

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

CONFIDENTIAL

FORM APPROVED
OMB No. 1004-0137
Expires: October 31, 2014SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.5. Lease Serial No.
NM LG-9090, BIA NO-G-1403-19466. If Indian, Allottee or Tribe Name
Allottee

SUBMIT IN TRIPLICATE - Other instructions on page 2.

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other2. Name of Operator
Encana Oil & Gas (USA) Inc.3a. Address
370 17th Street, Suite 1700 Denver, CO 802023b. Phone No. (include area code)
720-876-58677. If Unit of CA/Agreement, Name and/or No.
N/A8. Well Name and No.
Lybrook G31-2307 01H9. API Well No.
30-043-212174. Location of Well (Footage, Sec., T., R., M., or Survey Description)
SHL: 1358' FNL and 2379' FEL Sec 31, T23N, R7W
BHL: 400' FNL and 330' FWL Sec 36, T23N, R8W10. Field and Pool or Exploratory Area
Basin Mancos Pool11. County or Parish, State
Sandoval and San Juan Counties, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other
	☒ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.)

Encana Oil & Gas (USA) Inc. (Encana) wishes to modify the drilling plan for the Lybrook G31-2307 01H well to cement the 4 1/2" production liner, instead of running open hole swell packers, as previously planned. Attached is an updated Directional Drilling Plan, 10-Point Drilling Plan and Wellbore Diagram that reflect this change. Please note, the 7" ICP was also moved from approximately 72 degrees to approximately 55 degrees.

OIL CONS. DIV DIST. 3

NOV 17 2014

CONDITIONS OF APPROVAL

Adhere to previously issued stipulations

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

14. I hereby certify that the foregoing is true and correct. Name (Printed/Typed)

Cristi Bauer

Title Operations Technician

Signature

Cristi Bauer

Date

11/12/14

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

William Tambekou

Title

Petroleum Engineer

Date

11/14/2014

Conditions of approval, if any, are attached. Approval of this notice 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.

Office FFO

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.

(Instructions on page 2)

NMOCD AV

ADHERE TO PREVIOUS NMOCD
CONDITIONS OF APPROVAL

Lybrook G31-2307 01H

SHL: SW/4 NE/4 Sec 31 T23N R7W, 1358' FNL, 2379' FEL

BHL: NW/4 NW/4 Sec 36 T23N R8W, 400' FNL, 330' FWL

Sandoval, New Mexico

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

1. ESTIMATED TOPS OF GEOLOGICAL MARKERS (TVD)

The estimated tops of important geologic markers are as follows:

Formation	Depth (TVD) units = feet
Nacimiento	0
Ojo Alamo	924
Kirtland Shale	1,119
Fruitland Coal	1,385
Pictured Cliffs Ss.	1,509
Lewis Shale	1,625
Cliffhouse Ss.	2,278
Menefee Fn.	3,068
Point Lookout Ss.	3,893
Mancos Shale	4,075
Mancos Silt	4,601
Gallup Fn.	4,866
Horizontal Target	5,138

OIL CONS. DIV DIST. 3

NOV 17 2014

The referenced surface elevation is 6995', KB 7011'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,385
Oil/Gas	Pictured Cliffs Ss.	1,509
Oil/Gas	Cliffhouse Ss.	2,278
Gas	Menefee Fn.	3,068
Oil/Gas	Point Lookout Ss.	3,893
Oil/Gas	Mancos Shale	4,075
Oil/Gas	Mancos Silt	4,601
Oil/Gas	Gallup Fn.	4,866

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

Lybrook G31-2307 01H

SHL: SW/4 NE/4 Sec 31 T23N R7W, 1358' FNL, 2379' FEL

BHL: NW/4 NW/4 Sec 36 T23N R8W, 400' FNL, 330' FWL

Sandoval, New Mexico

3. PRESSURE CONTROL

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

Proposed BOP and choke manifold arrangements are attached.

4. CASING & CEMENTING PROGRAM

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

- a) The proposed casing design is as follows:

Casing	Depth (MD)	Hole Size	Csg Size	Weight	Grade
Conductor	0'-60'	26"	16"	42.09#	
Surface	0'-500'	12 1/4"	9 5/8"	36#	J55, STC New
Intermediate	0'-4827'	8 3/4"	7"	26#	J55, LTC New
Production Liner	4727'-13184'	6 1/8"	4 1/2"	11.6#	B80*, LTC New

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

*B80 pipe specifications are attached

Casing design is subject to revision based on geologic conditions encountered

Lybrook G31-2307 01H

SHL: SW/4 NE/4 Sec 31 T23N R7W, 1358' FNL, 2379' FEL

BHL: NW/4 NW/4 Sec 36 T23N R8W, 400' FNL, 330' FWL

Sandoval, New Mexico

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

b) The proposed cementing program is as follows

Casing	Depth (MD)	Cement Volume (sacks)	Cement Type & Yield	Designed TOC	Centralizers
Conductor	0'-60'	100 sks	Type I Neat 16 ppg	Surface	None
Surface	0'-500'	228 sks	Type III Cement + 1% bwoc Calcium Chloride + 0.25 lbs/sack Cello Flake + 0.2% bwoc FL-52A + 58.9% Fresh Water	Surface	1 per joint on bottom 3 joints
Intermediate	0'-4827'	100% open hole excess Stage 1 Lead: 446 sks Stage 1 Tail: 347 sks	Lead: PremLite + 3% CaCl + 0.25lb/sk CelloFlake + 5lb/sk LCM, 12.1ppg 2.13cuft/sk Tail: Type III Cmt + 1% CaCl + 0.25lb/sk Cello Flake 14.5ppg 1.38cuft/sk	Surface	1 every 3 joints through water bearing zones
Production Liner	4727'-13184'	50% OH excess Stage 1 Blend Total: 469sks	Blend: Premium Lite High Strength FM + 0.7% bwoc R-3 + 3% bwoc Potassium Chloride + 0.25lbs/sack Cello Flake + 0.5% bwoc CD-32 + 1.15% bwoc FL- 52A + 60 lbs/sack Calcium Carbonate + 124.4% Fresh Water. Yield 2.63 cuft/sk	Liner Hanger	N/A

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

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

5. WELL PLAN & DIRECTIONAL DRILLING PROGRAM

The proposed horizontal well will have a kick off point of 4216'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5070'/13184'	Gallup

Lybrook G31-2307 01H**SHL: SW/4 NE/4 Sec 31 T23N R7W, 1358' FNL, 2379' FEL****BHL: NW/4 NW/4 Sec 36 T23N R8W, 400' FNL, 330' FWL****Sandoval, New Mexico****6. DRILLING FLUIDS PROGRAM****a) Surface through Intermediate Casing Point:**

Hole Size (in)	Depth (TVD/MD)	Mud Type	Density (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
30"	0-60'/60'	Fresh Water	8.3-9.2	38-100	4-28
12 1/4"	0'-500'/500'	Fresh Water	8.3-10	60-70	NC
8 3/4"	500'/500'-4738'/4827'	Fresh Water LSND	8.3-10	40-50	8-10

b) Intermediate Casing Point to TD:

Hole Size (in)	Depth (TVD/MD)	Mud Type	Density (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
6 1/8"	4738'/4827'- 5070'/13184'	Fresh Water LSND	8.3-10	15-25	<15

- c) There will be sufficient mud on location to control a blowout should one occur. Mud flow and volume will be monitored both visually and with electronic pit volume totalizers. Mud tests shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH.
- d) A closed-loop system will be used to recover drilling fluid and dry cuttings in both phases of the well and on all hole intervals. Above-ground tanks will be utilized to hold cuttings and fluids for rig operations. A frac tank will be on location to store fresh water. Waste will be disposed of properly at an EPA-approved hazardous waste facility. Fresh water cuttings will be disposed of at Basin Disposal, Inc. and/or Industrial Ecosystems, Inc. The location will be lined in accordance with the Surface Use Plan of Operations.

7. TESTING, CORING, & LOGGING

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

Cased Hole:

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

8. ABNORMAL PRESSURES & HYDROGEN SULFIDE

The anticipated bottom hole pressure is +/- 2405 psi based on a 9.0 ppg at 5138' 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 November 5, 2015. It is anticipated that completion operations will begin within 30 days after the well has been drilled depending on fracture treatment schedules with various pumping service companies.

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

LOC: Lybrook G31-2307 01H county: Sandoval WELL: Lybrook G31-2307 01H			Encana Natural Gas WELL SUMMARY						ENG: Jeff Villalobos 11/12/14 RIG: Aztec 920 GLE: 6995 RKBE: 7011	
MWD LWD	OPEN HOLE LOGGING	FORM	DEPTH TVDMD				HOLE SIZE	CASING SPECS	MW MUD TYPE	DEVIATION INFORMATION
			60	60'			26	16" 42.09# 100sx Type I Neat 16.0ppg cmt	Fresh wtr 8.3-9.2	
Multi-Well pad take survey every stand and run anti-collision report prior to spud	None	San Jose Fn. Nacimiento 9 5/8" Csg	0 0 500	 500.00			12 1/4	9 5/8" 36ppf J55 STC TOC Surface with 100% OH Excess: 228 sks Type III Cement + 1% bwoc Calcium Chloride + 0.25 lbs/sack Cello Flake + 0.2% bwoc FL-52A + 58.9% Fresh Water.	Fresh wtr 8.3-10	Vertical <1°
Survey Every 60'-120', updating anticollision report after surveys. Stop operations and contact drilling engineer if separation factor approaches 1.5	No OH logs	Ojo Alamo Kirtland Shale Fruitland Coal Pictured Cliffs Ss. Lewis Shale Cliffhouse Ss. Menefee Fn. Point Lookout Ss. Mancos Shale	924 1,119 1,385 1,509 1,625 2,278 3,068 3,893 4,075				8 3/4	7" 26ppf J55 LTC TOC @ surface (100% OH excess - 70% Lead 30% Tail) Stage 1 Total: 793sks Stage 1 Lead: 446 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: 347 sks Type III Cement + 1% CaCl2 + 0.25#/sk Cello Flake + 0.2% FL-52A. Mixed at 14.6 ppg. Yield 1.38 cuft/sk.	Fresh Wtr 8.3-10	Vertical <1°
Surveys every 30' through the curve	Mud logger onsite	KOP Mancos Silt Gallup Fn. 7" Csg	4,216 4,601 4,866 4,738	4,216 4,827'						
Surveys every stand to TD unless directed otherwise by Geologist	No OH Logs	Horizontal Target TD Base Gallup	5,138 5,070 5,212	13,184			6 1/8	100' overlap at liner top 8357' Drilled Lateral		Horz Inc/TVD 90.5 degdeg/5138ft TD = 13184.4 MD
MWD Gamma Directional								4 1/2" 11.6ppf SB80 LTC TOC @ hanger (50% OH excess) Stage 1 Total: 469sks Stage 1 Blend: 469 sks Premium Lite High Strength FM + 0.7% bwoc R-3 + 3% bwow Potassium Chloride + 0.25lbs/sack Cello Flake + 0.5% bwoc CD-32 + 1.15% bwoc FL- 52A + 60 lbs/sack Calcium Carbonate + 124.4% Fresh Water. Yield 2.63 cuft/sk.	WBM 8.3-10	

NOTES:

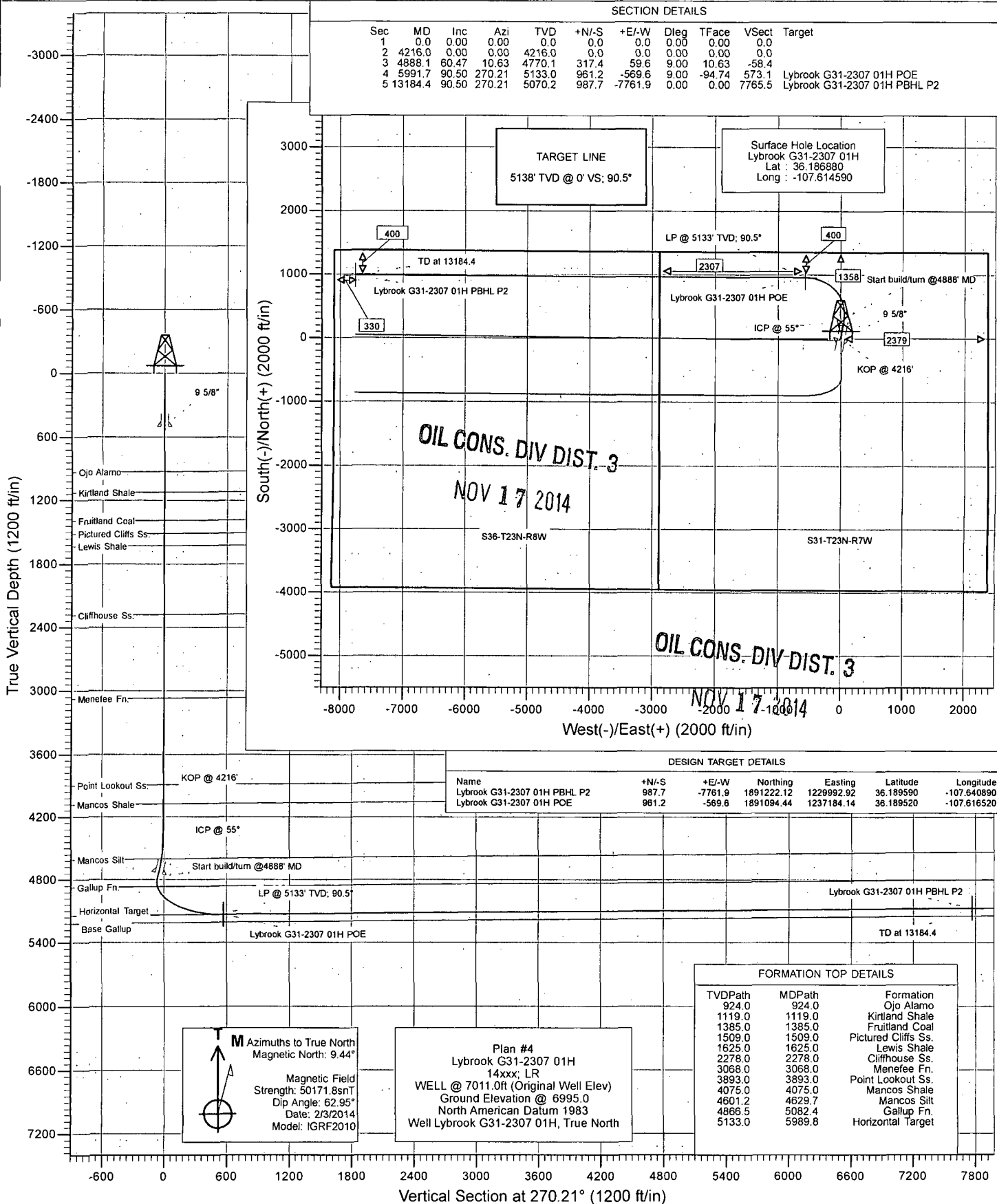
- 1) Drill with 26" bit to 60', set 16" 42.09ppf conductor pipe
- 2) Drill surface to 500', R&C 9 5/8" casing
- 3) N/U BOP and surface equipment
- 4) Drill to KOP of 4216', 8 3/4 inch holesize
- 5) Start curve at 10deg/100' build rate
- 6) Drill to csg point of 4827' MD
- 7) R&C 7" csg, circ cmt to surface
- 8) Land at ~90 deg, drill lateral to 13184' run 4 1/2 inch cemented liner

OIL CONS. DIV DIST. 3

NOV 17 2014

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	4216.0	0.00	0.00	4216.0	0.0	0.0	0.00	0.00	0.0	
3	4888.1	60.47	10.63	4770.1	317.4	59.6	9.00	10.63	-58.4	
4	5991.7	90.50	270.21	5133.0	961.2	-569.6	9.00	-94.74	573.1	Lybrook G31-2307 01H POE
5	13184.4	90.50	270.21	5070.2	987.7	-7761.9	0.00	0.00	7765.5	Lybrook G31-2307 01H PBHL P2



Cathedral Energy Services

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 G31-2307 01H
 Wellbore: Hz
 Design: Plan #4

Local Co-ordinate Reference: Well Lybrook G31-2307 01H
 TVD Reference: WELL @ 7011.0ft (Original Well Elev)
 MD Reference: WELL @ 7011.0ft (Original Well Elev)
 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	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 G31-2307 01H					
Well Position	+N/-S	0.0 ft	Northing:	1,890,125.34 ft	Latitude:	36.186880
	+E/-W	0.0 ft	Easting:	1,237,740.16 ft	Longitude:	-107.614590
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,995.0 ft	

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/3/2014	9.44	62.95	50,172

Design	Plan #4			
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	270.21

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	
4,216.0	0.00	0.00	4,216.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,888.1	60.47	10.63	4,770.1	317.4	59.6	9.00	9.00	0.00	10.63	
5,991.7	90.50	270.21	5,133.0	961.2	-569.6	9.00	2.72	-9.10	-94.74	Lybrook G31-2307 01
13,184.4	90.50	270.21	5,070.2	987.7	-7,761.9	0.00	0.00	0.00	0.00	Lybrook G31-2307 01

Cathedral Energy Services

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 G31-2307 01H
 Wellbore: Hz
 Design: Plan #4

Local Co-ordinate Reference: Well Lybrook G31-2307 01H
 TVD Reference: WELL @ 7011.0ft (Original Well Elev)
 MD Reference: WELL @ 7011.0ft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	9 5/8"
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	
924.0	0.00	0.00	924.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo
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	
1,119.0	0.00	0.00	1,119.0	0.0	0.0	0.0	0.00	0.00	Kirtland Shale
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	
1,385.0	0.00	0.00	1,385.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	
1,509.0	0.00	0.00	1,509.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs Ss.
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	
1,625.0	0.00	0.00	1,625.0	0.0	0.0	0.0	0.00	0.00	Lewis Shale
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	
2,278.0	0.00	0.00	2,278.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss.
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	
3,068.0	0.00	0.00	3,068.0	0.0	0.0	0.0	0.00	0.00	Menefee Fn.
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	
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	
3,893.0	0.00	0.00	3,893.0	0.0	0.0	0.0	0.00	0.00	Point Lookout Ss.
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	
4,075.0	0.00	0.00	4,075.0	0.0	0.0	0.0	0.00	0.00	Mancos Shale
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	

Cathedral Energy Services

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 G31-2307 01H
 Wellbore: Hz
 Design: Plan #4

Local Co-ordinate Reference:
 TVD Reference:
 MD Reference:
 North Reference:
 Survey Calculation Method:

Well Lybrook G31-2307 01H
 WELL @ 7011.0ft (Original Well Elev)
 WELL @ 7011.0ft (Original Well Elev)
 True
 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
4,216.0	0.00	0.00	4,216.0	0.0	0.0	0.0	0.00	0.00	KOP @ 4216'
4,250.0	3.06	10.63	4,250.0	0.9	0.2	-0.2	9.00	9.00	
4,300.0	7.56	10.63	4,299.8	5.4	1.0	-1.0	9.00	9.00	
4,350.0	12.06	10.63	4,349.0	13.8	2.6	-2.5	9.00	9.00	
4,400.0	16.55	10.63	4,397.5	25.9	4.9	-4.8	9.00	9.00	
4,450.0	21.05	10.63	4,444.8	41.8	7.8	-7.7	9.00	9.00	
4,500.0	25.55	10.63	4,490.7	61.2	11.5	-11.3	9.00	9.00	
4,550.0	30.05	10.63	4,534.9	84.1	15.8	-15.5	9.00	9.00	
4,600.0	34.55	10.63	4,577.1	110.4	20.7	-20.3	9.00	9.00	
4,629.7	37.22	10.63	4,601.2	127.5	23.9	-23.5	9.00	9.00	Mancos Silt
4,650.0	39.05	10.63	4,617.2	139.8	26.3	-25.7	9.00	9.00	
4,700.0	43.55	10.63	4,654.7	172.2	32.3	-31.7	9.00	9.00	
4,750.0	48.05	10.63	4,689.6	207.5	39.0	-38.2	9.00	9.00	
4,800.0	52.54	10.63	4,721.5	245.2	46.0	-45.1	9.00	9.00	
4,827.3	55.00	10.63	4,737.6	266.9	50.1	-49.1	9.00	9.00	ICP @ 55°
4,850.0	57.04	10.63	4,750.3	285.4	53.6	-52.5	9.00	9.00	
4,888.1	60.47	10.63	4,770.1	317.4	59.6	-58.4	9.00	9.00	Start build/turn @4888' MD
4,900.0	60.39	9.41	4,776.0	327.6	61.4	-60.2	9.00	-0.70	
4,950.0	60.16	4.23	4,800.8	370.7	66.6	-65.2	9.00	-0.45	
5,000.0	60.14	359.04	4,825.7	414.0	67.8	-66.3	9.00	-0.04	
5,050.0	60.32	353.87	4,850.5	457.3	65.1	-63.4	9.00	0.36	
5,082.4	60.55	350.52	4,866.5	485.3	61.3	-59.5	9.00	0.69	Gallup Fn.
5,100.0	60.70	348.71	4,875.1	500.3	58.5	-56.7	9.00	0.89	
5,150.0	61.28	343.61	4,899.4	542.7	48.1	-46.1	9.00	1.15	
5,200.0	62.05	338.58	4,923.1	584.4	33.8	-31.7	9.00	1.53	
5,250.0	62.99	333.62	4,946.2	624.9	15.8	-13.5	9.00	1.89	
5,300.0	64.11	328.75	4,968.5	664.1	-5.8	8.2	9.00	2.23	
5,350.0	65.39	323.98	4,989.8	701.7	-30.8	33.4	9.00	2.55	
5,400.0	66.81	319.31	5,010.1	737.5	-59.2	61.9	9.00	2.85	
5,450.0	68.37	314.74	5,029.2	771.3	-90.7	93.5	9.00	3.12	
5,500.0	70.05	310.28	5,046.9	802.9	-125.1	128.1	9.00	3.36	
5,550.0	71.84	305.91	5,063.3	832.1	-162.3	165.4	9.00	3.58	
5,600.0	73.72	301.63	5,078.1	858.6	-202.0	205.1	9.00	3.77	
5,650.0	75.69	297.44	5,091.3	882.4	-244.0	247.2	9.00	3.94	
5,700.0	77.73	293.32	5,102.8	903.2	-287.9	291.2	9.00	4.08	
5,750.0	79.84	289.27	5,112.5	921.0	-333.6	337.0	9.00	4.21	
5,800.0	81.99	285.26	5,120.4	935.6	-380.7	384.2	9.00	4.30	
5,850.0	84.18	281.31	5,126.4	947.0	-429.0	432.5	9.00	4.38	
5,900.0	86.40	277.38	5,130.5	955.1	-478.2	481.7	9.00	4.43	
5,950.0	88.63	273.47	5,132.7	959.8	-527.9	531.4	9.00	4.47	
5,989.8	90.41	270.36	5,133.0	961.2	-567.6	571.1	9.00	4.48	Horizontal Target
5,991.7	90.50	270.21	5,133.0	961.2	-569.6	573.1	9.00	4.48	LP @ 5133' TVD; 90.5°
6,000.0	90.50	270.21	5,132.9	961.2	-577.9	581.4	0.00	0.00	
6,100.0	90.50	270.21	5,132.1	961.6	-677.9	681.4	0.00	0.00	
6,200.0	90.50	270.21	5,131.2	961.9	-777.9	781.4	0.00	0.00	
6,300.0	90.50	270.21	5,130.3	962.3	-877.9	881.4	0.00	0.00	
6,400.0	90.50	270.21	5,129.4	962.7	-977.9	981.4	0.00	0.00	
6,500.0	90.50	270.21	5,128.6	963.1	-1,077.8	1,081.4	0.00	0.00	
6,600.0	90.50	270.21	5,127.7	963.4	-1,177.8	1,181.4	0.00	0.00	
6,700.0	90.50	270.21	5,126.8	963.8	-1,277.8	1,281.4	0.00	0.00	
6,800.0	90.50	270.21	5,125.9	964.2	-1,377.8	1,381.4	0.00	0.00	
6,900.0	90.50	270.21	5,125.1	964.5	-1,477.8	1,481.4	0.00	0.00	

Cathedral Energy Services

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 G31-2307 01H
Wellbore: Hz
Design: Plan #4

Local Co-ordinate Reference: Well Lybrook G31-2307 01H
TVD Reference: WELL @ 7011.0ft (Original Well Elev)
MD Reference: WELL @ 7011.0ft (Original Well Elev)
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
7,000.0	90.50	270.21	5,124.2	964.9	-1,577.8	1,581.3	0.00	0.00	
7,100.0	90.50	270.21	5,123.3	965.3	-1,677.8	1,681.3	0.00	0.00	
7,200.0	90.50	270.21	5,122.5	965.6	-1,777.8	1,781.3	0.00	0.00	
7,300.0	90.50	270.21	5,121.6	966.0	-1,877.8	1,881.3	0.00	0.00	
7,400.0	90.50	270.21	5,120.7	966.4	-1,977.8	1,981.3	0.00	0.00	
7,500.0	90.50	270.21	5,119.8	966.7	-2,077.8	2,081.3	0.00	0.00	
7,600.0	90.50	270.21	5,119.0	967.1	-2,177.8	2,181.3	0.00	0.00	
7,700.0	90.50	270.21	5,118.1	967.5	-2,277.8	2,281.3	0.00	0.00	
7,800.0	90.50	270.21	5,117.2	967.9	-2,377.8	2,381.3	0.00	0.00	
7,900.0	90.50	270.21	5,116.3	968.2	-2,477.8	2,481.3	0.00	0.00	
8,000.0	90.50	270.21	5,115.5	968.6	-2,577.8	2,581.3	0.00	0.00	
8,100.0	90.50	270.21	5,114.6	969.0	-2,677.8	2,681.3	0.00	0.00	
8,200.0	90.50	270.21	5,113.7	969.3	-2,777.8	2,781.3	0.00	0.00	
8,300.0	90.50	270.21	5,112.9	969.7	-2,877.8	2,881.3	0.00	0.00	
8,400.0	90.50	270.21	5,112.0	970.1	-2,977.8	2,981.3	0.00	0.00	
8,500.0	90.50	270.21	5,111.1	970.4	-3,077.8	3,081.3	0.00	0.00	
8,600.0	90.50	270.21	5,110.2	970.8	-3,177.8	3,181.3	0.00	0.00	
8,700.0	90.50	270.21	5,109.4	971.2	-3,277.7	3,281.3	0.00	0.00	
8,800.0	90.50	270.21	5,108.5	971.5	-3,377.7	3,381.3	0.00	0.00	
8,900.0	90.50	270.21	5,107.6	971.9	-3,477.7	3,481.3	0.00	0.00	
9,000.0	90.50	270.21	5,106.7	972.3	-3,577.7	3,581.3	0.00	0.00	
9,100.0	90.50	270.21	5,105.9	972.6	-3,677.7	3,681.3	0.00	0.00	
9,200.0	90.50	270.21	5,105.0	973.0	-3,777.7	3,781.3	0.00	0.00	
9,300.0	90.50	270.21	5,104.1	973.4	-3,877.7	3,881.3	0.00	0.00	
9,400.0	90.50	270.21	5,103.3	973.8	-3,977.7	3,981.3	0.00	0.00	
9,500.0	90.50	270.21	5,102.4	974.1	-4,077.7	4,081.3	0.00	0.00	
9,600.0	90.50	270.21	5,101.5	974.5	-4,177.7	4,181.3	0.00	0.00	
9,700.0	90.50	270.21	5,100.6	974.9	-4,277.7	4,281.2	0.00	0.00	
9,800.0	90.50	270.21	5,099.8	975.2	-4,377.7	4,381.2	0.00	0.00	
9,900.0	90.50	270.21	5,098.9	975.6	-4,477.7	4,481.2	0.00	0.00	
10,000.0	90.50	270.21	5,098.0	976.0	-4,577.7	4,581.2	0.00	0.00	
10,100.0	90.50	270.21	5,097.1	976.3	-4,677.7	4,681.2	0.00	0.00	
10,200.0	90.50	270.21	5,096.3	976.7	-4,777.7	4,781.2	0.00	0.00	
10,300.0	90.50	270.21	5,095.4	977.1	-4,877.7	4,881.2	0.00	0.00	
10,400.0	90.50	270.21	5,094.5	977.4	-4,977.7	4,981.2	0.00	0.00	
10,500.0	90.50	270.21	5,093.7	977.8	-5,077.7	5,081.2	0.00	0.00	
10,600.0	90.50	270.21	5,092.8	978.2	-5,177.7	5,181.2	0.00	0.00	
10,700.0	90.50	270.21	5,091.9	978.5	-5,277.7	5,281.2	0.00	0.00	
10,800.0	90.50	270.21	5,091.0	978.9	-5,377.7	5,381.2	0.00	0.00	
10,900.0	90.50	270.21	5,090.2	979.3	-5,477.6	5,481.2	0.00	0.00	
11,000.0	90.50	270.21	5,089.3	979.7	-5,577.6	5,581.2	0.00	0.00	
11,100.0	90.50	270.21	5,088.4	980.0	-5,677.6	5,681.2	0.00	0.00	
11,200.0	90.50	270.21	5,087.6	980.4	-5,777.6	5,781.2	0.00	0.00	
11,300.0	90.50	270.21	5,086.7	980.8	-5,877.6	5,881.2	0.00	0.00	
11,400.0	90.50	270.21	5,085.8	981.1	-5,977.6	5,981.2	0.00	0.00	
11,500.0	90.50	270.21	5,084.9	981.5	-6,077.6	6,081.2	0.00	0.00	
11,600.0	90.50	270.21	5,084.1	981.9	-6,177.6	6,181.2	0.00	0.00	
11,700.0	90.50	270.21	5,083.2	982.2	-6,277.6	6,281.2	0.00	0.00	
11,800.0	90.50	270.21	5,082.3	982.6	-6,377.6	6,381.2	0.00	0.00	
11,900.0	90.50	270.21	5,081.4	983.0	-6,477.6	6,481.2	0.00	0.00	
12,000.0	90.50	270.21	5,080.6	983.3	-6,577.6	6,581.2	0.00	0.00	
12,100.0	90.50	270.21	5,079.7	983.7	-6,677.6	6,681.2	0.00	0.00	

Cathedral Energy Services

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 G31-2307 01H
Wellbore: Hz
Design: Plan #4

Local Co-ordinate Reference: Well Lybrook G31-2307 01H
TVD Reference: WELL @ 7011.0ft (Original Well Elev)
MD Reference: WELL @ 7011.0ft (Original Well Elev)
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
12,200.0	90.50	270.21	5,078.8	984.1	-6,777.6	6,781.2	0.00	0.00	
12,300.0	90.50	270.21	5,078.0	984.5	-6,877.6	6,881.1	0.00	0.00	
12,400.0	90.50	270.21	5,077.1	984.8	-6,977.6	6,981.1	0.00	0.00	
12,500.0	90.50	270.21	5,076.2	985.2	-7,077.6	7,081.1	0.00	0.00	
12,600.0	90.50	270.21	5,075.3	985.6	-7,177.6	7,181.1	0.00	0.00	
12,700.0	90.50	270.21	5,074.5	985.9	-7,277.6	7,281.1	0.00	0.00	
12,800.0	90.50	270.21	5,073.6	986.3	-7,377.6	7,381.1	0.00	0.00	
12,900.0	90.50	270.21	5,072.7	986.7	-7,477.6	7,481.1	0.00	0.00	
13,000.0	90.50	270.21	5,071.8	987.0	-7,577.6	7,581.1	0.00	0.00	
13,100.0	90.50	270.21	5,071.0	987.4	-7,677.5	7,681.1	0.00	0.00	
13,184.4	90.50	270.21	5,070.2	987.7	-7,761.9	7,765.5	0.00	0.00	TD at 13184.4

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Lybrook G31-2307 01H I	0.00	0.00	5,133.0	961.2	-569.6	1,891,094.44	1,237,184.14	36.189520	-107.616520
- plan hits target center									
- Point									
Lybrook G31-2307 01H I	0.00	0.00	5,070.2	987.7	-7,761.9	1,891,222.12	1,229,992.92	36.189590	-107.640890
- plan hits target center									
- Point									
Lybrook G31-2307 01H I	0.00	0.00	5,093.0	976.2	-5,155.9	1,891,173.96	1,232,598.50	36.189560	-107.632060
- plan misses target center by 1.9ft at 10578.2ft MD (5093.0 TVD, 978.1 N, -5155.9 E)									
- Point									

500.0	500.0	9 5/8"	0.000	0.000
4,827.3	4,737.6	ICP @ 55°	0.000	0.000

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
924.0	924.0	Ojo Alamo		-0.50	270.21
1,119.0	1,119.0	Kirtland Shale		-0.50	270.21
1,385.0	1,385.0	Fruitland Coal		-0.50	270.21
1,509.0	1,509.0	Pictured Cliffs Ss.		-0.50	270.21
1,625.0	1,625.0	Lewis Shale		-0.50	270.21
2,278.0	2,278.0	Cliffhouse Ss.		-0.50	270.21
3,068.0	3,068.0	Menefee Fn.		-0.50	270.21
3,893.0	3,893.0	Point Lookout Ss.		-0.50	270.21
4,075.0	4,075.0	Mancos Shale		-0.50	270.21
4,629.7	4,601.0	Mancos Silt		-0.50	270.21
5,082.4	4,866.0	Gallup Fn.		-0.50	270.21
5,989.8	5,138.0	Horizontal Target		-0.50	270.21

Cathedral Energy Services

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 G31-2307 01H
Wellbore: Hz
Design: Plan #4

Local Co-ordinate Reference: Well Lybrook G31-2307 01H
TVD Reference: WELL @ 7011.0ft (Original Well Elev)
MD Reference: WELL @ 7011.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,216.0	4,216.0	0.0	0.0	KOP @ 4216'
4,888.1	4,770.1	317.4	59.6	Start build/turn @4888' MD
5,991.7	5,133.0	961.2	-569.6	LP @ 5133' TVD; 90.5°
13,184.4	5,070.2	987.7	-7,761.9	TD at 13184.4

EnCana Oil & Gas (USA) Inc

Sandoval County, NM

S31-T23N-R7W

Lybrook G31-2307 01H

Hz

Plan #4

Anticollision Report

06 November, 2014

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook G31-2307 01H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 7011.0ft (Original Well Elev)
Reference Site:	S31-T23N-R7W	MD Reference:	WELL @ 7011.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook G31-2307 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 #4	Offset TVD Reference:	Offset Datum

Reference	Plan #4		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	Error Model:	Systematic Ellipse
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,457.4ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program **Date** 11/6/2014

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	13,184.4	Plan #4 (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						
S31-T23N-R7W						
Lybrook G31-2307 02H - Hz - Plan #3	4,200.0	4,200.0	27.5	12.9	1.885	CC, ES, SF
Lybrook G31-2307 03H - Hz - Plan #3	2,400.0	2,400.0	40.0	31.7	4.813	CC, ES
Lybrook G31-2307 03H - Hz - Plan #3	2,500.0	2,499.1	41.1	32.5	4.746	SF

Cathedral Energy Services

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S31-T23N-R7W
Site Error: 0.0ft
Reference Well: Lybrook G31-2307 01H
Well Error: 0.0ft
Reference Wellbore: Hz
Reference Design: Plan #4

Local Co-ordinate Reference: Well Lybrook G31-2307 01H
TVD Reference: WELL @ 7011.0ft (Original Well Elev)
MD Reference: WELL @ 7011.0ft (Original Well Elev)
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 G31-2307 02H - Hz - Plan #3												Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance					Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	
0.0	0.0	0.0	0.0	0.0	0.0	-131.38	-18.2	-20.7	27.5				
100.0	100.0	100.0	100.0	0.1	0.1	-131.38	-18.2	-20.7	27.5	27.2	0.29	93.909	
200.0	200.0	200.0	200.0	0.3	0.3	-131.38	-18.2	-20.7	27.5	26.9	0.64	42.872	
300.0	300.0	300.0	300.0	0.5	0.5	-131.38	-18.2	-20.7	27.5	26.5	0.99	27.776	
400.0	400.0	400.0	400.0	0.7	0.7	-131.38	-18.2	-20.7	27.5	26.2	1.34	20.543	
500.0	500.0	500.0	500.0	0.8	0.8	-131.38	-18.2	-20.7	27.5	25.8	1.69	16.298	
600.0	600.0	600.0	600.0	1.0	1.0	-131.38	-18.2	-20.7	27.5	25.5	2.04	13.507	
700.0	700.0	700.0	700.0	1.2	1.2	-131.38	-18.2	-20.7	27.5	25.1	2.39	11.533	
800.0	800.0	800.0	800.0	1.4	1.4	-131.38	-18.2	-20.7	27.5	24.8	2.74	10.062	
900.0	900.0	900.0	900.0	1.5	1.5	-131.38	-18.2	-20.7	27.5	24.4	3.09	8.924	
1,000.0	1,000.0	1,000.0	1,000.0	1.7	1.7	-131.38	-18.2	-20.7	27.5	24.1	3.43	8.017	
1,100.0	1,100.0	1,100.0	1,100.0	1.9	1.9	-131.38	-18.2	-20.7	27.5	23.8	3.78	7.277	
1,200.0	1,200.0	1,200.0	1,200.0	2.1	2.1	-131.38	-18.2	-20.7	27.5	23.4	4.13	6.662	
1,300.0	1,300.0	1,300.0	1,300.0	2.2	2.2	-131.38	-18.2	-20.7	27.5	23.1	4.48	6.144	
1,400.0	1,400.0	1,400.0	1,400.0	2.4	2.4	-131.38	-18.2	-20.7	27.5	22.7	4.83	5.700	
1,500.0	1,500.0	1,500.0	1,500.0	2.6	2.6	-131.38	-18.2	-20.7	27.5	22.4	5.18	5.316	
1,600.0	1,600.0	1,600.0	1,600.0	2.8	2.8	-131.38	-18.2	-20.7	27.5	22.0	5.53	4.980	
1,700.0	1,700.0	1,700.0	1,700.0	2.9	2.9	-131.38	-18.2	-20.7	27.5	21.7	5.88	4.684	
1,800.0	1,800.0	1,800.0	1,800.0	3.1	3.1	-131.38	-18.2	-20.7	27.5	21.3	6.23	4.422	
1,900.0	1,900.0	1,900.0	1,900.0	3.3	3.3	-131.38	-18.2	-20.7	27.5	21.0	6.58	4.187	
2,000.0	2,000.0	2,000.0	2,000.0	3.5	3.5	-131.38	-18.2	-20.7	27.5	20.6	6.93	3.976	
2,100.0	2,100.0	2,100.0	2,100.0	3.6	3.6	-131.38	-18.2	-20.7	27.5	20.3	7.27	3.785	
2,200.0	2,200.0	2,200.0	2,200.0	3.8	3.8	-131.38	-18.2	-20.7	27.5	19.9	7.62	3.612	
2,300.0	2,300.0	2,300.0	2,300.0	4.0	4.0	-131.38	-18.2	-20.7	27.5	19.6	7.97	3.454	
2,400.0	2,400.0	2,400.0	2,400.0	4.2	4.2	-131.38	-18.2	-20.7	27.5	19.2	8.32	3.309	
2,500.0	2,500.0	2,500.0	2,500.0	4.3	4.3	-131.38	-18.2	-20.7	27.5	18.9	8.67	3.176	
2,600.0	2,600.0	2,600.0	2,600.0	4.5	4.5	-131.38	-18.2	-20.7	27.5	18.5	9.02	3.053	
2,700.0	2,700.0	2,700.0	2,700.0	4.7	4.7	-131.38	-18.2	-20.7	27.5	18.2	9.37	2.939	
2,800.0	2,800.0	2,800.0	2,800.0	4.9	4.9	-131.38	-18.2	-20.7	27.5	17.8	9.72	2.833	
2,900.0	2,900.0	2,900.0	2,900.0	5.0	5.0	-131.38	-18.2	-20.7	27.5	17.5	10.07	2.735	
3,000.0	3,000.0	3,000.0	3,000.0	5.2	5.2	-131.38	-18.2	-20.7	27.5	17.1	10.42	2.644	
3,100.0	3,100.0	3,100.0	3,100.0	5.4	5.4	-131.38	-18.2	-20.7	27.5	16.8	10.77	2.558	
3,200.0	3,200.0	3,200.0	3,200.0	5.6	5.6	-131.38	-18.2	-20.7	27.5	16.4	11.11	2.478	
3,300.0	3,300.0	3,300.0	3,300.0	5.7	5.7	-131.38	-18.2	-20.7	27.5	16.1	11.46	2.402	
3,400.0	3,400.0	3,400.0	3,400.0	5.9	5.9	-131.38	-18.2	-20.7	27.5	15.7	11.81	2.331	
3,500.0	3,500.0	3,500.0	3,500.0	6.1	6.1	-131.38	-18.2	-20.7	27.5	15.4	12.16	2.264	
3,600.0	3,600.0	3,600.0	3,600.0	6.3	6.3	-131.38	-18.2	-20.7	27.5	15.0	12.51	2.201	
3,700.0	3,700.0	3,700.0	3,700.0	6.4	6.4	-131.38	-18.2	-20.7	27.5	14.7	12.86	2.141	
3,800.0	3,800.0	3,800.0	3,800.0	6.6	6.6	-131.38	-18.2	-20.7	27.5	14.3	13.21	2.085	
3,900.0	3,900.0	3,900.0	3,900.0	6.8	6.8	-131.38	-18.2	-20.7	27.5	14.0	13.56	2.031	
4,000.0	4,000.0	4,000.0	4,000.0	7.0	7.0	-131.38	-18.2	-20.7	27.5	13.6	13.91	1.980	
4,100.0	4,100.0	4,100.0	4,100.0	7.1	7.1	-131.38	-18.2	-20.7	27.5	13.3	14.26	1.932	
4,200.0	4,200.0	4,200.0	4,200.0	7.3	7.3	-131.38	-18.2	-20.7	27.5	12.9	14.60	1.885 CC, ES, SF	
4,300.0	4,299.8	4,299.8	4,299.8	7.5	7.5	-147.89	-18.2	-20.7	32.1	17.2	14.89	2.154	
4,400.0	4,397.5	4,397.5	4,397.5	7.7	7.6	-159.82	-18.2	-20.7	51.0	36.1	14.94	3.415	
4,500.0	4,490.7	4,490.7	4,490.7	7.9	7.8	-167.39	-18.2	-20.7	85.7	71.0	14.71	5.825	
4,600.0	4,577.1	4,575.3	4,575.3	8.3	8.0	-170.91	-18.2	-21.2	135.3	121.0	14.26	9.487	
4,700.0	4,654.7	4,645.1	4,644.7	8.8	8.1	-169.75	-18.1	-28.6	200.1	186.5	13.68	14.632	
4,800.0	4,721.5	4,700.0	4,698.3	9.6	8.2	-166.29	-18.1	-40.3	278.1	265.0	13.12	21.191	
4,900.0	4,776.0	4,740.8	4,737.2	10.6	8.3	-158.85	-18.0	-52.3	365.9	352.7	13.18	27.762	
5,000.0	4,825.7	4,776.9	4,770.9	11.6	8.4	-139.88	-17.9	-65.3	455.2	439.5	15.73	28.941	
5,100.0	4,875.1	4,815.9	4,806.3	12.8	8.5	-126.27	-17.8	-81.6	541.1	523.1	17.98	30.086	

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

Cathedral Energy Services

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S31-T23N-R7W
Site Error: 0.0ft
Reference Well: Lybrook G31-2307 01H
Well Error: 0.0ft
Reference Wellbore: Hz
Reference Design: Plan #4

Local Co-ordinate Reference: Well Lybrook G31-2307 01H
TVD Reference: WELL @ 7011.0ft (Original Well Elev)
MD Reference: WELL @ 7011.0ft (Original Well Elev)
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 G31-2307 02H - Hz - Plan #3													Offset Site Error: 0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error: 0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	
5,200.0	4,923.1	4,858.6	4,843.8	14.0	8.6	-116.04	-17.6	-102.2	622.3	602.4	19.82	31.394	
5,300.0	4,968.5	4,906.1	4,883.4	15.2	8.8	-108.13	-17.5	-128.4	697.7	676.4	21.34	32.688	
5,400.0	5,010.1	4,959.5	4,925.1	16.5	9.2	-101.98	-17.2	-161.6	766.4	743.7	22.68	33.795	
5,500.0	5,046.9	5,019.7	4,968.3	17.7	9.6	-97.29	-16.9	-203.6	827.3	803.4	23.96	34.536	
5,600.0	5,078.1	5,087.9	5,011.5	19.1	10.3	-93.83	-16.6	-256.3	879.4	854.0	25.32	34.731	
5,700.0	5,102.8	5,164.7	5,052.2	20.4	11.2	-91.43	-16.1	-321.4	921.3	894.4	26.92	34.220	
5,800.0	5,120.4	5,250.0	5,086.7	21.8	12.5	-89.94	-15.6	-399.3	952.0	923.1	28.85	32.995	
5,900.0	5,130.5	5,342.5	5,110.5	23.1	14.2	-89.24	-14.9	-488.6	970.3	939.2	31.10	31.198	
6,000.0	5,132.9	5,440.5	5,119.8	24.5	16.2	-89.23	-14.2	-586.0	975.6	942.0	33.62	29.017	
6,100.0	5,132.1	5,540.8	5,119.2	25.9	18.4	-89.24	-13.4	-686.3	975.1	937.2	37.90	25.725	
6,200.0	5,131.2	5,640.8	5,118.3	27.5	20.6	-89.24	-12.5	-786.3	974.6	932.3	42.32	23.029	
6,300.0	5,130.3	5,740.8	5,117.4	29.3	22.8	-89.24	-11.6	-886.2	974.1	927.2	46.84	20.795	
6,400.0	5,129.4	5,840.8	5,116.5	31.1	25.1	-89.24	-10.8	-986.2	973.6	922.1	51.44	18.925	
6,500.0	5,128.6	5,940.8	5,115.7	33.1	27.5	-89.24	-9.9	-1,086.2	973.1	917.0	56.10	17.344	
6,600.0	5,127.7	6,040.8	5,114.8	35.1	29.8	-89.24	-9.0	-1,186.2	972.6	911.8	60.81	15.994	
6,700.0	5,126.8	6,140.8	5,113.9	37.2	32.2	-89.24	-8.1	-1,286.2	972.1	906.5	65.55	14.829	
6,800.0	5,125.9	6,240.8	5,113.0	39.3	34.6	-89.24	-7.3	-1,386.2	971.6	901.2	70.32	13.816	
6,900.0	5,125.1	6,340.8	5,112.2	41.5	37.0	-89.24	-6.4	-1,486.2	971.1	895.9	75.11	12.928	
7,000.0	5,124.2	6,440.8	5,111.3	43.7	39.4	-89.24	-5.5	-1,586.2	970.5	890.6	79.93	12.143	
7,100.0	5,123.3	6,540.8	5,110.4	45.9	41.8	-89.24	-4.7	-1,686.2	970.0	885.3	84.75	11.445	
7,200.0	5,122.5	6,640.8	5,109.6	48.2	44.2	-89.24	-3.8	-1,786.2	969.5	879.9	89.59	10.821	
7,300.0	5,121.6	6,740.8	5,108.7	50.5	46.7	-89.24	-2.9	-1,886.2	969.0	874.6	94.45	10.260	
7,400.0	5,120.7	6,840.8	5,107.8	52.8	49.1	-89.24	-2.0	-1,986.1	968.5	869.2	99.31	9.753	
7,500.0	5,119.8	6,940.8	5,106.9	55.1	51.5	-89.24	-1.2	-2,086.1	968.0	863.9	104.18	9.292	
7,600.0	5,119.0	7,040.8	5,106.1	57.4	54.0	-89.24	-0.3	-2,186.1	967.5	858.5	109.05	8.872	
7,700.0	5,118.1	7,140.8	5,105.2	59.7	56.4	-89.24	0.6	-2,286.1	967.0	853.1	113.94	8.487	
7,800.0	5,117.2	7,240.8	5,104.3	62.1	58.9	-89.24	1.5	-2,386.1	966.5	847.7	118.82	8.134	
7,900.0	5,116.3	7,340.8	5,103.4	64.4	61.3	-89.24	2.3	-2,486.1	966.0	842.3	123.72	7.808	
8,000.0	5,115.5	7,440.8	5,102.6	66.8	63.8	-89.24	3.2	-2,586.1	965.5	836.9	128.61	7.507	
8,100.0	5,114.6	7,540.8	5,101.7	69.2	66.2	-89.24	4.1	-2,686.1	965.0	831.5	133.52	7.228	
8,200.0	5,113.7	7,640.8	5,100.8	71.6	68.7	-89.24	4.9	-2,786.1	964.5	826.1	138.42	6.968	
8,300.0	5,112.9	7,740.8	5,100.0	74.0	71.1	-89.24	5.8	-2,886.1	964.0	820.7	143.33	6.726	
8,400.0	5,112.0	7,840.8	5,099.1	76.4	73.6	-89.24	6.7	-2,986.1	963.5	815.3	148.24	6.500	
8,500.0	5,111.1	7,940.8	5,098.2	78.8	76.0	-89.23	7.6	-3,086.0	963.0	809.8	153.15	6.288	
8,600.0	5,110.2	8,040.8	5,097.3	81.2	78.5	-89.23	8.4	-3,186.0	962.5	804.4	158.06	6.089	
8,700.0	5,109.4	8,140.8	5,096.5	83.6	81.0	-89.23	9.3	-3,286.0	962.0	799.0	162.98	5.902	
8,800.0	5,108.5	8,240.7	5,095.6	86.0	83.4	-89.23	10.2	-3,386.0	961.5	793.6	167.90	5.727	
8,900.0	5,107.6	8,340.7	5,094.7	88.4	85.9	-89.23	11.1	-3,486.0	961.0	788.2	172.82	5.561	
9,000.0	5,106.7	8,440.7	5,093.8	90.8	88.4	-89.23	11.9	-3,586.0	960.5	782.7	177.74	5.404	
9,100.0	5,105.9	8,540.7	5,093.0	93.2	90.8	-89.23	12.8	-3,686.0	960.0	777.3	182.66	5.255	
9,200.0	5,105.0	8,640.7	5,092.1	95.7	93.3	-89.23	13.7	-3,786.0	959.5	771.9	187.59	5.115	
9,300.0	5,104.1	8,740.7	5,091.2	98.1	95.7	-89.23	14.5	-3,886.0	959.0	766.4	192.51	4.981	
9,400.0	5,103.3	8,840.7	5,090.4	100.5	98.2	-89.23	15.4	-3,986.0	958.5	761.0	197.44	4.854	
9,500.0	5,102.4	8,940.7	5,089.5	103.0	100.7	-89.23	16.3	-4,086.0	958.0	755.6	202.37	4.734	
9,600.0	5,101.5	9,040.7	5,088.6	105.4	103.1	-89.23	17.2	-4,185.9	957.4	750.2	207.30	4.619	
9,700.0	5,100.6	9,140.7	5,087.7	107.8	105.6	-89.23	18.0	-4,285.9	956.9	744.7	212.23	4.509	
9,800.0	5,099.8	9,240.7	5,086.9	110.3	108.1	-89.23	18.9	-4,385.9	956.4	739.3	217.16	4.404	
9,900.0	5,098.9	9,340.7	5,086.0	112.7	110.5	-89.23	19.8	-4,485.9	955.9	733.8	222.09	4.304	
10,000.0	5,098.0	9,440.7	5,085.1	115.2	113.0	-89.23	20.7	-4,585.9	955.4	728.4	227.02	4.209	
10,100.0	5,097.1	9,540.7	5,084.2	117.6	115.5	-89.23	21.5	-4,685.9	954.9	723.0	231.95	4.117	
10,200.0	5,096.3	9,640.7	5,083.4	120.0	117.9	-89.23	22.4	-4,785.9	954.4	717.5	236.89	4.029	
10,300.0	5,095.4	9,740.7	5,082.5	122.5	120.4	-89.23	23.3	-4,885.9	953.9	712.1	241.82	3.945	

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

Cathedral Energy Services

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S31-T23N-R7W
Site Error: 0.0ft
Reference Well: Lybrook G31-2307 01H
Well Error: 0.0ft
Reference Wellbore: Hz
Reference Design: Plan #4

Local Co-ordinate Reference: Well Lybrook G31-2307 01H
TVD Reference: WELL @ 7011.0ft (Original Well Elev)
MD Reference: WELL @ 7011.0ft (Original Well Elev)
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 G31-2307 02H - Hz - Plan #3														Offset Site Error: 0.0 ft
Survey Program: 0-Geolink MWD														Offset Well Error: 0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
10,400.0	5,094.5	9,840.7	5,081.6	124.9	122.9	-89.23	24.1	-4,985.9	953.4	706.7	246.76	3.864		
10,500.0	5,093.7	9,940.7	5,080.8	127.4	125.3	-89.23	25.0	-5,085.9	952.9	701.2	251.69	3.786		
10,600.0	5,092.8	10,040.7	5,079.9	129.8	127.8	-89.23	25.9	-5,185.9	952.4	695.8	256.63	3.711		
10,700.0	5,091.9	10,140.7	5,079.0	132.3	130.3	-89.23	26.8	-5,285.9	951.9	690.3	261.56	3.639		
10,800.0	5,091.0	10,240.7	5,078.1	134.7	132.7	-89.23	27.6	-5,385.8	951.4	684.9	266.50	3.570		
10,900.0	5,090.2	10,340.7	5,077.3	137.2	135.2	-89.23	28.5	-5,485.8	950.9	679.5	271.44	3.503		
11,000.0	5,089.3	10,440.7	5,076.4	139.6	137.7	-89.22	29.4	-5,585.8	950.4	674.0	276.37	3.439		
11,100.0	5,088.4	10,540.7	5,075.5	142.1	140.2	-89.22	30.3	-5,685.8	949.9	668.6	281.31	3.377		
11,200.0	5,087.6	10,640.7	5,074.6	144.5	142.6	-89.22	31.1	-5,785.8	949.4	663.1	286.25	3.317		
11,300.0	5,086.7	10,740.7	5,073.8	147.0	145.1	-89.22	32.0	-5,885.8	948.9	657.7	291.19	3.259		
11,400.0	5,085.8	10,840.7	5,072.9	149.4	147.6	-89.22	32.9	-5,985.8	948.4	652.3	296.13	3.203		
11,500.0	5,084.9	10,940.7	5,072.0	151.9	150.0	-89.22	33.7	-6,085.8	947.9	646.8	301.06	3.148		
11,600.0	5,084.1	11,040.7	5,071.2	154.4	152.5	-89.22	34.6	-6,185.8	947.4	641.4	306.00	3.096		
11,700.0	5,083.2	11,140.7	5,070.3	156.8	155.0	-89.22	35.5	-6,285.8	946.9	635.9	310.94	3.045		
11,800.0	5,082.3	11,240.7	5,069.4	159.3	157.4	-89.22	36.4	-6,385.8	946.4	630.5	315.88	2.996		
11,900.0	5,081.4	11,340.7	5,068.5	161.7	159.9	-89.22	37.2	-6,485.7	945.9	625.0	320.82	2.948		
12,000.0	5,080.6	11,440.7	5,067.7	164.2	162.4	-89.22	38.1	-6,585.7	945.4	619.6	325.76	2.902		
12,100.0	5,079.7	11,540.7	5,066.8	166.6	164.9	-89.22	39.0	-6,685.7	944.9	614.2	330.70	2.857		
12,200.0	5,078.8	11,640.7	5,065.9	169.1	167.3	-89.22	39.9	-6,785.7	944.4	608.7	335.64	2.814		
12,300.0	5,078.0	11,740.7	5,065.0	171.6	169.8	-89.22	40.7	-6,885.7	943.8	603.3	340.59	2.771		
12,400.0	5,077.1	11,840.7	5,064.2	174.0	172.3	-89.22	41.6	-6,985.7	943.3	597.8	345.53	2.730		
12,500.0	5,076.2	11,940.7	5,063.3	176.5	174.7	-89.22	42.5	-7,085.7	942.8	592.4	350.47	2.690		
12,600.0	5,075.3	12,040.7	5,062.4	178.9	177.2	-89.22	43.3	-7,185.7	942.3	586.9	355.41	2.651		
12,700.0	5,074.5	12,140.7	5,061.6	181.4	179.7	-89.22	44.2	-7,285.7	941.8	581.5	360.35	2.614		
12,800.0	5,073.6	12,240.7	5,060.7	183.9	182.2	-89.22	45.1	-7,385.7	941.3	576.0	365.29	2.577		
12,900.0	5,072.7	12,340.7	5,059.8	186.3	184.6	-89.22	46.0	-7,485.7	940.8	570.6	370.23	2.541		
13,000.0	5,071.8	12,440.7	5,058.9	188.8	187.1	-89.22	46.8	-7,585.6	940.3	565.1	375.18	2.506		
13,100.0	5,071.0	12,540.7	5,058.1	191.3	189.6	-89.22	47.7	-7,685.6	939.8	559.7	380.12	2.472		
13,179.6	5,070.3	12,617.2	5,057.4	193.2	191.5	-89.22	48.4	-7,762.2	939.4	555.4	383.98	2.447		
13,184.4	5,070.2	12,617.2	5,057.4	193.3	191.5	-89.22	48.4	-7,762.2	939.4	555.3	384.09	2.446		

Cathedral Energy Services

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Reference Site: S31-T23N-R7W
 Site Error: 0.0ft
 Reference Well: Lybrook G31-2307 01H
 Well Error: 0.0ft
 Reference Wellbore: Hz
 Reference Design: Plan #4

Local Co-ordinate Reference: Well Lybrook G31-2307 01H
 TVD Reference: WELL @ 7011.0ft (Original Well Elev)
 MD Reference: WELL @ 7011.0ft (Original Well Elev)
 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 G31-2307 03H - Hz - Plan #3													Offset Site Error: 0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error: 0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Total Uncertainty Axis	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			
0.0	0.0	0.0	0.0	0.0	0.0	180.00	-40.0	0.0	40.0				
100.0	100.0	100.0	100.0	0.1	0.1	180.00	-40.0	0.0	40.0	39.8	0.29	138.585	
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-40.0	0.0	40.0	39.4	0.64	62.354	
300.0	300.0	300.0	300.0	0.5	0.5	180.00	-40.0	0.0	40.0	39.1	0.99	40.398	
400.0	400.0	400.0	400.0	0.7	0.7	180.00	-40.0	0.0	40.0	38.7	1.34	29.878	
500.0	500.0	500.0	500.0	0.8	0.8	180.00	-40.0	0.0	40.0	38.4	1.69	23.705	
600.0	600.0	600.0	600.0	1.0	1.0	180.00	-40.0	0.0	40.0	38.0	2.04	19.646	
700.0	700.0	700.0	700.0	1.2	1.2	180.00	-40.0	0.0	40.0	37.7	2.39	16.774	
800.0	800.0	800.0	800.0	1.4	1.4	180.00	-40.0	0.0	40.0	37.3	2.74	14.634	
900.0	900.0	900.0	900.0	1.5	1.5	180.00	-40.0	0.0	40.0	37.0	3.09	12.979	
1,000.0	1,000.0	1,000.0	1,000.0	1.7	1.7	180.00	-40.0	0.0	40.0	36.6	3.43	11.680	
1,100.0	1,100.0	1,100.0	1,100.0	1.9	1.9	180.00	-40.0	0.0	40.0	36.3	3.78	10.584	
1,200.0	1,200.0	1,200.0	1,200.0	2.1	2.1	180.00	-40.0	0.0	40.0	35.9	4.13	9.690	
1,300.0	1,300.0	1,300.0	1,300.0	2.2	2.2	180.00	-40.0	0.0	40.0	35.6	4.48	8.935	
1,400.0	1,400.0	1,400.0	1,400.0	2.4	2.4	180.00	-40.0	0.0	40.0	35.2	4.83	8.290	
1,500.0	1,500.0	1,500.0	1,500.0	2.6	2.6	180.00	-40.0	0.0	40.0	34.9	5.18	7.731	
1,600.0	1,600.0	1,600.0	1,600.0	2.8	2.8	180.00	-40.0	0.0	40.0	34.5	5.53	7.243	
1,700.0	1,700.0	1,700.0	1,700.0	2.9	2.9	180.00	-40.0	0.0	40.0	34.2	5.88	6.813	
1,800.0	1,800.0	1,800.0	1,800.0	3.1	3.1	180.00	-40.0	0.0	40.0	33.8	6.23	6.431	
1,900.0	1,900.0	1,900.0	1,900.0	3.3	3.3	180.00	-40.0	0.0	40.0	33.5	6.58	6.090	
2,000.0	2,000.0	2,000.0	2,000.0	3.5	3.5	180.00	-40.0	0.0	40.0	33.1	6.93	5.783	
2,100.0	2,100.0	2,100.0	2,100.0	3.6	3.6	180.00	-40.0	0.0	40.0	32.8	7.27	5.505	
2,200.0	2,200.0	2,200.0	2,200.0	3.8	3.8	180.00	-40.0	0.0	40.0	32.4	7.62	5.253	
2,300.0	2,300.0	2,300.0	2,300.0	4.0	4.0	180.00	-40.0	0.0	40.0	32.1	7.97	5.023	
2,400.0	2,400.0	2,400.0	2,400.0	4.2	4.2	180.00	-40.0	0.0	40.0	31.7	8.32	4.813 CC, ES	
2,500.0	2,500.0	2,499.1	2,499.1	4.3	4.3	179.98	-41.1	0.0	41.1	32.5	8.67	4.746 SF	
2,600.0	2,600.0	2,598.1	2,598.1	4.5	4.5	179.91	-44.4	0.1	44.4	35.4	9.02	4.927	
2,700.0	2,700.0	2,696.9	2,696.7	4.7	4.7	179.82	-49.8	0.2	49.9	40.5	9.36	5.328	
2,800.0	2,800.0	2,795.5	2,795.0	4.9	4.9	179.73	-57.3	0.3	57.5	47.8	9.71	5.924	
2,900.0	2,900.0	2,893.7	2,892.7	5.0	5.1	179.64	-66.9	0.4	67.3	57.3	10.06	6.695	
3,000.0	3,000.0	2,991.4	2,989.7	5.2	5.3	179.56	-78.6	0.6	79.3	68.9	10.40	7.621	
3,100.0	3,100.0	3,088.5	3,085.9	5.4	5.5	179.49	-92.3	0.8	93.4	82.6	10.75	8.687	
3,200.0	3,200.0	3,185.0	3,181.1	5.6	5.7	179.44	-107.9	1.1	109.6	98.5	11.09	9.877	
3,300.0	3,300.0	3,280.8	3,275.3	5.7	5.9	179.39	-125.4	1.3	127.9	116.4	11.44	11.179	
3,400.0	3,400.0	3,375.8	3,368.3	5.9	6.2	179.35	-144.8	1.6	148.2	136.4	11.78	12.581	
3,500.0	3,500.0	3,470.0	3,460.1	6.1	6.5	179.32	-165.9	2.0	170.6	158.5	12.12	14.073	
3,600.0	3,600.0	3,563.2	3,550.5	6.3	6.8	179.29	-188.6	2.3	195.0	182.6	12.47	15.645	
3,700.0	3,700.0	3,655.4	3,639.4	6.4	7.1	179.27	-212.9	2.7	221.4	208.6	12.81	17.289	
3,800.0	3,800.0	3,746.6	3,726.8	6.6	7.5	179.25	-238.8	3.1	249.8	236.6	13.15	18.996	
3,900.0	3,900.0	3,836.6	3,812.6	6.8	7.9	179.24	-266.0	3.5	280.0	266.5	13.49	20.761	
4,000.0	4,000.0	3,925.5	3,896.8	7.0	8.3	179.23	-294.6	4.0	312.1	298.3	13.83	22.576	
4,100.0	4,100.0	4,013.2	3,979.3	7.1	8.7	179.21	-324.3	4.4	346.1	331.9	14.16	24.435	
4,200.0	4,200.0	4,100.0	4,060.3	7.3	9.2	179.20	-355.4	4.9	381.9	367.4	14.50	26.333	
4,300.0	4,299.8	4,182.7	4,137.0	7.5	9.7	167.97	-386.4	5.4	424.3	409.7	14.61	29.046	
4,400.0	4,397.5	4,257.1	4,205.5	7.7	10.1	167.14	-415.5	5.9	481.4	466.8	14.55	33.094	
4,500.0	4,490.7	4,320.9	4,263.8	7.9	10.5	165.89	-441.3	6.3	551.4	537.2	14.27	38.632	
4,600.0	4,577.1	4,372.3	4,310.5	8.3	10.9	163.73	-462.8	6.6	632.3	618.4	13.88	45.542	
4,700.0	4,654.7	4,410.6	4,345.1	8.8	11.1	159.47	-479.1	6.9	721.6	707.9	13.63	52.938	
4,800.0	4,721.5	4,435.2	4,367.3	9.6	11.3	149.09	-489.7	7.0	816.8	802.3	14.49	56.378	
4,900.0	4,776.0	4,446.3	4,377.4	10.6	11.4	125.95	-494.5	7.1	915.3	896.7	18.62	49.145	
5,000.0	4,825.7	4,452.0	4,382.5	11.6	11.4	-132.17	-497.1	7.2	1,014.9	996.4	18.56	54.681	
5,100.0	4,875.1	4,457.4	4,387.3	12.8	11.4	-101.35	-499.4	7.2	1,113.5	1,090.4	23.19	48.021	

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

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook G31-2307 01H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 7011.0ft (Original Well Elev)
Reference Site:	S31-T23N-R7W	MD Reference:	WELL @ 7011.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook G31-2307 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 #4	Offset TVD Reference:	Offset Datum

Offset Design S31-T23N-R7W - Lybrook G31-2307 03H - Hz - Plan #3													Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error:	0.0 ft
Reference				Offset		Semi Major Axis			Distance				Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (ft)	+E-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,200.0	4,923.1	4,462.2	4,391.6	14.0	11.5	-89.97	-501.5	7.2	1,209.2	1,184.9	24.37	49.628		
5,300.0	4,968.5	4,466.4	4,395.4	15.2	11.5	-82.63	-503.3	7.3	1,300.6	1,275.7	24.90	52.238		
5,400.0	5,010.1	4,469.9	4,398.6	16.5	11.5	-77.09	-504.9	7.3	1,386.4	1,361.3	25.06	55.329		

Cathedral Energy Services

Anticollision Report

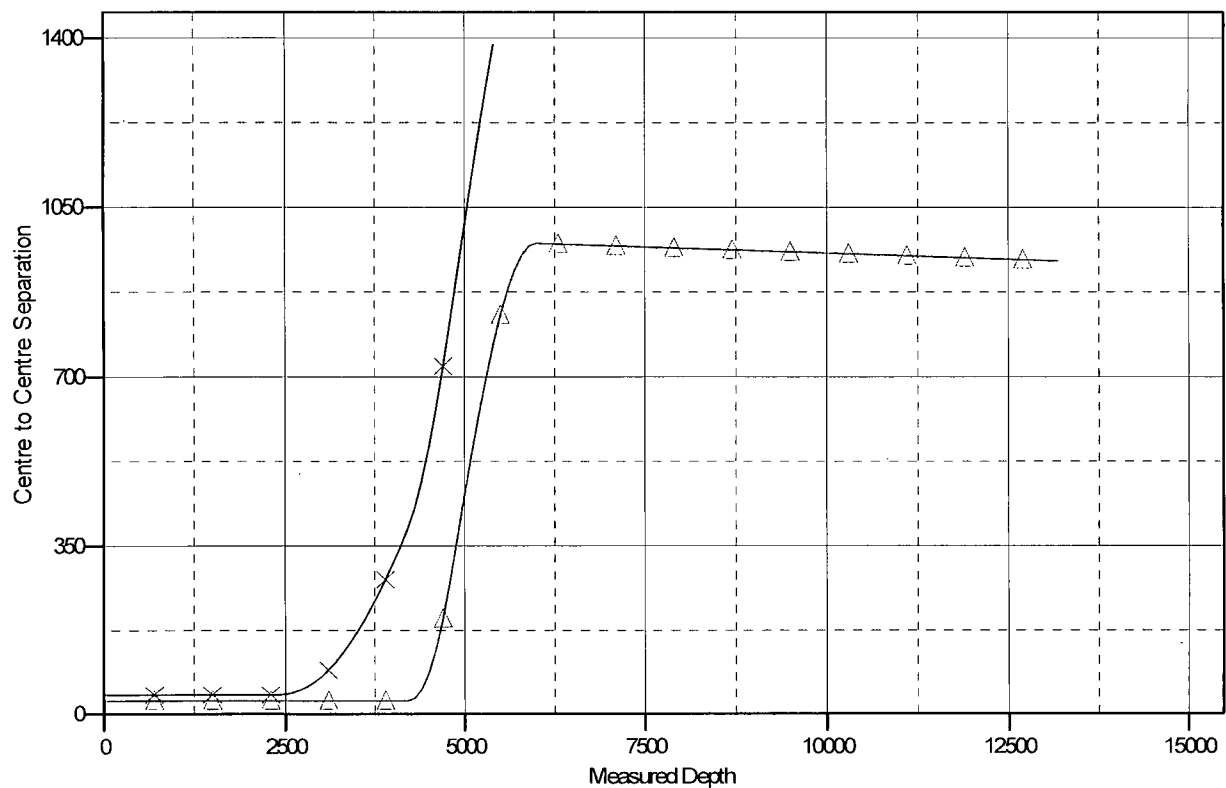
Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Reference Site: S31-T23N-R7W
 Site Error: 0.0ft
 Reference Well: Lybrook G31-2307 01H
 Well Error: 0.0ft
 Reference Wellbore: Hz
 Reference Design: Plan #4

Local Co-ordinate Reference: Well Lybrook G31-2307 01H
 TVD Reference: WELL @ 7011.0ft (Original Well Elev)
 MD Reference: WELL @ 7011.0ft (Original Well Elev)
 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 @ 7011.0ft (Original Well Elev)
 Offset Depths are relative to Offset Datum
 Central Meridian is -106.250000 °

Coordinates are relative to: Lybrook G31-2307 01H
 Coordinate System is US State Plane 1983, New Mexico Central Zone
 Grid Convergence at Surface is: -0.81°

Ladder Plot



LEGEND

✕ Lybrook G31-2307 03H, Hz, Plan #3 V0 ▲ Lybrook G31-2307 02H, Hz, Plan #3 V0