

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB No. 1004-0137
Expires: October 31, 2014

SUNDRY NOTICES AND REPORTS ON WELLS

NOV 17 2014
DO NOT use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on page 2.

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

2. Name of Operator

Encana Oil & Gas (USA) Inc.

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

3b. Phone No. (include area code)

720-876-5867

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

SHL: 2192' FSL and 2551' FEL Sec 31, T23N, R7W
BHL: 1117' FSL and 2291' FEL Sec 36, T23N, R8W5. Lease Serial No.
NM LG-90906. If Indian, Allottee or Tribe Name
N/A7. If Unit of CA/Agreement, Name and/or No.
Pending8. Well Name and No.
Lybrook J31-2307 02H

9. API Well No.

30-043-24214 30-043-21215

10. Field and Pool or Exploratory Area
Alamito-Gallup11. County or Parish, State
Sandoval, NM

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

TYPE OF SUBMISSION

- ☒
- Notice of Intent
-
- ☐
- Subsequent Report
-
- ☐
- Final Abandonment Notice

TYPE OF ACTION

- | | | | |
|--|---|--|---|
| ☐ Acidize | ☐ Deepen | ☐ Production (Start/Resume) | ☐ Water Shut-Off |
| ☐ Alter Casing | ☐ Fracture Treat | ☐ Reclamation | ☐ Well Integrity |
| ☐ 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 recompleat 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 recompleat 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 J31-2307 02H 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

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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

CONDITIONS OF APPROVAL

Adhere to previously issued stipulations

ADHERE TO PREVIOUS NMOC D
CONDITIONS OF APPROVAL

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

Cristi Bauer

Title Operations Technician

Signature

Cristi Bauer

Date

11/14/14

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

William Tambekou

Title

Petroleum Engineer

Date

11/17/2014

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 FFD

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)

NMOC D

Lybrook J31-2307 02H

SHL: NW/4 SE/4 Sec 31 T23N R7W, 2192' ESL, 2551' FEL

BHL: SW/4 SW/4 Sec 36 T23N R8W, 1177' FSL, 330' FWL

Sandoval, New Mexico

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

1. ESTIMATED TOPS OF GEOLOGICAL MARKERS (TVD)

The estimated tops of important geologic markers are as follows:

Formation	Depth (TVD) units = feet
Nacimiento	0
Ojo Alamo	874
Kirtland Shale	1,069
Fruitland Coal	1,335
Pictured Cliffs Ss.	1,459
Lewis Shale	1,575
Cliffhouse Ss.	2,228
Menefee Fn.	3,018
Point Lookout Ss.	3,843
Mancos Shale	4,025
Mancos Silt	4,545
Gallup Fn.	4,802
Horizontal Target	5,058

OIL CONS. DIV DIST. 3

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The referenced surface elevation is 6974', KB 6990'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,335
Oil/Gas	Pictured Cliffs Ss.	1,459
Oil/Gas	Cliffhouse Ss.	2,228
Gas	Menefee Fn.	3,018
Oil/Gas	Point Lookout Ss.	3,843
Oil/Gas	Mancos Shale	4,025
Oil/Gas	Mancos Silt	4,545
Oil/Gas	Gallup Fn.	4,802

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

Lybrook J31-2307 02H

SHL: NW/4 SE/4 Sec 31 T23N R7W, 2192' FSL, 2551' FEL

BHL: SW/4 SW/4 Sec 36 T23N R8W, 1177' FSL, 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'-4750'	8 3/4"	7"	26#	J55, LTC New
Production Liner	4650'-12886'	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 J31-2307 02H**SHL: NW/4 SE/4 Sec 31 T23N R7W, 2192' FSL, 2551' FEL****BHL: SW/4 SW/4 Sec 36 T23N R8W, 1177' FSL, 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'-4750'	100% open hole excess Stage 1 Lead: 438 sks Stage 1 Tail: 341 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	4650'-12886'	50% OH excess Stage 1 Blend Total: 457sks	Blend: Premium Lite High Strength FM + 0.7% bwoc R-3 + 3% bwow Potassium Chloride + 0.25lbs/sack Cello Flake + 0.5% bwoc CD-32 + 1.15% bwoc FL- 52A + 60 lbs/sack Calcium Carbonate + 124.4% Fresh Water. Yield 2.63 cuft/sk	Liner Hanger	N/A

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

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

5. WELL PLAN & DIRECTIONAL DRILLING PROGRAM

The proposed horizontal well will have a kick off point of 4062'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	4992'/12886'	Gallup

Lybrook J31-2307 02H

SHL: NW/4 SE/4 Sec 31 T23N R7W, 2192' FSL, 2551' FEL

BHL: SW/4 SW/4 Sec 36 T23N R8W, 1177' FSL, 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'-4649'/4750'	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"	4649'/4750'- 4992'/12886'	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 +/- 2367 psi based on a 9.0 ppg at 5058' 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.

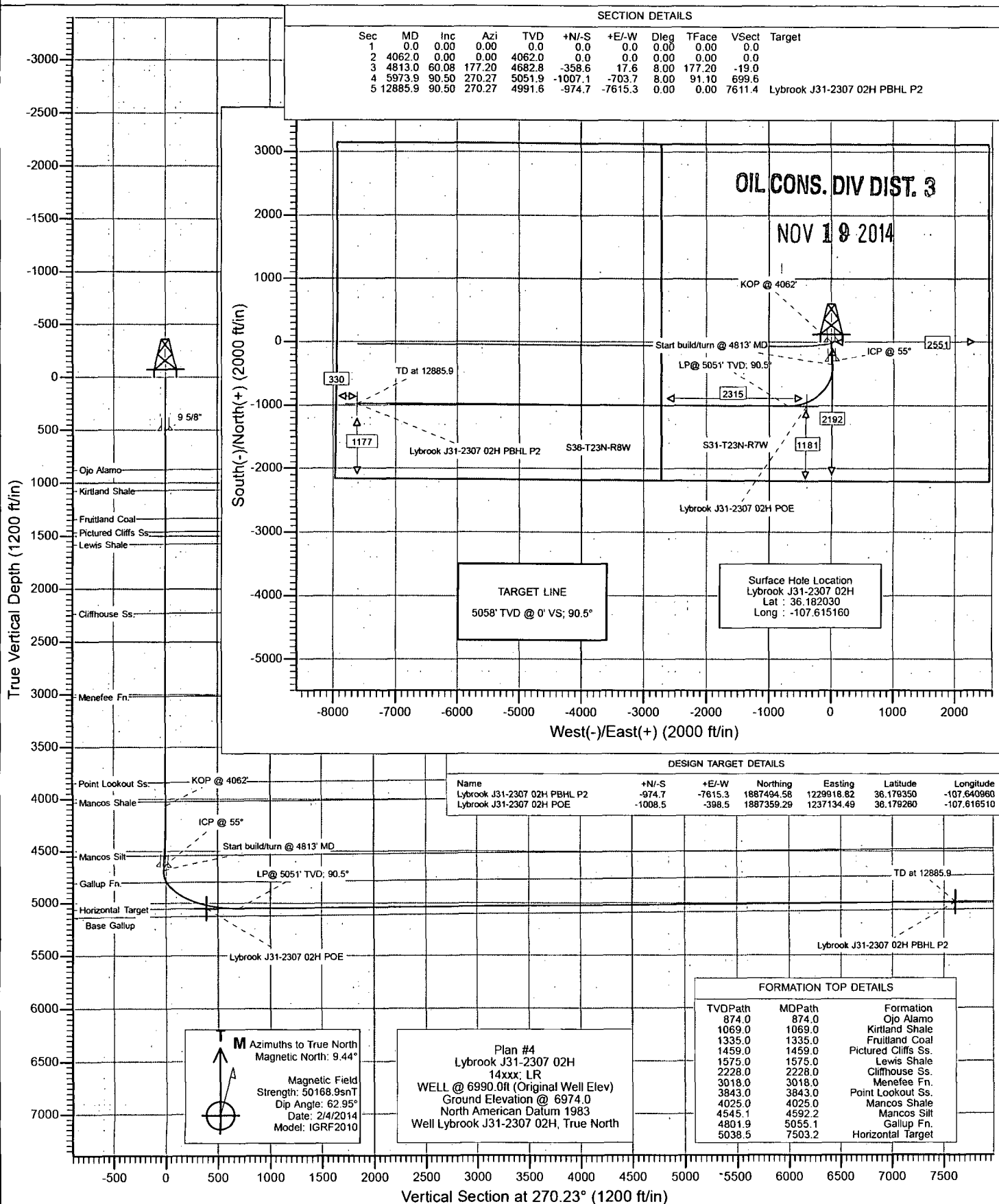
Loc: Lybrook J31-2307 02H County: Sandoval WELL: Lybrook J31-2307 02H			Encana Natural Gas WELL SUMMARY				ENG: Jeff Villalobos 11/13/14 RIG: Aztec 920 GLE: 6974 RKBE: 6990		
MWD LWD	OPEN HOLE LOGGING	FORM	DEPTH			HOLE SIZE	CASING SPECS	MW MUD TYPE	DEVIATION INFORMATION
			TVD	MD					
			60	60'		26	16" 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.	0			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°
		Nacimiento 9 5/8" Csg	0 500		500.00				
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	874			8 3/4	7" 26ppf J55 LTC TOC @ surface (100% OH excess - 70% Lead 30% Tail) Stage 1 Total: 780sks Stage 1 Lead: 438 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: 341 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°
		Kirtland Shale	1,069						
		Fruitland Coal	1,335						
		Pictured Cliffs Ss.	1,459						
		Lewis Shale	1,575						
		Cliffhouse Ss.	2,228						
Surveys every 30' through the curve	Mud logger onsite	Menefee Fn.	3,018						
		Point Lookout Ss.	3,843						
		Mancos Shale	4,025						
		KOP	4,062	4,062					
		Mancos Silt	4,545						
		Gallup Fn.	4,802						
		7" Csg	4,649	4,750'					
Surveys every stand to TD unless directed otherwise by Geologist	No OH Logs	Horizontal Target	5,058			6 1/8	100' overlap at liner top		Horz Inc/TVD 90.5 degdeg/5058ft
		TD	4,992	12,886		8136' Drilled Lateral			
MWD Gamma Directional		Base Gallup	5,132				4 1/2" 11.6ppf SB80 LTC TOC @ hanger (50% OH excess) Stage 1 Total: 457sks Stage 1 Blend: 457 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 4062', 8 3/4 inch holesize
- 5) Start curve at 10deg/100' build rate
- 6) Drill to csg point of 4750' MD
- 7) R&C 7" csg, circ cmt to surface
- 8) Land at ~90 deg, drill lateral to 12886' run 4 1/2 inch cemented liner

OIL CONS. DIV DIST. 3

NOV 19 2014



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 J31-2307 02H
 Wellbore: Hz
 Design: Plan #4

Local Co-ordinate Reference: Well Lybrook J31-2307 02H
 TVD Reference: WELL @ 6990.0ft (Original Well Elev)
 MD Reference: WELL @ 6990.0ft (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 J31-2307 02H					
Well Position	+N/-S	0.0 ft	Northing:	1,888,362.09 ft	Latitude:	36.182030
	+E/-W	0.0 ft	Easting:	1,237,547.11 ft	Longitude:	-107.615160
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,974.0 ft	

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/4/2014	9.44	62.95	50,169

Design	Plan #4			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	270.23

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	
4,062.0	0.00	0.00	4,062.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,813.0	60.08	177.20	4,682.8	-358.6	17.6	8.00	8.00	0.00	177.20	
5,973.9	90.50	270.27	5,051.9	-1,007.1	-703.7	8.00	2.62	8.02	91.10	
12,885.9	90.50	270.27	4,991.6	-974.7	-7,615.3	0.00	0.00	0.00	0.00	Lybrook J31-2307 02H

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 J31-2307 02H
 Wellbore: Hz
 Design: Plan #4

Local Co-ordinate Reference: Well Lybrook J31-2307 02H
 TVD Reference: WELL @ 6990.0ft (Original Well Elev)
 MD Reference: WELL @ 6990.0ft (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	
874.0	0.00	0.00	874.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	
1,069.0	0.00	0.00	1,069.0	0.0	0.0	0.0	0.00	0.00	Kirtland Shale
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	
1,335.0	0.00	0.00	1,335.0	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	
1,459.0	0.00	0.00	1,459.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs Ss.
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	
1,575.0	0.00	0.00	1,575.0	0.0	0.0	0.0	0.00	0.00	Lewis Shale
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	
2,100.0	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	
2,228.0	0.00	0.00	2,228.0	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	
3,018.0	0.00	0.00	3,018.0	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	
3,843.0	0.00	0.00	3,843.0	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	
4,025.0	0.00	0.00	4,025.0	0.0	0.0	0.0	0.00	0.00	Mancos Shale
4,062.0	0.00	0.00	4,062.0	0.0	0.0	0.0	0.00	0.00	KOP @ 4062'
4,100.0	3.04	177.20	4,100.0	-1.0	0.0	-0.1	8.00	8.00	

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 J31-2307 02H
Wellbore: Hz
Design: Plan #4

Local Co-ordinate Reference: Well Lybrook J31-2307 02H
TVD Reference: WELL @ 6990.0ft (Original Well Elev)
MD Reference: WELL @ 6990.0ft (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
4,200.0	11.04	177.20	4,199.1	-13.2	0.6	-0.7	8.00	8.00	
4,300.0	19.04	177.20	4,295.6	-39.1	1.9	-2.1	8.00	8.00	
4,400.0	27.04	177.20	4,387.6	-78.2	3.8	-4.1	8.00	8.00	
4,500.0	35.04	177.20	4,473.2	-129.6	6.4	-6.9	8.00	8.00	
4,592.2	42.41	177.20	4,545.1	-187.2	9.2	-9.9	8.00	8.00	Mancos Silt
4,600.0	43.04	177.20	4,550.8	-192.5	9.4	-10.2	8.00	8.00	
4,700.0	51.04	177.20	4,618.9	-265.5	13.0	-14.1	8.00	8.00	
4,749.5	55.00	177.20	4,648.7	-305.0	14.9	-16.2	8.00	8.00	ICP @ 55°
4,800.0	59.04	177.20	4,676.2	-347.3	17.0	-18.4	8.00	8.00	
4,813.0	60.08	177.20	4,682.8	-358.6	17.6	-19.0	8.00	8.00	Start build/turn @ 4813' MD
4,900.0	60.19	185.22	4,726.1	-433.9	16.0	-17.7	8.00	0.13	
5,000.0	60.91	194.38	4,775.4	-519.5	1.1	-3.2	8.00	0.72	
5,055.1	61.57	199.36	4,801.9	-565.8	-12.9	10.6	8.00	1.20	Gallup Fn.
5,100.0	62.24	203.36	4,823.0	-602.6	-27.3	24.9	8.00	1.49	
5,200.0	64.14	212.07	4,868.2	-681.5	-68.8	66.0	8.00	1.89	
5,300.0	66.53	220.48	4,910.0	-754.6	-122.5	119.5	8.00	2.40	
5,400.0	69.36	228.56	4,947.6	-820.6	-187.5	184.2	8.00	2.83	
5,500.0	72.55	236.32	4,980.3	-878.1	-262.4	258.9	8.00	3.19	
5,600.0	76.03	243.81	5,007.4	-926.0	-345.8	342.0	8.00	3.48	
5,688.5	79.30	250.25	5,026.3	-959.7	-425.3	421.4	8.00	3.69	Lybrook J31-2307 02H POE
5,700.0	79.74	251.07	5,028.4	-963.5	-436.0	432.1	8.00	3.78	
5,800.0	83.59	258.16	5,042.9	-989.7	-531.3	527.3	8.00	3.86	
5,900.0	87.55	265.14	5,050.6	-1,004.1	-629.9	625.8	8.00	3.96	
5,973.9	90.50	270.27	5,051.9	-1,007.1	-703.7	699.6	8.00	3.99	LP@ 5051' TVD; 90.5°
6,000.0	90.50	270.27	5,051.7	-1,007.0	-729.8	725.7	0.00	0.00	
6,100.0	90.50	270.27	5,050.8	-1,006.5	-829.8	825.7	0.00	0.00	
6,200.0	90.50	270.27	5,049.9	-1,006.0	-929.8	925.7	0.00	0.00	
6,300.0	90.50	270.27	5,049.0	-1,005.5	-1,029.7	1,025.7	0.00	0.00	
6,400.0	90.50	270.27	5,048.2	-1,005.1	-1,129.7	1,125.7	0.00	0.00	
6,500.0	90.50	270.27	5,047.3	-1,004.6	-1,229.7	1,225.7	0.00	0.00	
6,600.0	90.50	270.27	5,046.4	-1,004.1	-1,329.7	1,325.7	0.00	0.00	
6,700.0	90.50	270.27	5,045.6	-1,003.7	-1,429.7	1,425.7	0.00	0.00	
6,800.0	90.50	270.27	5,044.7	-1,003.2	-1,529.7	1,525.7	0.00	0.00	
6,900.0	90.50	270.27	5,043.8	-1,002.7	-1,629.7	1,625.7	0.00	0.00	
7,000.0	90.50	270.27	5,042.9	-1,002.3	-1,729.7	1,725.7	0.00	0.00	
7,100.0	90.50	270.27	5,042.1	-1,001.8	-1,829.7	1,825.7	0.00	0.00	
7,200.0	90.50	270.27	5,041.2	-1,001.3	-1,929.7	1,925.7	0.00	0.00	
7,300.0	90.50	270.27	5,040.3	-1,000.9	-2,029.7	2,025.7	0.00	0.00	
7,400.0	90.50	270.27	5,039.4	-1,000.4	-2,129.7	2,125.7	0.00	0.00	
7,500.0	90.50	270.27	5,038.6	-999.9	-2,229.7	2,225.7	0.00	0.00	
7,503.2	90.50	270.27	5,038.5	-999.9	-2,232.9	2,228.8	0.00	0.00	Horizontal Target
7,600.0	90.50	270.27	5,037.7	-999.5	-2,329.7	2,325.7	0.00	0.00	
7,700.0	90.50	270.27	5,036.8	-999.0	-2,429.7	2,425.7	0.00	0.00	
7,800.0	90.50	270.27	5,036.0	-998.5	-2,529.7	2,525.6	0.00	0.00	
7,900.0	90.50	270.27	5,035.1	-998.1	-2,629.7	2,625.6	0.00	0.00	
8,000.0	90.50	270.27	5,034.2	-997.6	-2,729.7	2,725.6	0.00	0.00	
8,100.0	90.50	270.27	5,033.3	-997.1	-2,829.7	2,825.6	0.00	0.00	
8,200.0	90.50	270.27	5,032.5	-996.7	-2,929.7	2,925.6	0.00	0.00	
8,300.0	90.50	270.27	5,031.6	-996.2	-3,029.7	3,025.6	0.00	0.00	
8,400.0	90.50	270.27	5,030.7	-995.7	-3,129.6	3,125.6	0.00	0.00	
8,500.0	90.50	270.27	5,029.9	-995.3	-3,229.6	3,225.6	0.00	0.00	
8,600.0	90.50	270.27	5,029.0	-994.8	-3,329.6	3,325.6	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 J31-2307 02H
 Wellbore: Hz
 Design: Plan #4

Local Co-ordinate Reference: Well Lybrook J31-2307 02H
 TVD Reference: WELL @ 6990.0ft (Original Well Elev)
 MD Reference: WELL @ 6990.0ft (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
8,700.0	90.50	270.27	5,028.1	-994.3	-3,429.6	3,425.6	0.00	0.00	
8,800.0	90.50	270.27	5,027.2	-993.9	-3,529.6	3,525.6	0.00	0.00	
8,900.0	90.50	270.27	5,026.4	-993.4	-3,629.6	3,625.6	0.00	0.00	
9,000.0	90.50	270.27	5,025.5	-992.9	-3,729.6	3,725.6	0.00	0.00	
9,100.0	90.50	270.27	5,024.6	-992.4	-3,829.6	3,825.6	0.00	0.00	
9,200.0	90.50	270.27	5,023.7	-992.0	-3,929.6	3,925.6	0.00	0.00	
9,300.0	90.50	270.27	5,022.9	-991.5	-4,029.6	4,025.6	0.00	0.00	
9,400.0	90.50	270.27	5,022.0	-991.0	-4,129.6	4,125.6	0.00	0.00	
9,500.0	90.50	270.27	5,021.1	-990.6	-4,229.6	4,225.6	0.00	0.00	
9,600.0	90.50	270.27	5,020.3	-990.1	-4,329.6	4,325.6	0.00	0.00	
9,700.0	90.50	270.27	5,019.4	-989.6	-4,429.6	4,425.6	0.00	0.00	
9,800.0	90.50	270.27	5,018.5	-989.2	-4,529.6	4,525.6	0.00	0.00	
9,900.0	90.50	270.27	5,017.6	-988.7	-4,629.6	4,625.6	0.00	0.00	
10,000.0	90.50	270.27	5,016.8	-988.2	-4,729.6	4,725.6	0.00	0.00	
10,100.0	90.50	270.27	5,015.9	-987.8	-4,829.6	4,825.6	0.00	0.00	
10,200.0	90.50	270.27	5,015.0	-987.3	-4,929.6	4,925.6	0.00	0.00	
10,276.5	90.50	270.27	5,014.4	-986.9	-5,006.0	5,002.0	0.00	0.00	Lybrook J31-2307 02H PBHL
10,300.0	90.50	270.27	5,014.2	-986.8	-5,029.6	5,025.6	0.00	0.00	
10,400.0	90.50	270.27	5,013.3	-986.4	-5,129.5	5,125.5	0.00	0.00	
10,500.0	90.50	270.27	5,012.4	-985.9	-5,229.5	5,225.5	0.00	0.00	
10,600.0	90.50	270.27	5,011.5	-985.4	-5,329.5	5,325.5	0.00	0.00	
10,700.0	90.50	270.27	5,010.7	-985.0	-5,429.5	5,425.5	0.00	0.00	
10,800.0	90.50	270.27	5,009.8	-984.5	-5,529.5	5,525.5	0.00	0.00	
10,900.0	90.50	270.27	5,008.9	-984.0	-5,629.5	5,625.5	0.00	0.00	
11,000.0	90.50	270.27	5,008.0	-983.6	-5,729.5	5,725.5	0.00	0.00	
11,100.0	90.50	270.27	5,007.2	-983.1	-5,829.5	5,825.5	0.00	0.00	
11,200.0	90.50	270.27	5,006.3	-982.6	-5,929.5	5,925.5	0.00	0.00	
11,300.0	90.50	270.27	5,005.4	-982.2	-6,029.5	6,025.5	0.00	0.00	
11,400.0	90.50	270.27	5,004.6	-981.7	-6,129.5	6,125.5	0.00	0.00	
11,500.0	90.50	270.27	5,003.7	-981.2	-6,229.5	6,225.5	0.00	0.00	
11,600.0	90.50	270.27	5,002.8	-980.8	-6,329.5	6,325.5	0.00	0.00	
11,700.0	90.50	270.27	5,001.9	-980.3	-6,429.5	6,425.5	0.00	0.00	
11,800.0	90.50	270.27	5,001.1	-979.8	-6,529.5	6,525.5	0.00	0.00	
11,900.0	90.50	270.27	5,000.2	-979.4	-6,629.5	6,625.5	0.00	0.00	
12,000.0	90.50	270.27	4,999.3	-978.9	-6,729.5	6,725.5	0.00	0.00	
12,100.0	90.50	270.27	4,998.5	-978.4	-6,829.5	6,825.5	0.00	0.00	
12,200.0	90.50	270.27	4,997.6	-977.9	-6,929.5	6,925.5	0.00	0.00	
12,300.0	90.50	270.27	4,996.7	-977.5	-7,029.5	7,025.5	0.00	0.00	
12,400.0	90.50	270.27	4,995.8	-977.0	-7,129.5	7,125.5	0.00	0.00	
12,500.0	90.50	270.27	4,995.0	-976.5	-7,229.4	7,225.5	0.00	0.00	
12,600.0	90.50	270.27	4,994.1	-976.1	-7,329.4	7,325.5	0.00	0.00	
12,700.0	90.50	270.27	4,993.2	-975.6	-7,429.4	7,425.5	0.00	0.00	
12,800.0	90.50	270.27	4,992.3	-975.1	-7,529.4	7,525.5	0.00	0.00	
12,885.9	90.50	270.27	4,991.6	-974.7	-7,615.3	7,611.4	0.00	0.00	TD at 12885.9 - Lybrook J31-2307 02H PBHL P

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 J31-2307 02H
Wellbore: Hz
Design: Plan #4

Local Co-ordinate Reference: Well Lybrook J31-2307 02H
TVD Reference: WELL @ 6990.0ft (Original Well Elev)
MD Reference: WELL @ 6990.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

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 J31-2307 02H F - plan misses target center by 2.9ft at 10276.5ft MD (5014.4 TVD, -986.9 N, -5006.0 E) - Point	0.00	0.00	5,014.3	-989.9	-5,006.0	1,887,442.74	1,232,527.64	36.179310	-107.632120
Lybrook J31-2307 02H F - plan misses target center by 62.4ft at 5688.5ft MD (5026.3 TVD, -959.7 N, -425.3 E) - Point	0.00	0.00	5,054.5	-1,008.5	-398.5	1,887,359.29	1,237,134.49	36.179260	-107.616510
Lybrook J31-2307 02H F - plan hits target center - Point	0.00	0.00	4,991.6	-974.7	-7,615.3	1,887,494.58	1,229,918.82	36.179350	-107.640960

500.0	500.0	9 5/8"	0.000	0.000
4,749.5	4,648.7	ICP @ 55°	0.000	0.000

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
874.0	874.0	Ojo Alamo		-0.50	270.23
1,069.0	1,069.0	Kirtland Shale		-0.50	270.23
1,335.0	1,335.0	Fruitland Coal		-0.50	270.23
1,459.0	1,459.0	Pictured Cliffs Ss.		-0.50	270.23
1,575.0	1,575.0	Lewis Shale		-0.50	270.23
2,228.0	2,228.0	Cliffhouse Ss.		-0.50	270.23
3,018.0	3,018.0	Menefee Fn.		-0.50	270.23
3,843.0	3,843.0	Point Lookout Ss.		-0.50	270.23
4,025.0	4,025.0	Mancos Shale		-0.50	270.23
4,592.2	4,545.0	Mancos Silt		-0.50	270.23
5,055.1	4,802.0	Gallup Fn.		-0.50	270.23
7,503.2	5,058.0	Horizontal Target		-0.50	270.23

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,062.0	4,062.0	0.0	0.0	KOP @ 4062'
4,813.0	4,682.8	-358.6	17.6	Start build/turn @ 4813' MD
5,973.9	5,051.9	-1,007.1	-703.7	LP@ 5051' TVD; 90.5°
12,885.9	4,991.6	-974.7	-7,615.3	TD at 12885.9

EnCana Oil & Gas (USA) Inc

Sandoval County, NM

S31-T23N-R7W

Lybrook J31-2307 02H

Hz

Plan #4

Anticollision Report

05 November, 2014

Cathedral Energy Services

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well Lybrook J31-2307 02H
Project: Sandoval County, NM	TVD Reference: WELL @ 6990.0ft (Original Well Elev)
Reference Site: S31-T23N-R7W	MD Reference: WELL @ 6990.0ft (Original Well Elev)
Site Error: 0.0ft	North Reference: True
Reference Well: Lybrook J31-2307 02H	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 1,488.6ft	Error Surface: Elliptical Conic
Warning Levels Evaluated at: 2.00 Sigma	

Survey Tool Program	Date 11/5/2014										
<table border="0" style="width: 100%;"> <tr> <th style="width: 15%;">From (ft)</th> <th style="width: 15%;">To (ft)</th> <th style="width: 30%;">Survey (Wellbore)</th> <th style="width: 20%;">Tool Name</th> <th style="width: 20%;">Description</th> </tr> <tr> <td>0.0</td> <td>12,885.9</td> <td>Plan #4 (Hz)</td> <td>Geolink MWD</td> <td>Geolink MWD</td> </tr> </table>	From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	0.0	12,885.9	Plan #4 (Hz)	Geolink MWD	Geolink MWD	
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description							
0.0	12,885.9	Plan #4 (Hz)	Geolink MWD	Geolink MWD							

Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
S30-T23N-R7W						
Lybrook O30-2307 01H - Hz - Plan #3	5,111.8	9,400.4	393.4	322.2	5.521	CC, ES
Lybrook O30-2307 01H - Hz - Plan #3	5,200.0	9,469.1	401.9	326.5	5.330	SF
S31-T23N-R7W						
Lybrook J31-2307 01H - Hz - Plan #3	4,000.0	4,000.0	30.1	16.2	2.162	CC, ES
Lybrook J31-2307 01H - Hz - Plan #3	4,100.0	4,100.0	30.8	16.5	2.160	SF
S35-T23N-R8W						
Lybrook O35-2308 02H - Hz - FINAL	12,885.9	5,160.0	1,370.7	1,164.5	6.647	CC, ES, SF
Lybrook O35-2308 02H - Hz - Plan #3	12,885.9	5,200.0	1,349.7	1,142.8	6.522	CC, ES, 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 J31-2307 02H
 Well Error: 0.0ft
 Reference Wellbore: Hz
 Reference Design: Plan #4

Local Co-ordinate Reference: Well Lybrook J31-2307 02H
 TVD Reference: WELL @ 6990.0ft (Original Well Elev)
 MD Reference: WELL @ 6990.0ft (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 S30-T23N-R7W - Lybrook O30-2307 01H - Hz - Plan #3

Survey Program: 0-Geolink MWD

Offset Site Error: 0.0 ft

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)			
3,700.0	3,700.0	8,806.0	5,132.0	6.4	65.6	94.41	-21.6	279.9	1,406.3	1,334.8	71.52	19.664	
3,800.0	3,800.0	8,804.5	5,132.0	6.6	65.6	94.09	-20.0	279.9	1,308.5	1,236.9	71.62	18.270	
3,900.0	3,900.0	8,802.9	5,132.1	6.8	65.6	93.77	-18.4	279.9	1,211.0	1,139.3	71.72	16.886	
4,000.0	4,000.0	8,801.3	5,132.1	7.0	65.6	93.45	-16.9	279.9	1,114.0	1,042.2	71.82	15.512	
4,100.0	4,100.0	8,800.7	5,132.1	7.1	65.5	-94.70	-16.3	279.9	1,017.5	949.4	68.07	14.947	
4,200.0	4,199.1	8,811.4	5,131.9	7.3	65.7	-116.94	-27.0	279.9	922.2	866.5	55.75	16.541	
4,300.0	4,295.6	8,835.8	5,131.6	7.5	66.1	-129.78	-51.3	279.9	830.0	763.4	46.52	17.839	
4,400.0	4,387.6	8,873.4	5,131.0	7.8	66.8	-136.67	-88.9	280.0	742.7	700.8	41.86	17.744	
4,500.0	4,473.2	8,923.5	5,130.2	8.2	67.6	-140.21	-139.1	280.0	662.2	621.9	40.27	16.445	
4,600.0	4,550.8	8,985.1	5,129.2	8.8	68.6	-141.75	-200.7	280.0	580.1	549.4	40.71	14.497	
4,700.0	4,618.9	9,057.1	5,128.1	9.6	69.8	-142.03	-272.6	280.0	527.7	485.1	42.64	12.378	
4,800.0	4,676.2	9,138.0	5,126.8	10.5	71.2	-141.54	-353.5	280.0	476.0	430.2	45.71	10.413	
4,900.0	4,726.1	9,223.7	5,125.5	11.7	72.6	-139.54	-439.2	280.0	434.8	380.6	54.17	8.026	
5,000.0	4,775.4	9,308.6	5,124.1	12.8	74.1	-136.82	-524.1	280.1	405.8	342.7	63.12	6.430	
5,100.0	4,823.0	9,390.9	5,122.8	14.1	75.5	-133.86	-606.4	280.1	393.6	323.0	70.54	5.580	
5,111.8	4,828.5	9,400.4	5,122.7	14.2	75.6	-133.52	-615.9	280.1	393.4	322.2	71.26	5.521 CC, ES	
5,200.0	4,868.2	9,469.1	5,121.6	15.4	76.8	-131.08	-684.5	280.1	401.9	326.5	75.39	5.330 SF	
5,300.0	4,910.0	9,541.5	5,120.5	16.7	78.0	-128.73	-757.0	280.1	432.0	354.7	77.25	5.592	
5,400.0	4,947.6	9,606.9	5,119.4	18.0	79.1	-126.91	-822.3	280.1	482.3	406.0	76.21	6.328	
5,500.0	4,980.3	9,663.8	5,118.5	19.4	80.1	-125.54	-879.3	280.2	549.0	476.4	72.65	7.558	
5,600.0	5,007.4	9,711.3	5,117.8	20.9	80.9	-124.50	-926.8	280.2	628.5	561.4	67.02	9.377	
5,700.0	5,028.4	9,748.4	5,117.2	22.4	81.5	-123.67	-963.8	280.2	717.0	657.2	59.81	11.988	
5,800.0	5,042.9	9,774.3	5,116.8	23.8	82.0	-123.05	-989.8	280.2	811.7	760.2	51.52	15.755	
5,900.0	5,050.6	9,788.6	5,116.6	25.3	82.2	-123.35	-1,004.1	280.2	910.1	867.5	42.65	21.340	
6,000.0	5,051.7	9,791.4	5,116.5	26.8	82.3	113.29	-1,006.9	280.2	1,010.0	967.6	42.45	23.795	
6,100.0	5,050.8	9,790.9	5,116.6	28.4	82.3	111.45	-1,006.4	280.2	1,110.0	1,065.3	44.76	24.797	
6,200.0	5,049.9	9,790.5	5,116.6	30.1	82.2	109.88	-1,005.9	280.2	1,210.0	1,162.9	47.11	25.683	
6,300.0	5,049.0	9,790.0	5,116.6	31.9	82.2	108.52	-1,005.4	280.2	1,310.0	1,260.5	49.49	26.471	
6,400.0	5,048.2	9,789.5	5,116.6	33.9	82.2	107.34	-1,004.9	280.2	1,410.0	1,358.1	51.88	27.178	

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 J31-2307 02H
 Well Error: 0.0ft
 Reference Wellbore Hz
 Reference Design: Plan #4

Local Co-ordinate Reference: Well Lybrook J31-2307 02H
 TVD Reference: WELL @ 6990.0ft (Original Well Elev)
 MD Reference: WELL @ 6990.0ft (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 J31-2307 01H - 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					
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	Warning
0.0	0.0	0.0	0.0	0.0	0.0	43.40	21.8	20.7	30.1				
100.0	100.0	100.0	100.0	0.1	0.1	43.40	21.8	20.7	30.1	29.8	0.29	102.545	
200.0	200.0	200.0	200.0	0.3	0.3	43.40	21.8	20.7	30.1	29.4	0.64	46.814	
300.0	300.0	300.0	300.0	0.5	0.5	43.40	21.8	20.7	30.1	29.1	0.99	30.330	
400.0	400.0	400.0	400.0	0.7	0.7	43.40	21.8	20.7	30.1	28.7	1.34	22.432	
500.0	500.0	500.0	500.0	0.8	0.8	43.40	21.8	20.7	30.1	28.4	1.69	17.797	
600.0	600.0	600.0	600.0	1.0	1.0	43.40	21.8	20.7	30.1	28.0	2.04	14.750	
700.0	700.0	700.0	700.0	1.2	1.2	43.40	21.8	20.7	30.1	27.7	2.39	12.593	
800.0	800.0	800.0	800.0	1.4	1.4	43.40	21.8	20.7	30.1	27.3	2.74	10.987	
900.0	900.0	900.0	900.0	1.5	1.5	43.40	21.8	20.7	30.1	27.0	3.09	9.744	
1,000.0	1,000.0	1,000.0	1,000.0	1.7	1.7	43.40	21.8	20.7	30.1	26.6	3.43	8.754	
1,100.0	1,100.0	1,100.0	1,100.0	1.9	1.9	43.40	21.8	20.7	30.1	26.3	3.78	7.946	
1,200.0	1,200.0	1,200.0	1,200.0	2.1	2.1	43.40	21.8	20.7	30.1	25.9	4.13	7.275	
1,300.0	1,300.0	1,300.0	1,300.0	2.2	2.2	43.40	21.8	20.7	30.1	25.6	4.48	6.709	
1,400.0	1,400.0	1,400.0	1,400.0	2.4	2.4	43.40	21.8	20.7	30.1	25.2	4.83	6.224	
1,500.0	1,500.0	1,500.0	1,500.0	2.6	2.6	43.40	21.8	20.7	30.1	24.9	5.18	5.804	
1,600.0	1,600.0	1,600.0	1,600.0	2.8	2.8	43.40	21.8	20.7	30.1	24.5	5.53	5.438	
1,700.0	1,700.0	1,700.0	1,700.0	2.9	2.9	43.40	21.8	20.7	30.1	24.2	5.88	5.115	
1,800.0	1,800.0	1,800.0	1,800.0	3.1	3.1	43.40	21.8	20.7	30.1	23.8	6.23	4.828	
1,900.0	1,900.0	1,900.0	1,900.0	3.3	3.3	43.40	21.8	20.7	30.1	23.5	6.58	4.572	
2,000.0	2,000.0	2,000.0	2,000.0	3.5	3.5	43.40	21.8	20.7	30.1	23.1	6.93	4.342	
2,100.0	2,100.0	2,100.0	2,100.0	3.6	3.6	43.40	21.8	20.7	30.1	22.8	7.27	4.133	
2,200.0	2,200.0	2,200.0	2,200.0	3.8	3.8	43.40	21.8	20.7	30.1	22.4	7.62	3.944	
2,300.0	2,300.0	2,300.0	2,300.0	4.0	4.0	43.40	21.8	20.7	30.1	22.1	7.97	3.771	
2,400.0	2,400.0	2,400.0	2,400.0	4.2	4.2	43.40	21.8	20.7	30.1	21.7	8.32	3.613	
2,500.0	2,500.0	2,500.0	2,500.0	4.3	4.3	43.40	21.8	20.7	30.1	21.4	8.67	3.468	
2,600.0	2,600.0	2,600.0	2,600.0	4.5	4.5	43.40	21.8	20.7	30.1	21.0	9.02	3.334	
2,700.0	2,700.0	2,700.0	2,700.0	4.7	4.7	43.40	21.8	20.7	30.1	20.7	9.37	3.209	
2,800.0	2,800.0	2,800.0	2,800.0	4.9	4.9	43.40	21.8	20.7	30.1	20.3	9.72	3.094	
2,900.0	2,900.0	2,900.0	2,900.0	5.0	5.0	43.40	21.8	20.7	30.1	20.0	10.07	2.987	
3,000.0	3,000.0	3,000.0	3,000.0	5.2	5.2	43.40	21.8	20.7	30.1	19.7	10.42	2.887	
3,100.0	3,100.0	3,100.0	3,100.0	5.4	5.4	43.40	21.8	20.7	30.1	19.3	10.77	2.793	
3,200.0	3,200.0	3,200.0	3,200.0	5.6	5.6	43.40	21.8	20.7	30.1	19.0	11.11	2.705	
3,300.0	3,300.0	3,300.0	3,300.0	5.7	5.7	43.40	21.8	20.7	30.1	18.6	11.46	2.623	
3,400.0	3,400.0	3,400.0	3,400.0	5.9	5.9	43.40	21.8	20.7	30.1	18.3	11.81	2.545	
3,500.0	3,500.0	3,500.0	3,500.0	6.1	6.1	43.40	21.8	20.7	30.1	17.9	12.16	2.472	
3,600.0	3,600.0	3,600.0	3,600.0	6.3	6.3	43.40	21.8	20.7	30.1	17.6	12.51	2.403	
3,700.0	3,700.0	3,700.0	3,700.0	6.4	6.4	43.40	21.8	20.7	30.1	17.2	12.86	2.338	
3,800.0	3,800.0	3,800.0	3,800.0	6.6	6.6	43.40	21.8	20.7	30.1	16.9	13.21	2.276	
3,900.0	3,900.0	3,900.0	3,900.0	6.8	6.8	43.40	21.8	20.7	30.1	16.5	13.56	2.218	
4,000.0	4,000.0	4,000.0	4,000.0	7.0	7.0	43.40	21.8	20.7	30.1	16.2	13.91	2.162 CC, ES	
4,041.1	4,041.1	4,041.1	4,041.1	7.0	7.0	-134.39	21.8	20.7	30.4	16.3	14.05	2.162	
4,100.0	4,100.0	4,100.0	4,100.0	7.1	7.1	-135.11	21.8	20.7	30.8	16.5	14.25	2.160 SF	
4,200.0	4,199.1	4,198.7	4,198.4	7.3	7.3	-137.23	18.3	26.4	40.7	26.2	14.51	2.808	
4,300.0	4,295.6	4,299.1	4,297.4	7.5	7.5	-137.74	8.7	39.6	60.9	46.2	14.70	4.143	
4,400.0	4,387.6	4,399.9	4,397.6	7.8	7.7	-150.20	-1.6	40.8	85.6	71.1	14.57	5.877	
4,500.0	4,473.2	4,493.3	4,489.7	8.2	7.8	-164.75	-11.0	29.4	121.9	107.9	14.07	8.689	
4,600.0	4,550.8	4,574.9	4,568.5	8.8	8.0	-176.46	-19.1	9.5	174.3	160.9	13.44	12.976	
4,700.0	4,618.9	4,642.8	4,631.9	9.6	8.2	174.71	-25.5	-13.7	241.9	229.0	12.89	18.760	
4,800.0	4,676.2	4,696.8	4,680.6	10.5	8.3	167.28	-30.4	-36.5	321.4	308.8	12.62	25.465	
4,900.0	4,726.1	4,743.5	4,721.3	11.7	8.5	149.70	-34.5	-59.1	406.4	391.8	14.58	27.874	
5,000.0	4,775.4	4,793.1	4,762.7	12.8	8.7	135.16	-38.7	-85.9	488.9	471.8	17.06	28.654	

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 J31-2307 02H
 Well Error: 0.0ft
 Reference Wellbore: Hz
 Reference Design: Plan #4

Local Co-ordinate Reference: Well Lybrook J31-2307 02H
 TVD Reference: WELL @ 6990.0ft (Original Well Elev)
 MD Reference: WELL @ 6990.0ft (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 J31-2307 01H - 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			
5,100.0	4,823.0	4,846.3	4,805.0	14.1	9.0	124.11	-42.9	-117.9	567.3	548.0	19.33	29.344			
5,200.0	4,868.2	4,900.0	4,845.3	15.4	9.4	115.44	-46.9	-153.3	640.6	619.2	21.38	29.963			
5,300.0	4,910.0	4,965.6	4,890.6	16.7	10.0	108.75	-51.4	-200.4	707.8	684.5	23.33	30.335			
5,400.0	4,947.6	5,032.6	4,932.3	18.0	10.7	103.41	-55.5	-252.6	768.0	742.8	25.27	30.390			
5,500.0	4,980.3	5,104.9	4,971.7	19.4	11.7	99.23	-59.3	-313.1	820.4	793.1	27.31	30.047			
5,600.0	5,007.4	5,182.5	5,006.9	20.9	12.9	96.04	-62.6	-382.1	864.2	834.7	29.51	29.284			
5,700.0	5,028.4	5,264.9	5,038.0	22.4	14.3	93.70	-65.3	-459.1	898.5	868.6	31.89	28.178			
5,800.0	5,042.9	5,350.0	5,056.6	23.8	16.0	92.12	-67.1	-541.7	922.7	888.3	34.35	26.858			
5,900.0	5,050.6	5,440.2	5,067.6	25.3	17.9	91.25	-67.9	-631.1	936.4	899.5	36.87	25.397			
6,000.0	5,051.7	5,534.6	5,068.5	26.8	20.0	91.03	-67.7	-725.5	939.5	899.7	39.79	23.609			
6,100.0	5,050.8	5,634.6	5,067.6	28.4	22.2	91.03	-67.2	-825.5	939.5	895.2	44.27	21.222			
6,200.0	5,049.9	5,734.6	5,066.7	30.1	24.5	91.03	-66.7	-925.5	939.5	890.6	48.84	19.237			
6,300.0	5,049.0	5,834.6	5,065.9	31.9	26.9	91.03	-66.2	-1,025.5	939.5	886.0	53.47	17.570			
6,400.0	5,048.2	5,934.6	5,065.0	33.9	29.2	91.03	-65.8	-1,125.5	939.5	881.3	58.16	16.154			
6,500.0	5,047.3	6,034.6	5,064.1	35.8	31.6	91.03	-65.3	-1,225.5	939.5	876.6	62.88	14.940			
6,600.0	5,046.4	6,134.6	5,063.2	37.9	34.0	91.03	-64.8	-1,325.5	939.5	871.8	67.64	13.889			
6,700.0	5,045.6	6,234.6	5,062.4	40.0	36.4	91.03	-64.4	-1,425.5	939.5	867.0	72.43	12.971			
6,800.0	5,044.7	6,334.6	5,061.5	42.2	38.8	91.03	-63.9	-1,525.5	939.5	862.2	77.23	12.165			
6,900.0	5,043.8	6,434.6	5,060.6	44.3	41.2	91.03	-63.4	-1,625.5	939.5	857.4	82.05	11.450			
7,000.0	5,042.9	6,534.6	5,059.8	46.6	43.6	91.03	-63.0	-1,725.5	939.5	852.6	86.89	10.813			
7,100.0	5,042.1	6,634.6	5,058.9	48.8	46.0	91.03	-62.5	-1,825.5	939.5	847.7	91.73	10.241			
7,200.0	5,041.2	6,734.6	5,058.0	51.1	48.5	91.03	-62.0	-1,925.4	939.5	842.9	96.59	9.726			
7,300.0	5,040.3	6,834.6	5,057.1	53.4	50.9	91.03	-61.6	-2,025.4	939.5	838.0	101.46	9.260			
7,400.0	5,039.4	6,934.6	5,056.3	55.7	53.3	91.03	-61.1	-2,125.4	939.5	833.1	106.33	8.835			
7,500.0	5,038.6	7,034.6	5,055.4	58.0	55.8	91.03	-60.6	-2,225.4	939.5	828.3	111.21	8.447			
7,600.0	5,037.7	7,134.6	5,054.5	60.3	58.2	91.03	-60.2	-2,325.4	939.5	823.4	116.10	8.092			
7,700.0	5,036.8	7,234.6	5,053.7	62.7	60.7	91.03	-59.7	-2,425.4	939.5	818.5	120.99	7.765			
7,800.0	5,036.0	7,334.6	5,052.8	65.0	63.1	91.03	-59.2	-2,525.4	939.5	813.6	125.89	7.463			
7,900.0	5,035.1	7,434.6	5,051.9	67.4	65.6	91.03	-58.7	-2,625.4	939.5	808.7	130.79	7.183			
8,000.0	5,034.2	7,534.6	5,051.0	69.8	68.0	91.03	-58.3	-2,725.4	939.5	803.8	135.69	6.924			
8,100.0	5,033.3	7,634.6	5,050.2	72.1	70.5	91.03	-57.8	-2,825.4	939.5	798.9	140.60	6.682			
8,200.0	5,032.5	7,734.6	5,049.3	74.5	73.0	91.03	-57.3	-2,925.4	939.5	794.0	145.51	6.457			
8,300.0	5,031.6	7,834.6	5,048.4	76.9	75.4	91.03	-56.9	-3,025.4	939.5	789.1	150.42	6.246			
8,400.0	5,030.7	7,934.6	5,047.5	79.3	77.9	91.03	-56.4	-3,125.4	939.5	784.2	155.33	6.048			
8,500.0	5,029.9	8,034.6	5,046.7	81.7	80.3	91.03	-55.9	-3,225.4	939.5	779.2	160.25	5.863			
8,600.0	5,029.0	8,134.6	5,045.8	84.1	82.8	91.03	-55.5	-3,325.4	939.5	774.3	165.16	5.688			
8,700.0	5,028.1	8,234.6	5,044.9	86.5	85.2	91.03	-55.0	-3,425.4	939.5	769.4	170.08	5.524			
8,800.0	5,027.2	8,334.6	5,044.1	88.9	87.7	91.03	-54.5	-3,525.4	939.5	764.5	175.01	5.368			
8,900.0	5,026.4	8,434.6	5,043.2	91.3	90.2	91.03	-54.1	-3,625.4	939.5	759.6	179.93	5.221			
9,000.0	5,025.5	8,534.6	5,042.3	93.8	92.6	91.03	-53.6	-3,725.4	939.5	754.6	184.85	5.082			
9,100.0	5,024.6	8,634.6	5,041.4	96.2	95.1	91.03	-53.1	-3,825.4	939.5	749.7	189.78	4.950			
9,200.0	5,023.7	8,734.6	5,040.6	98.6	97.6	91.03	-52.7	-3,925.4	939.5	744.8	194.70	4.825			
9,300.0	5,022.9	8,834.6	5,039.7	101.0	100.0	91.03	-52.2	-4,025.3	939.5	739.9	199.63	4.706			
9,400.0	5,022.0	8,934.6	5,038.8	103.5	102.5	91.03	-51.7	-4,125.3	939.5	734.9	204.56	4.593			
9,500.0	5,021.1	9,034.6	5,038.0	105.9	105.0	91.03	-51.2	-4,225.3	939.5	730.0	209.49	4.485			
9,600.0	5,020.3	9,134.6	5,037.1	108.3	107.4	91.03	-50.8	-4,325.3	939.5	725.1	214.42	4.382			
9,700.0	5,019.4	9,234.6	5,036.2	110.8	109.9	91.03	-50.3	-4,425.3	939.5	720.1	219.35	4.283			
9,800.0	5,018.5	9,334.6	5,035.3	113.2	112.4	91.03	-49.8	-4,525.3	939.5	715.2	224.28	4.189			
9,900.0	5,017.6	9,434.6	5,034.5	115.6	114.8	91.03	-49.4	-4,625.3	939.5	710.3	229.21	4.099			
10,000.0	5,016.8	9,534.6	5,033.6	118.1	117.3	91.03	-48.9	-4,725.3	939.5	705.4	234.15	4.012			
10,100.0	5,015.9	9,634.6	5,032.7	120.5	119.8	91.03	-48.4	-4,825.3	939.5	700.4	239.08	3.930			
10,200.0	5,015.0	9,734.6	5,031.9	123.0	122.2	91.03	-48.0	-4,925.3	939.5	695.5	244.01	3.850			

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 J31-2307 02H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 6990.0ft (Original Well Elev)
Reference Site:	S31-T23N-R7W	MD Reference:	WELL @ 6990.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook J31-2307 02H	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 J31-2307 01H - 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)					
10,300.0	5,014.2	9,834.6	5,031.0	125.4	124.7	91.03	-47.5	-5,025.3	939.5	690.6	248.95	3.774			
10,400.0	5,013.3	9,934.6	5,030.1	127.9	127.2	91.03	-47.0	-5,125.3	939.5	685.6	253.88	3.701			
10,500.0	5,012.4	10,034.6	5,029.2	130.3	129.6	91.03	-46.6	-5,225.3	939.5	680.7	258.82	3.630			
10,600.0	5,011.5	10,134.6	5,028.4	132.8	132.1	91.03	-46.1	-5,325.3	939.5	675.7	263.76	3.562			
10,700.0	5,010.7	10,234.6	5,027.5	135.2	134.6	91.03	-45.6	-5,425.3	939.5	670.8	268.69	3.497			
10,800.0	5,009.8	10,334.6	5,026.6	137.7	137.0	91.03	-45.1	-5,525.3	939.5	665.9	273.63	3.433			
10,900.0	5,008.9	10,434.6	5,025.7	140.1	139.5	91.03	-44.7	-5,625.3	939.5	660.9	278.57	3.373			
11,000.0	5,008.0	10,534.6	5,024.9	142.6	142.0	91.03	-44.2	-5,725.3	939.5	656.0	283.51	3.314			
11,100.0	5,007.2	10,634.6	5,024.0	145.0	144.4	91.03	-43.7	-5,825.3	939.5	651.1	288.44	3.257			
11,200.0	5,006.3	10,734.6	5,023.1	147.5	146.9	91.03	-43.3	-5,925.3	939.5	646.1	293.38	3.202			
11,300.0	5,005.4	10,834.6	5,022.3	149.9	149.4	91.03	-42.8	-6,025.2	939.5	641.2	298.32	3.149			
11,400.0	5,004.6	10,934.6	5,021.4	152.4	151.9	91.03	-42.3	-6,125.2	939.5	636.3	303.26	3.098			
11,500.0	5,003.7	11,034.6	5,020.5	154.8	154.3	91.03	-41.9	-6,225.2	939.5	631.3	308.20	3.048			
11,600.0	5,002.8	11,134.6	5,019.6	157.3	156.8	91.03	-41.4	-6,325.2	939.5	626.4	313.14	3.000			
11,700.0	5,001.9	11,234.6	5,018.8	159.7	159.3	91.03	-40.9	-6,425.2	939.5	621.4	318.08	2.954			
11,800.0	5,001.1	11,334.6	5,017.9	162.2	161.7	91.03	-40.5	-6,525.2	939.5	616.5	323.02	2.909			
11,900.0	5,000.2	11,434.6	5,017.0	164.7	164.2	91.03	-40.0	-6,625.2	939.5	611.6	327.96	2.865			
12,000.0	4,999.3	11,534.6	5,016.2	167.1	166.7	91.03	-39.5	-6,725.2	939.5	606.6	332.90	2.822			
12,100.0	4,998.5	11,634.6	5,015.3	169.6	169.1	91.03	-39.1	-6,825.2	939.5	601.7	337.84	2.781			
12,200.0	4,997.6	11,734.6	5,014.4	172.0	171.6	91.03	-38.6	-6,925.2	939.5	596.7	342.78	2.741			
12,300.0	4,996.7	11,834.6	5,013.5	174.5	174.1	91.03	-38.1	-7,025.2	939.5	591.8	347.72	2.702			
12,400.0	4,995.8	11,934.6	5,012.7	176.9	176.6	91.03	-37.6	-7,125.2	939.5	586.9	352.66	2.664			
12,500.0	4,995.0	12,034.6	5,011.8	179.4	179.0	91.03	-37.2	-7,225.2	939.5	581.9	357.61	2.627			
12,600.0	4,994.1	12,134.6	5,010.9	181.9	181.5	91.03	-36.7	-7,325.2	939.5	577.0	362.55	2.591			
12,700.0	4,993.2	12,234.6	5,010.1	184.3	184.0	91.03	-36.2	-7,425.2	939.5	572.0	367.49	2.557			
12,800.0	4,992.3	12,334.6	5,009.2	186.8	186.4	91.03	-35.8	-7,525.2	939.5	567.1	372.43	2.523			
12,848.8	4,991.9	12,383.4	5,008.8	188.0	187.7	91.03	-35.5	-7,574.0	939.5	564.7	374.84	2.506			
12,885.9	4,991.6	12,412.7	5,008.5	188.9	188.4	91.03	-35.4	-7,603.3	939.6	563.1	376.48	2.496			

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook J31-2307 02H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 6990.0ft (Original Well Elev)
Reference Site:	S31-T23N-R7W	MD Reference:	WELL @ 6990.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook J31-2307 02H	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 S35-T23N-R8W - Lybrook O35-2308 02H - Hz - FINAL													Offset Site Error:	0.0 ft
Survey Program: 556-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)				
12,800.0	4,992.3	5,179.1	4,762.0	186.8	19.7	-83.99	-1,993.2	-8,526.0	1,429.3	1,224.8	204.52	6.989		
12,885.9	4,991.6	5,160.0	4,754.4	188.9	19.5	-83.49	-1,980.7	-8,538.2	1,370.7	1,164.5	206.21	6.647	CC, ES, SF	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook J31-2307 02H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 6990.0ft (Original Well Elev)
Reference Site:	S31-T23N-R7W	MD Reference:	WELL @ 6990.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook J31-2307 02H	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 S35-T23N-R8W - Lybrook O35-2308 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								
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	Warning		
12,700.0	4,993.2	5,228.8	4,776.9	184.3	20.3	-84.78	-1,987.7	-8,504.1	1,479.7	1,276.8	202.94	7.291			
12,800.0	4,992.3	5,200.0	4,766.1	186.8	19.9	-84.07	-1,968.2	-8,522.2	1,408.7	1,203.8	204.83	6.877			
12,885.9	4,991.6	5,200.0	4,766.1	188.9	19.9	-84.07	-1,968.2	-8,522.2	1,349.7	1,142.8	206.94	6.522 CC, ES, SF			

Cathedral Energy Services

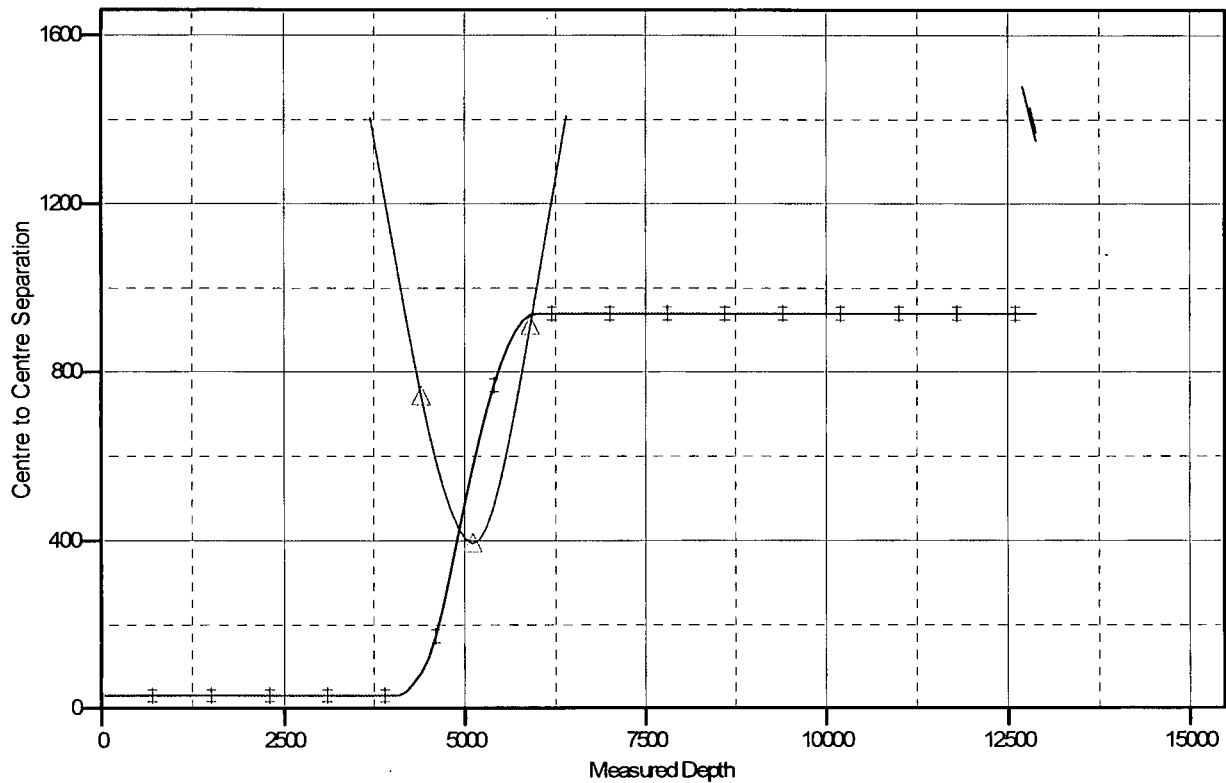
Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook J31-2307 02H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 6990.0ft (Original Well Elev)
Reference Site:	S31-T23N-R7W	MD Reference:	WELL @ 6990.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook J31-2307 02H	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 Depths are relative to WELL @ 6990.0ft (Original Well Elev)
 Offset Depths are relative to Offset Datum
 Central Meridian is -106.250000 °

Coordinates are relative to: Lybrook J31-2307 02H
 Coordinate System is US State Plane 1983, New Mexico Central Zone
 Grid Convergence at Surface is: -0.81°

Ladder Plot



LEGEND

- △ Lybrook O30-2307 01H, Hz, Plan #3 V0
- Lybrook O35-2308 02H, Hz, Plan #3 V0
- Lybrook O35-2308 02H, Hz, FINAL V0
- Lybrook J31-2307 01H, Hz, Plan #3 V0