: Sandoval			WELL SUMMARY								
WELL: Lybrook P31-2307 03H											
MWD	OPEN HOLE		DEPTH			HOLE	CASING	MW	DEVIATION		
LWD	LOGGING	FORM	TVD	MD		SIZE	SPECS	MUD TYPE	INFORMATION		
			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					12 1/4	9 5/8" 36ppf J55 STC	Fresh wtr	Vertical		
		Nacimiento 9 5/8" Csg	0 500	500.00			TOC Surface - 201 sks of Type III Cement	8.4-8.6	<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.	716			8 3/4	7" 26ppf J55 LTC TOC @ surface 30% OH excess: 640 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: 381 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. 128 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°	
		Kirtland Shale	911								
		Fruitland Coal	1,177								
		Pictured Cliffs Ss.	1,301								
		Lewis Shale	1,417								
		Cliffhouse Ss.	2,070								
Mud logger onsite		Menefee Fn.	2,860			6 1/8	200' overlap at liner top 4733' Drilled Lateral	Horizontal Inclination Horizontal TVD 8 6-9.0 OBM	Switch to OBM 8 6-9.0	Horz Inc/TVD /90.8 deg TD = 9,934.3 MD	
		Point Lookout Ss.	3,685								
		Mancos Shale	3,667								
		KOP	3,000	3,000.0							
		Mancos Silt	4,390								
Surveys every 30' through the curve		Gallup Fn.	4,649			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				
		7" Csg	4,895	5,201.0							
Surveys every stand to TD unless directed otherwise by Geologist	No OH Logs	Horizontal Target TD	4,913 4,837	9,934.3							
		Base Gallup	4,987								
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 3000', 8 3/4 inch holesize
- 5) PU directional tools and start curve at 10deg/100' build rate
- 6) Drill to csg point of 5201' MD
- 7) R&C 7" csg, circ cmt to surface, switch to OBM
- 8) Land at 90 deg, drill lateral to 9934' run 4 1/2 inch liner with external swellable csg packers



Project: Sandoval County, NM
 Site: S31-T23N-R7W
 Well: Lybrook P31-2307 03H
 Wellbore: Hz
 Design: Plan #1



Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: S31-T23N-R7W
 Well: Lybrook P31-2307 03H
 Wellbore: Hz
 Design: Plan #1

Local Co-ordinate Reference: Well Lybrook P31-2307 03H
 TVD Reference: WELL @ 6837.0ft (Aztec)
 MD Reference: WELL @ 6837.0ft (Aztec)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

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
From:	Lat/Long	Easting:	1,237,740.16 ft
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in
		Latitude:	36.186880
		Longitude:	-107.614590
		Grid Convergence:	-0.81 °

Well	Lybrook P31-2307 03H		
Well Position	+N/-S	0.0 ft	Northing:
	+E/-W	0.0 ft	Easting:
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft
		Latitude:	36.177340
		Longitude:	-107.608320
		Ground Level:	6,821.0 ft

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

Design	Plan #1		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(ft)	(ft)	(ft)
	0.0	0.0	0.0
			Direction
			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	
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,583.4	17.50	225.78	3,574.4	-61.7	-63.4	3.00	3.00	0.00	225.78	
4,513.7	17.50	225.78	4,461.6	-256.8	-263.9	0.00	0.00	0.00	0.00	
5,298.5	90.80	180.88	4,901.4	-822.8	-371.9	10.00	9.34	-5.72	-46.09	Lybrook P31-2307 03
9,934.3	90.80	180.88	4,836.7	-5,457.6	-442.8	0.00	0.00	0.00	0.00	Lybrook P31-2307 03

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: S31-T23N-R7W
 Well: Lybrook P31-2307 03H
 Wellbore: Hz
 Design: Plan #1

Local Co-ordinate Reference: Well Lybrook P31-2307 03H
 TVD Reference: WELL @ 6837.0ft (Aztec)
 MD Reference: WELL @ 6837.0ft (Aztec)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	9 5/8"
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
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	KOP @ 3000'
3,100.0	3.00	225.78	3,100.0	-1.8	-1.9	1.9	3.00	3.00	
3,200.0	6.00	225.78	3,199.6	-7.3	-7.5	7.4	3.00	3.00	
3,300.0	9.00	225.78	3,298.8	-16.4	-16.9	16.7	3.00	3.00	
3,400.0	12.00	225.78	3,397.1	-29.1	-29.9	29.6	3.00	3.00	
3,500.0	15.00	225.78	3,494.3	-45.4	-46.6	46.1	3.00	3.00	
3,583.4	17.50	225.78	3,574.4	-61.7	-63.4	62.6	3.00	3.00	EOB; Inc=17.5°
3,600.0	17.50	225.78	3,590.2	-65.1	-66.9	66.2	0.00	0.00	
3,698.1	17.50	225.78	3,683.8	-85.7	-88.1	87.1	0.00	0.00	Point Lookout Ss.
3,700.0	17.50	225.78	3,685.6	-86.1	-88.5	87.5	0.00	0.00	
3,800.0	17.50	225.78	3,780.9	-107.1	-110.1	108.8	0.00	0.00	
3,888.4	17.50	225.78	3,865.2	-125.6	-129.1	127.6	0.00	0.00	Mancos Shale
3,900.0	17.50	225.78	3,876.3	-128.1	-131.6	130.1	0.00	0.00	
4,000.0	17.50	225.78	3,971.7	-149.0	-153.2	151.4	0.00	0.00	
4,100.0	17.50	225.78	4,067.1	-170.0	-174.7	172.7	0.00	0.00	

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: S31-T23N-R7W
 Well: Lybrook P31-2307 03H
 Wellbore: Hz
 Design: Plan #1

Local Co-ordinate Reference: Well Lybrook P31-2307 03H
 TVD Reference: WELL @ 6837.0ft (Aztec)
 MD Reference: WELL @ 6837.0ft (Aztec)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination °	Azimuth °	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
4,200.0	17.50	225.78	4,162.4	-191.0	-196.3	194.0	0.00	0.00	
4,300.0	17.50	225.78	4,257.8	-212.0	-217.8	215.3	0.00	0.00	
4,400.0	17.50	225.78	4,353.2	-232.9	-239.4	236.6	0.00	0.00	
4,435.1	17.50	225.78	4,386.6	-240.3	-246.9	244.1	0.00	0.00	Mancos Silt
4,500.0	17.50	225.78	4,448.5	-253.9	-260.9	257.9	0.00	0.00	
4,513.7	17.50	225.78	4,461.6	-256.8	-263.9	260.8	0.00	0.00	Start build/turn @ 4513' MD
4,600.0	24.27	210.54	4,542.2	-281.2	-282.2	285.5	10.00	7.84	
4,700.0	33.16	200.91	4,629.9	-324.5	-302.5	329.1	10.00	8.89	
4,717.3	34.76	199.70	4,644.3	-333.6	-305.9	338.3	10.00	9.22	Gallup Fn.
4,800.0	42.51	195.07	4,708.8	-382.8	-321.1	387.7	10.00	9.37	
4,900.0	52.06	191.02	4,776.6	-454.4	-337.4	459.5	10.00	9.55	
5,000.0	61.72	187.91	4,831.2	-536.9	-351.1	542.2	10.00	9.66	
5,100.0	71.43	185.33	4,870.9	-627.9	-361.6	633.4	10.00	9.72	
5,200.0	81.18	183.03	4,894.5	-724.7	-368.6	730.3	10.00	9.75	
5,201.0	81.28	183.00	4,894.7	-725.7	-368.6	731.3	10.00	9.76	7" ICP
5,298.5	90.80	180.88	4,901.4	-822.8	-371.9	828.4	10.00	9.76	LP @ 4901' TVD; 90.8°
5,300.0	90.80	180.88	4,901.4	-824.3	-372.0	829.9	0.00	0.00	
5,400.0	90.80	180.88	4,900.0	-924.3	-373.5	929.9	0.00	0.00	
5,500.0	90.80	180.88	4,898.6	-1,024.2	-375.0	1,029.9	0.00	0.00	
5,600.0	90.80	180.88	4,897.2	-1,124.2	-376.5	1,129.9	0.00	0.00	
5,700.0	90.80	180.88	4,895.8	-1,224.2	-378.1	1,229.8	0.00	0.00	
5,800.0	90.80	180.88	4,894.4	-1,324.2	-379.6	1,329.8	0.00	0.00	
5,900.0	90.80	180.88	4,893.0	-1,424.1	-381.1	1,429.8	0.00	0.00	
6,000.0	90.80	180.88	4,891.6	-1,524.1	-382.7	1,529.8	0.00	0.00	
6,100.0	90.80	180.88	4,890.2	-1,624.1	-384.2	1,629.8	0.00	0.00	
6,200.0	90.80	180.88	4,888.8	-1,724.1	-385.7	1,729.8	0.00	0.00	
6,300.0	90.80	180.88	4,887.4	-1,824.1	-387.2	1,829.8	0.00	0.00	
6,400.0	90.80	180.88	4,886.0	-1,924.0	-388.8	1,929.8	0.00	0.00	
6,500.0	90.80	180.88	4,884.6	-2,024.0	-390.3	2,029.8	0.00	0.00	
6,600.0	90.80	180.88	4,883.2	-2,124.0	-391.8	2,129.8	0.00	0.00	
6,700.0	90.80	180.88	4,881.8	-2,224.0	-393.4	2,229.8	0.00	0.00	
6,800.0	90.80	180.88	4,880.4	-2,324.0	-394.9	2,329.7	0.00	0.00	
6,900.0	90.80	180.88	4,879.0	-2,423.9	-396.4	2,429.7	0.00	0.00	
7,000.0	90.80	180.88	4,877.7	-2,523.9	-398.0	2,529.7	0.00	0.00	
7,100.0	90.80	180.88	4,876.3	-2,623.9	-399.5	2,629.7	0.00	0.00	
7,200.0	90.80	180.88	4,874.9	-2,723.9	-401.0	2,729.7	0.00	0.00	
7,300.0	90.80	180.88	4,873.5	-2,823.8	-402.5	2,829.7	0.00	0.00	
7,400.0	90.80	180.88	4,872.1	-2,923.8	-404.1	2,929.7	0.00	0.00	
7,500.0	90.80	180.88	4,870.7	-3,023.8	-405.6	3,029.7	0.00	0.00	
7,600.0	90.80	180.88	4,869.3	-3,123.8	-407.1	3,129.7	0.00	0.00	
7,700.0	90.80	180.88	4,867.9	-3,223.8	-408.7	3,229.7	0.00	0.00	
7,800.0	90.80	180.88	4,866.5	-3,323.7	-410.2	3,329.6	0.00	0.00	
7,900.0	90.80	180.88	4,865.1	-3,423.7	-411.7	3,429.6	0.00	0.00	
8,000.0	90.80	180.88	4,863.7	-3,523.7	-413.2	3,529.6	0.00	0.00	
8,100.0	90.80	180.88	4,862.3	-3,623.7	-414.8	3,629.6	0.00	0.00	
8,200.0	90.80	180.88	4,860.9	-3,723.7	-416.3	3,729.6	0.00	0.00	
8,300.0	90.80	180.88	4,859.5	-3,823.6	-417.8	3,829.6	0.00	0.00	
8,400.0	90.80	180.88	4,858.1	-3,923.6	-419.4	3,929.6	0.00	0.00	
8,500.0	90.80	180.88	4,856.7	-4,023.6	-420.9	4,029.6	0.00	0.00	
8,600.0	90.80	180.88	4,855.3	-4,123.6	-422.4	4,129.6	0.00	0.00	
8,700.0	90.80	180.88	4,853.9	-4,223.5	-423.9	4,229.6	0.00	0.00	
8,800.0	90.80	180.88	4,852.5	-4,323.5	-425.5	4,329.5	0.00	0.00	

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: S31-T23N-R7W
 Well: Lybrook P31-2307 03H
 Wellbore: Hz
 Design: Plan #1

Local Co-ordinate Reference: Well Lybrook P31-2307 03H
 TVD Reference: WELL @ 6837.0ft (Aztec)
 MD Reference: WELL @ 6837.0ft (Aztec)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments/ Formations
8,900.0	90.80	180.88	4,851.1	-4,423.5	-427.0	4,429.5	0.00	0.00	
9,000.0	90.80	180.88	4,849.7	-4,523.5	-428.5	4,529.5	0.00	0.00	
9,100.0	90.80	180.88	4,848.3	-4,623.5	-430.1	4,629.5	0.00	0.00	
9,200.0	90.80	180.88	4,846.9	-4,723.4	-431.6	4,729.5	0.00	0.00	
9,300.0	90.80	180.88	4,845.6	-4,823.4	-433.1	4,829.5	0.00	0.00	
9,400.0	90.80	180.88	4,844.2	-4,923.4	-434.7	4,929.5	0.00	0.00	
9,500.0	90.80	180.88	4,842.8	-5,023.4	-436.2	5,029.5	0.00	0.00	
9,600.0	90.80	180.88	4,841.4	-5,123.4	-437.7	5,129.5	0.00	0.00	
9,700.0	90.80	180.88	4,840.0	-5,223.3	-439.2	5,229.5	0.00	0.00	
9,800.0	90.80	180.88	4,838.6	-5,323.3	-440.8	5,329.4	0.00	0.00	
9,900.0	90.80	180.88	4,837.2	-5,423.3	-442.3	5,429.4	0.00	0.00	
9,934.3	90.80	180.88	4,836.7	-5,457.6	-442.8	5,463.7	0.00	0.00	TD at 9934.3

Targets

Target Name	hit/miss target	Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Lybrook P31-2307 03H I	- plan hits target center	- Point	0.00	0.00	4,901.4	-822.8	-371.9	1,885,808.86	1,239,158.47	36.175080	-107.609580
Lybrook P31-2307 03H I	- plan hits target center	- Point	0.00	0.00	4,836.7	-5,457.6	-442.8	1,881,175.57	1,239,022.71	36.162350	-107.609820

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
500.0	500.0	9 5/8"	0.000	0.000
5,201.0	4,894.7	7" ICP	0.000	0.000

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: S31-T23N-R7W
Well: Lybrook P31-2307 03H
Wellbore: Hz
Design: Plan #1

Local Co-ordinate Reference: Well Lybrook P31-2307 03H
TVD Reference: WELL @ 6837.0ft (Aztec)
MD Reference: WELL @ 6837.0ft (Aztec)
North Reference: True
Survey Calculation Method: Minimum Curvature

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	
3,698.1	3,685.0	Point Lookout Ss.		-0.80	180.88	
3,888.4	3,867.0	Mancos Shale		-0.80	180.88	
4,435.1	4,390.0	Mancos Silt		-0.80	180.88	
4,717.3	4,649.0	Gallup Fn.		-0.80	180.88	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
3,000.0	3,000.0	0.0	0.0	KOP @ 3000'	
3,583.4	3,574.4	-61.7	-63.4	EOB; Inc=17.5°	
4,513.7	4,461.6	-256.8	-263.9	Start build/turn @ 4513' MD	
5,298.5	4,901.4	-822.8	-371.9	LP @ 4901' TVD; 90.8°	
9,934.3	4,836.7	-5,457.6	-442.8	TD at 9934.3	

EnCana Oil & Gas (USA) Inc

Sandoval County, NM

S31-T23N-R7W

Lybrook P31-2307 03H

Hz

Plan #1

Anticollision Report

05 March, 2014

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

Local Co-ordinate Reference: Well Lybrook P31-2307 03H
 TVD Reference: WELL @ 6837.0ft (Aztec)
 MD Reference: WELL @ 6837.0ft (Aztec)
 North Reference: True
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: USA EDM 5000 Multi Users DB
 Offset TVD Reference: Offset Datum

Reference Plan #1

Filter type: NO GLOBAL FILTER: Using user defined selection & filtering criteria
 Interpolation Method: MD Interval 100.0ft
 Depth Range: Unlimited
 Results Limited by: Maximum center-center distance of 1,197.7ft
 Warning Levels Evaluated at: 2.00 Sigma
 Error Model: Systematic Ellipse
 Scan Method: Closest Approach 3D
 Error Surface: Elliptical Conic

Survey Tool Program Date 3/4/2014

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	9,934.3	Plan #1 (Hz)	Geolink MWD	Geolink MWD

Summary

Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
S30-T23N-R7W						
Lybrook O30-2307 02H - Hz - Plan #1	4,847.8	10,319.0	541.2	448.5	5.840	CC, ES
Lybrook O30-2307 02H - Hz - Plan #1	4,900.0	10,319.0	545.3	451.1	5.789	SF
Lybrook O30-2307 03H - Hz - Plan #1	4,700.0	10,482.6	541.5	445.7	5.654	SF
Lybrook O30-2307 03H - Hz - Plan #1	4,747.0	10,482.6	538.6	443.8	5.681	CC, ES
S31-T23N-R7W						
Lybrook P31-2307 01H - Hz - Plan #1	3,301.2	3,299.9	18.0	6.5	1.564	CC, ES, SF

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

Local Co-ordinate Reference: Well Lybrook P31-2307 03H
 TVD Reference: WELL @ 6837.0ft (Aztec)
 MD Reference: WELL @ 6837.0ft (Aztec)
 North Reference: True
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: USA EDM 5000 Multi Users DB
 Offset TVD Reference: Offset Datum

Offset Design S30-T23N-R7W - Lybrook O30-2307 02H - Hz - Plan #1														Offset Site Error: 0.0 ft
Survey Program: O-Geolink MWD														Offset Well Error: 0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
4,000.0	3,971.7	10,319.0	5,103.4	8.1	96.1	70.03	-160.2	-779.3	1,120.9	1,027.6	93.37	12.005		
4,100.0	4,067.1	10,319.0	5,103.4	8.5	96.1	70.03	-160.2	-779.3	1,030.4	936.6	93.77	10.988		
4,200.0	4,162.4	10,319.0	5,103.4	8.9	96.1	70.03	-160.2	-779.3	941.8	847.6	94.19	9.998		
4,300.0	4,257.8	10,319.0	5,103.4	9.4	96.1	70.03	-160.2	-779.3	855.6	761.0	94.62	9.043		
4,400.0	4,353.2	10,319.0	5,103.4	9.9	96.1	70.03	-160.2	-779.3	772.9	677.8	95.06	8.130		
4,500.0	4,448.5	10,319.0	5,103.4	10.3	96.1	70.03	-160.2	-779.3	694.6	599.1	95.51	7.273		
4,600.0	4,542.2	10,319.0	5,103.4	10.9	96.1	91.45	-160.2	-779.3	625.0	532.5	92.52	6.755		
4,700.0	4,629.9	10,319.0	5,103.4	11.6	96.1	104.95	-160.2	-779.3	572.7	481.7	91.03	6.292		
4,800.0	4,708.8	10,319.0	5,103.4	12.5	96.1	111.87	-160.2	-779.3	544.6	452.9	91.67	5.941		
4,847.8	4,742.7	10,319.0	5,103.4	13.0	96.1	113.62	-160.2	-779.3	541.2	448.5	92.67	5.840 CC, ES		
4,900.0	4,776.6	10,319.0	5,103.4	13.5	96.1	114.58	-160.2	-779.3	545.3	451.1	94.18	5.789 SF		
5,000.0	4,831.2	10,319.0	5,103.4	14.7	96.1	113.88	-160.2	-779.3	574.6	476.2	98.38	5.841		
5,100.0	4,870.9	10,319.0	5,103.4	16.0	96.1	109.75	-160.2	-779.3	627.8	523.8	103.99	6.037		
5,200.0	4,894.5	10,319.0	5,103.4	17.4	96.1	101.55	-160.2	-779.3	698.1	588.0	110.10	6.341		
5,300.0	4,901.4	10,319.0	5,103.4	18.9	96.1	88.74	-160.2	-779.3	779.0	665.3	113.79	6.846		
5,400.0	4,900.0	10,319.0	5,103.4	20.4	96.1	88.74	-160.2	-779.3	865.1	749.8	115.38	7.498		
5,500.0	4,898.6	10,319.0	5,103.4	21.9	96.1	88.74	-160.2	-779.3	953.9	837.0	116.99	8.154		
5,600.0	4,897.2	10,319.0	5,103.4	23.5	96.1	88.74	-160.2	-779.3	1,044.8	926.1	118.62	8.808		
5,700.0	4,895.8	10,319.0	5,103.4	25.1	96.1	88.74	-160.2	-779.3	1,137.1	1,016.9	120.27	9.455		

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

Local Co-ordinate Reference: Well Lybrook P31-2307 03H
 TVD Reference: WELL @ 6837.0ft (Aztec)
 MD Reference: WELL @ 6837.0ft (Aztec)
 North Reference: True
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: USA EDM 5000 Multi Users DB
 Offset TVD Reference: Offset Datum

Offset Design 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			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	3,780.9	10,443.3	5,111.6	7.2	97.5	-159.79	-124.5	132.8	1,154.6	1,056.7	97.98	11.785		
3,900.0	3,876.3	10,462.7	5,111.3	7.6	97.9	-157.84	-144.0	132.8	1,066.4	967.2	99.26	10.744		
4,000.0	3,971.7	10,482.2	5,111.0	8.1	98.2	-155.85	-163.4	132.8	980.1	879.6	100.48	9.754		
4,100.0	4,067.1	10,482.6	5,111.0	8.5	98.2	-155.81	-163.8	132.8	896.4	795.7	100.73	8.899		
4,200.0	4,162.4	10,482.6	5,111.0	8.9	98.2	-155.81	-163.8	132.8	816.3	715.4	100.96	8.086		
4,300.0	4,257.8	10,482.6	5,111.0	9.4	98.2	-155.81	-163.8	132.8	741.2	640.0	101.20	7.324		
4,400.0	4,353.2	10,482.6	5,111.0	9.9	98.2	-155.81	-163.8	132.8	672.5	571.1	101.43	6.630		
4,500.0	4,448.5	10,482.6	5,111.0	10.3	98.2	-155.81	-163.8	132.8	612.5	510.9	101.67	6.025		
4,600.0	4,542.2	10,482.6	5,111.0	10.9	98.2	-145.61	-163.8	132.8	566.2	467.4	98.77	5.732		
4,700.0	4,629.9	10,482.6	5,111.0	11.6	98.2	-139.46	-163.8	132.8	541.5	445.7	95.77	5.654 SF		
4,747.0	4,668.2	10,482.6	5,111.0	12.0	98.2	-137.22	-163.8	132.8	538.6	443.8	94.81	5.681 CC, ES		
4,800.0	4,708.8	10,482.6	5,111.0	12.5	98.2	-134.75	-163.8	132.8	542.3	448.1	94.18	5.758		
4,900.0	4,776.6	10,482.6	5,111.0	13.5	98.2	-129.52	-163.8	132.8	568.4	473.6	94.79	5.997		
5,000.0	4,831.2	10,482.6	5,111.0	14.7	98.2	-122.74	-163.8	132.8	615.9	517.9	98.07	6.281		
5,100.0	4,870.9	10,482.6	5,111.0	16.0	98.2	-113.78	-163.8	132.8	679.2	575.4	103.75	6.546		
5,200.0	4,894.5	10,482.6	5,111.0	17.4	98.2	-102.48	-163.8	132.8	752.5	642.3	110.14	6.832		
5,300.0	4,901.4	10,482.6	5,111.0	18.9	98.2	-89.80	-163.8	132.8	831.3	717.1	114.19	7.280		
5,400.0	4,900.0	10,482.6	5,111.0	20.4	98.2	-89.80	-163.8	132.8	913.6	797.8	115.78	7.891		
5,500.0	4,898.6	10,482.6	5,111.0	21.9	98.2	-89.80	-163.8	132.8	999.1	881.8	117.39	8.511		
5,600.0	4,897.2	10,482.6	5,111.0	23.5	98.2	-89.80	-163.8	132.8	1,087.2	968.1	119.02	9.134		
5,700.0	4,895.8	10,482.6	5,111.0	25.1	98.2	-89.80	-163.8	132.8	1,177.1	1,056.4	120.67	9.754		

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

Local Co-ordinate Reference: Well Lybrook P31-2307 03H
 TVD Reference: WELL @ 6837.0ft (Aztec)
 MD Reference: WELL @ 6837.0ft (Aztec)
 North Reference: True
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: USA EDM 5000 Multi Users DB
 Offset TVD Reference: Offset Datum

Offset Design S31-T23N-R7W - Lybrook P31-2307 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		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	-97.03	-3.6	-29.5	29.7	29.4	0.29	101.431	
100.0	100.0	100.0	100.0	0.1	0.1	-97.03	-3.6	-29.5	29.7	29.1	0.64	46.305	
200.0	200.0	200.0	200.0	0.3	0.3	-97.03	-3.6	-29.5	29.7	28.7	0.99	30.001	
300.0	300.0	300.0	300.0	0.5	0.5	-97.03	-3.6	-29.5	29.7	28.4	1.34	22.188	
400.0	400.0	400.0	400.0	0.7	0.7	-97.03	-3.6	-29.5	29.7	28.1	1.69	17.604	
500.0	500.0	500.0	500.0	0.8	0.8	-97.03	-3.6	-29.5	29.7	27.7	2.04	14.589	
600.0	600.0	600.0	600.0	1.0	1.0	-97.03	-3.6	-29.5	29.7	27.4	2.39	12.456	
700.0	700.0	700.0	700.0	1.2	1.2	-97.03	-3.6	-29.5	29.7	27.0	2.74	10.868	
800.0	800.0	800.0	800.0	1.4	1.4	-97.03	-3.6	-29.5	29.7	26.7	3.09	9.638	
900.0	900.0	900.0	900.0	1.5	1.5	-97.03	-3.6	-29.5	29.7	26.3	3.43	8.659	
1,000.0	1,000.0	1,000.0	1,000.0	1.7	1.7	-97.03	-3.6	-29.5	29.7	26.0	3.78	7.860	
1,100.0	1,100.0	1,100.0	1,100.0	1.9	1.9	-97.03	-3.6	-29.5	29.7	25.6	4.13	7.196	
1,200.0	1,200.0	1,200.0	1,200.0	2.1	2.1	-97.03	-3.6	-29.5	29.7	25.3	4.48	6.636	
1,300.0	1,300.0	1,300.0	1,300.0	2.2	2.2	-97.03	-3.6	-29.5	29.7	24.9	4.83	6.156	
1,400.0	1,400.0	1,400.0	1,400.0	2.4	2.4	-97.03	-3.6	-29.5	29.7	24.6	5.18	5.741	
1,500.0	1,500.0	1,500.0	1,500.0	2.6	2.6	-97.03	-3.6	-29.5	29.7	24.2	5.53	5.379	
1,600.0	1,600.0	1,600.0	1,600.0	2.8	2.8	-97.03	-3.6	-29.5	29.7	23.9	5.88	5.059	
1,700.0	1,700.0	1,700.0	1,700.0	2.9	2.9	-97.03	-3.6	-29.5	29.7	23.5	6.23	4.776	
1,800.0	1,800.0	1,800.0	1,800.0	3.1	3.1	-97.03	-3.6	-29.5	29.7	23.2	6.58	4.522	
1,900.0	1,900.0	1,900.0	1,900.0	3.3	3.3	-97.03	-3.6	-29.5	29.7	22.8	6.93	4.294	
2,000.0	2,000.0	2,000.0	2,000.0	3.5	3.5	-97.03	-3.6	-29.5	29.7	22.5	7.27	4.088	
2,100.0	2,100.0	2,100.0	2,100.0	3.6	3.6	-97.03	-3.6	-29.5	29.7	22.1	7.62	3.901	
2,200.0	2,200.0	2,200.0	2,200.0	3.8	3.8	-97.03	-3.6	-29.5	29.7	21.8	7.97	3.730	
2,300.0	2,300.0	2,300.0	2,300.0	4.0	4.0	-97.03	-3.6	-29.5	29.7	21.4	8.32	3.574	
2,400.0	2,400.0	2,400.0	2,400.0	4.2	4.2	-97.03	-3.6	-29.5	29.7	21.1	8.67	3.430	
2,500.0	2,500.0	2,500.0	2,500.0	4.3	4.3	-97.03	-3.6	-29.5	29.7	20.7	9.02	3.297	
2,600.0	2,600.0	2,600.0	2,600.0	4.5	4.5	-97.03	-3.6	-29.5	29.7	20.4	9.37	3.174	
2,700.0	2,700.0	2,700.0	2,700.0	4.7	4.7	-97.03	-3.6	-29.5	29.7	20.0	9.72	3.060	
2,800.0	2,800.0	2,800.0	2,800.0	4.9	4.9	-97.03	-3.6	-29.5	29.7	19.7	10.07	2.954	
2,900.0	2,900.0	2,900.0	2,900.0	5.0	5.0	-97.03	-3.6	-29.5	29.7	19.3	10.42	2.855	
3,000.0	3,000.0	3,000.0	3,000.0	5.2	5.2	-97.03	-3.6	-29.5	29.7	18.9	10.76	2.575	
3,100.0	3,100.0	3,100.0	3,100.0	5.4	5.4	40.50	-3.6	-29.5	27.7	16.9	11.10	2.010	
3,200.0	3,199.6	3,199.6	3,199.6	5.6	5.6	53.79	-3.6	-29.5	22.3	11.2	11.49	1.565	
3,300.0	3,298.8	3,298.8	3,298.8	5.8	5.7	89.43	-3.6	-29.5	18.0	6.5	11.49	1.564 CC, ES, SF	
3,301.2	3,299.9	3,299.9	3,299.9	5.8	5.7	90.00	-3.6	-29.5	18.0	6.5	11.49	1.564 CC, ES, SF	
3,400.0	3,397.1	3,397.1	3,397.1	6.0	5.9	134.47	-3.6	-29.5	25.5	13.7	11.76	2.165	
3,500.0	3,494.3	3,494.3	3,494.3	6.2	6.1	155.79	-3.6	-29.5	45.1	33.2	11.96	3.771	
3,600.0	3,590.2	3,590.2	3,590.2	6.5	6.2	164.87	-3.6	-29.5	72.0	59.8	12.18	5.909	
3,700.0	3,685.6	3,685.6	3,685.6	6.9	6.4	169.30	-3.6	-29.5	101.4	88.9	12.51	8.106	
3,800.0	3,780.9	3,780.9	3,780.9	7.2	6.6	171.74	-3.6	-29.5	131.1	118.3	12.84	10.209	
3,900.0	3,876.3	3,876.3	3,876.3	7.6	6.7	173.28	-3.6	-29.5	160.9	147.8	13.18	12.213	
4,000.0	3,971.7	3,971.7	3,971.7	8.1	6.9	174.34	-3.6	-29.5	190.9	177.3	13.52	14.122	
4,100.0	4,067.1	4,067.1	4,067.1	8.5	7.1	175.11	-3.6	-29.5	220.8	207.0	13.85	15.939	
4,200.0	4,162.4	4,162.4	4,162.4	8.9	7.2	175.69	-3.6	-29.5	250.8	236.6	14.19	17.671	
4,300.0	4,257.8	4,257.8	4,257.8	9.4	7.4	176.15	-3.6	-29.5	280.8	266.3	14.53	19.324	
4,400.0	4,353.2	4,353.2	4,353.2	9.9	7.6	176.47	-3.8	-30.4	310.5	295.6	14.89	20.843	
4,500.0	4,448.5	4,448.5	4,448.5	10.3	7.9	173.17	-9.7	-65.3	324.9	309.4	15.43	21.054	
4,600.0	4,542.2	4,542.2	4,542.2	10.9	8.5	178.17	-22.7	-141.8	323.9	308.1	15.87	20.415	
4,613.6	4,554.6	4,554.6	4,554.6	11.0	8.7	178.03	-24.8	-153.7	323.9	307.9	15.95	20.308	
4,700.0	4,629.9	4,629.9	4,629.9	11.6	9.5	174.07	-37.6	-228.9	328.6	312.0	16.57	19.836	
4,800.0	4,708.8	4,708.8	4,708.8	12.5	10.6	167.36	-50.7	-305.9	353.2	335.9	17.28	20.443	
4,900.0	4,776.6	4,776.6	4,776.6	13.5	11.6	160.77	-61.1	-367.3	403.1	385.4	17.68	22.798	

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

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Reference Site: S31-T23N-R7W
 Site Error: 0.0ft
 Reference Well: Lybrook P31-2307 03H
 Well Error: 0.0ft
 Reference Wellbore: Hz
 Reference Design: Plan #1

Local Co-ordinate Reference: Well Lybrook P31-2307 03H
 TVD Reference: WELL @ 6837.0ft (Aztec)
 MD Reference: WELL @ 6837.0ft (Aztec)
 North Reference: True
 Survey Calculation Method: Minimum Curvature
 Output errors are at 2.00 sigma
 Database: USA EDM 5000 Multi Users DB
 Offset TVD Reference: Offset Datum

Offset Design S31-T23N-R7W - Lybrook P31-2307 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		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	
5,000.0	4,831.2	5,049.6	4,878.4	14.7	12.4	153.65	-69.2	-414.6	474.4	456.4	17.99	26.362	
5,100.0	4,870.9	5,087.8	4,889.3	16.0	13.1	143.61	-75.3	-450.7	560.1	541.0	19.03	29.437	
5,200.0	4,894.5	5,116.3	4,895.9	17.4	13.7	124.68	-80.0	-478.0	654.0	631.6	22.40	29.188	
5,300.0	4,901.4	5,137.3	4,899.8	18.9	14.1	85.07	-83.4	-498.3	751.6	724.7	26.85	27.988	
5,400.0	4,900.0	5,155.1	4,902.6	20.4	14.4	86.65	-86.4	-515.7	849.9	821.4	28.50	29.817	
5,500.0	4,898.6	5,173.2	4,904.8	21.9	14.8	87.75	-89.4	-533.4	948.2	918.0	30.17	31.431	
5,600.0	4,897.2	5,191.6	4,906.5	23.5	15.2	88.48	-92.4	-551.4	1,046.5	1,014.7	31.85	32.858	
5,700.0	4,895.8	5,210.1	4,907.6	25.1	15.6	88.93	-95.5	-569.6	1,144.8	1,111.3	33.55	34.126	

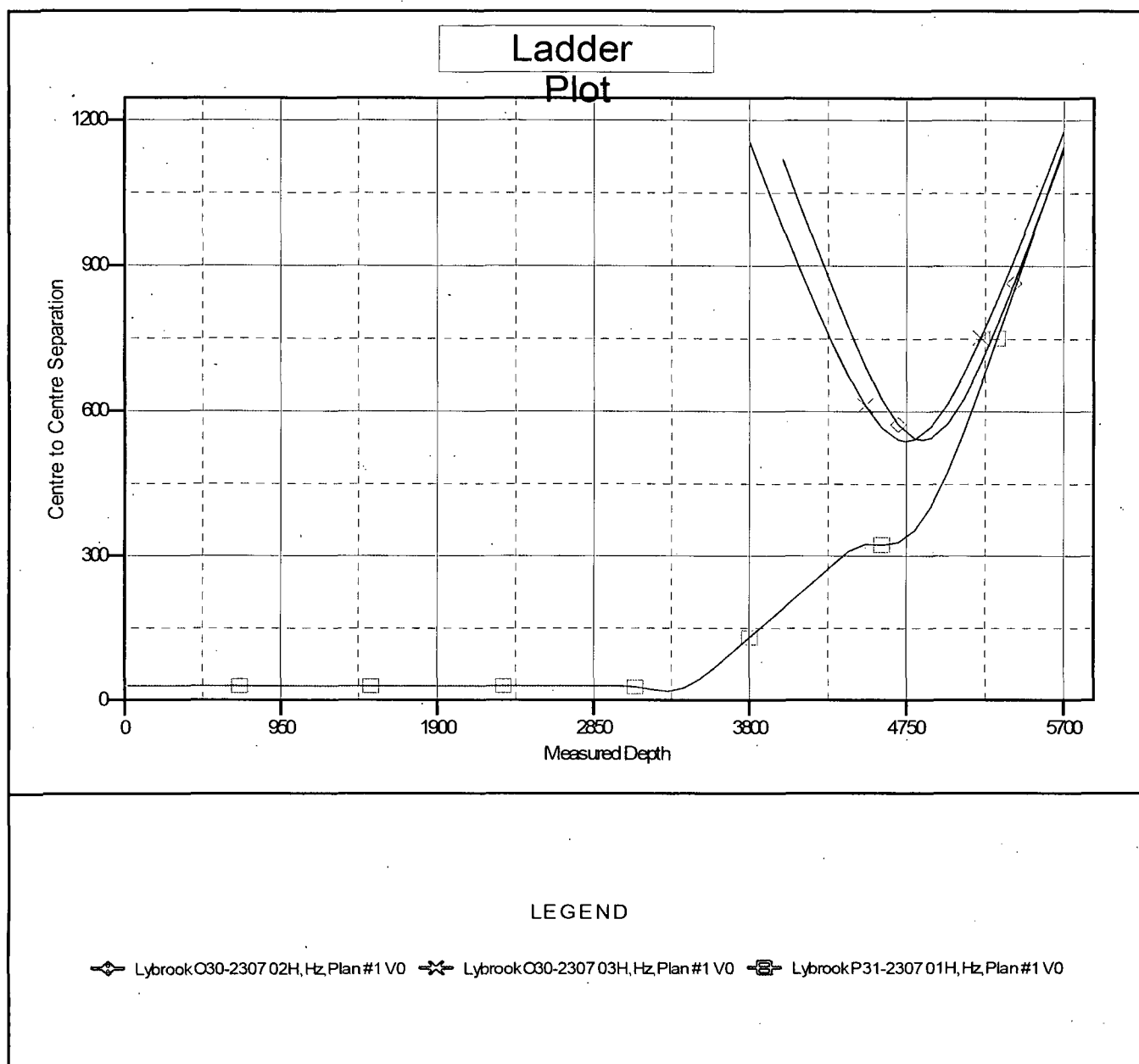
Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Reference Site: S31-T23N-R7W
 Site Error: 0.0ft
 Reference Well: Lybrook P31-2307 03H
 Well Error: 0.0ft
 Reference Wellbore: Hz
 Reference Design: Plan #1

Local Co-ordinate Reference: Well Lybrook P31-2307 03H
 TVD Reference: WELL @ 6837.0ft (Aztec)
 MD Reference: WELL @ 6837.0ft (Aztec)
 North Reference: True
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: USA EDM 5000 Multi Users DB
 Offset TVD Reference: Offset Datum

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

Coordinates are relative to: Lybrook P31-2307 03H
 Coordinate System is US State Plane 1983, New Mexico Central Zone
 Grid Convergence at Surface is: -0.80°



Directions from the Intersection of US Hwy 550 & US Hwy 64
in Bloomfield, NM to Encana Oil & Gas (USA) Inc. Lybrook P31-2307 03H
494' FSL & 532' FEL, Section 31, T23N, R7W, N.M.P.M., Sandoval County, NM

Latitude: 36.17734°N Longitude: 107.60832°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 03H location.

encana

SANDOVAL COUNTY,
NEW MEXICO

- ⊘ Abandoned
- ⊗ Abandoned Gas
- ⊘ Abandoned Oil
- ⊕ Dry Hole
- ⊗ GAS
- ⊘ Injection
- Basin Mancos Gas Pool
- OIL

HENRY AGC. FEDERAL 1

23N
7W

29

30

Lybrook P30-2307 04H ○ Lybrook P30-2307 02H

Lybrook G31-2307 01H
Lybrook G31-2307 02H
Lybrook G31-2307 03H

ALAMITO UNIT 3

ALAMITO UNIT 4

Lybrook E33-2307 01H
Lybrook E33-2307 02H

LITTLE B 1
LITTLE B 2

36

31

32

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

FEDERAL C 2

Lybrook L33-2307 01H

STATE K 1

Lybrook P31-2307 03H
FEDERAL C 30

FULTON 1 FEDERAL C 158
Lybrook P31-2307 01H
Lybrook P31-2307 02H
Lybrook P31-2307 04H

ALAMITO UNIT 2

ALAMITO 1

Lybrook P32-2307 01H

FEDERAL-G 1
SOUTH CHACO 5

ALAMITO
GALLUP
POOL

GALLO WASH 5

1

22N
8W

6

5

22N
7W

SOUTH SEAS 1

SOUTH SEAS 2

FEDERAL 6-22-7

820'

236'

1000'

FEDERAL 1-5

12

7

8

FEDERAL 7-22-7 1

NAVAJO 8-22-7 1

RUSTY
GALLUP
GAS POOL

0 0.125 0.25 0.5 Miles

WELLHEAD BLOWOUT CONTROL SYSTEM

encana

Well Name and Number:
Lybrook P31-2307 03H

