

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary-Designate

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey, Division Director
Oil Conservation Division



New Mexico Oil Conservation Division approval and conditions listed below are made in accordance with OCD Rule 19.15.7.11 and are in addition to the actions approved by BLM on the following 3160-3 APD form.

Operator Signature Date: 5/22/14

Well information;

Operator Encana, Well Name and Number Lybrook G30-2307 03H

API# 36-043-2123 7, Section 30, Township 23 NS, Range 7 EW

Conditions of Approval:

(See the below checked and handwritten conditions)

☒ Notify Aztec OCD 24hrs prior to casing & cement.

☒ Hold C-104 for directional survey & "As Drilled" Plat

☒ Hold C-104 for NSL, NSP DHC

☐ Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned

☐ Regarding the use of a pit, closed loop system or below grade tank, the operator must comply with the following as applicable:

- A pit requires a complete C-144 be submitted and approved prior to the construction or use of the pit, pursuant to 19.15.17.8.A
- A closed loop system requires notification prior to use, pursuant to 19.15.17.9.A
- A below grade tank requires a registration be filed prior to the construction or use of the below grade tank, pursuant to 19.15.17.8.C

☐ Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string

☒ Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.

Chandi Herrin
NMOCD Approved by Signature

6-20-2014
Date

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

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

APPLICATION FOR PERMIT TO DRILL OR REENTER MAY 23 2014

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NOG1403912 NM36943, NMNM81638, BIA-NG-G-140	
1b. Type of Well: ☐ Oil Well ☒ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name	
2. Name of Operator Encana Oil & Gas (USA) Inc.		7. If Unit or CA Agreement, Name and No. Pending	
3a. Address 370 17th Street, Suite 1700, Denver, CO, 80202		8. Lease Name and Well No. Lybrook G30-2307 03H	
3b. Phone No. (include area code) 720-876-5994		9. API Well No. 30-043-21237	
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface 1391 FNL and 2114 FEL in Section 30, T23N, R7W SWE At proposed prod. zone 2221 FNL and 330 FWL in Section 25, T23N, R8W SSWW		10. Field and Pool, or Exploratory Basin Mancos	
14. Distance in miles and direction from nearest town or post office* +/- 49.2 miles from the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM		11. Sec., T, R, M. or Blk. and Survey or Area Sec 25, T23N, R8W	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) BHL is 330' from the west lease line in Section 25, T23N, R8W		12. County or Parish Sandoval	
16. No. of acres in lease NM36943- 1402.64 acres NMNM81638- 2086.08		13. State NM	
17. Spacing Unit dedicated to this well 481.38 acres N/2 of Section 25 NW/4 of Section 30		18. Distance from proposed* location to nearest well, drilling, completed, applied for, on this lease, ft. SHL is +/- 30' N of Lybrook G30-2307 02H	
19. Proposed Depth 5,261' TVD/13,039' MD		20. BLM/BIA Bond No. on file COB-000235	
21. Elevations (Show whether DF, KDB, RT, Gl., etc.) GL 7076', KB 7092'		23. Estimated duration 20 Days	
22. Approximate date work will start* 11/08/2014		24. Attachments	

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

- | | |
|--|---|
| 1. Well plat certified by a registered surveyor. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be required by the BLM. |

25. Signature <i>Shannon Turk</i>	Name (Printed Typed) Shannon Turk	Date 5/22/14
Title Regulatory Analyst		
Approved by (Signature) <i>[Signature]</i>	Name (Printed Typed) AFM	Date 6/10/14
Title AFM		

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

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

(Conditions of Operations)
AUTHORIZED ARE SUBJECT TO COMPLIANCE WITH ATTACHED "GENERAL REQUIREMENTS"

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

*(Instructions on page 2)
This action is subject to technical and procedural review pursuant to 43 CFR 3165.3 and appeal pursuant to 43 CFR 3165.4

NMCCD AX

District I
1525 N. French Drive, Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

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

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

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

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised August 1, 2011

Submit one copy to
Appropriate District Office

OIL CONSERVATION DIVISION
1220 South St. Francis Drive
Santa Fe, NM 87505

☐ AMENDED REPORT
RECEIVED

MAY 23 2014

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30-043-21237		*Pool Code 97232	*Pool Name BASIN MANCOS
*Property Code 313378	*Property Name LYBROOK G30-2307		*Well Number 03H
*GRID No. 282327	*Operator Name ENCANA OIL & GAS (USA) INC.		*Elevation 7076'

10 Surface Location

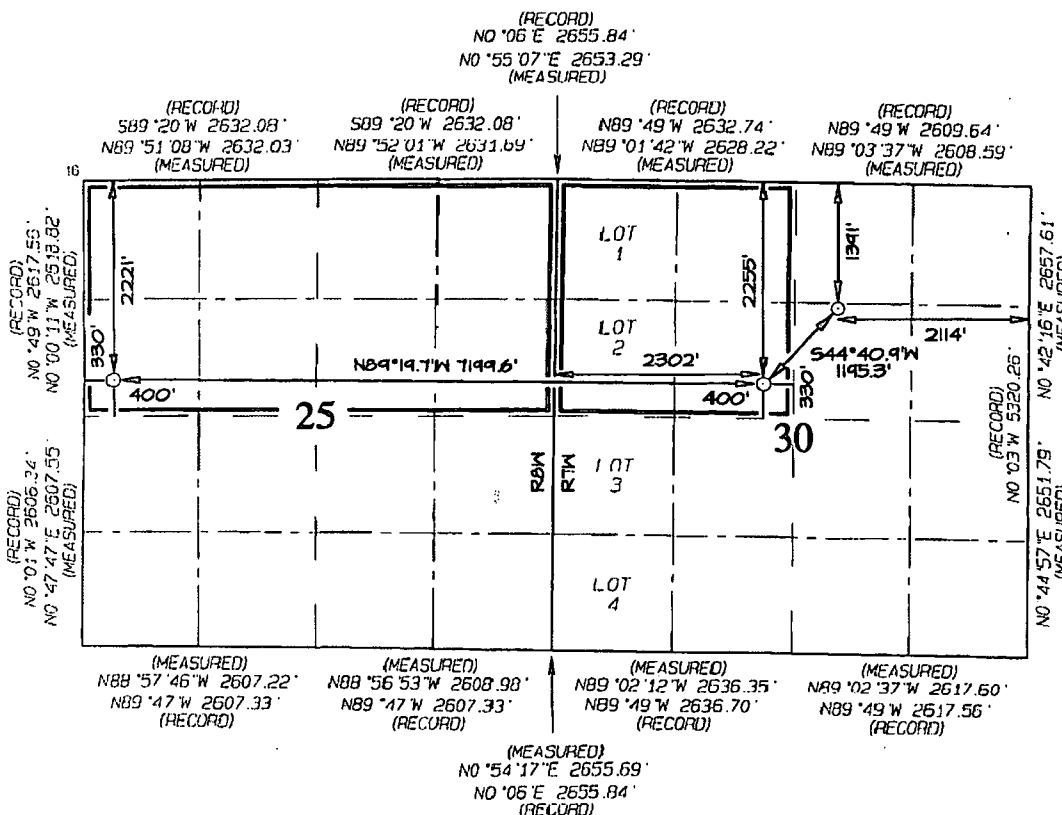
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
G	30	23N	7W		1391	NORTH	2114	EAST	SANDOVAL

11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
G	25	23N	8W		2221	NORTH	330	WEST	SAN JUAN

*Dedicated Acres 481.38 Acres	N/2 of Section 25 NW/4 of Section 30	*Joint or Int'l	*Consolidation Code	*Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE
BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



END-OF-LATERAL
2221' FNL 330' FNL
SECTION 25, T23N, R7W
LAT: 36.19894°N
LONG: 107.64030°W
DATUM: NAD1927

POINT-OF-ENTRY
2255' FNL 2302' FNL
SECTION 30, T23N, R7W
LAT: 36.19899°N
LONG: 107.61591°W
DATUM: NAD1927

SURFACE LOCATION
1391' FNL 2114' FEL
SECTION 30, T23N, R7W
LAT: 36.20136°N
LONG: 107.61310°W
DATUM: NAD1927

17 OPERATOR CERTIFICATION
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom-hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature: Shannon Turk Date: 5/23/14
Printed Name: Shannon Turk
E-mail Address: Shannon.Turk@encana.com

18 SURVEYOR CERTIFICATION
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

Date Revised: APRIL 3, 2014
Survey Date: NOVEMBER 13, 2013
Signature and Seal of Professional Surveyor:



JASON C. EDWARDS
Certificate Number 15269

Lybrook G30-2307 03H

SHL: SWNE Sec 30 T23N R7W

1390' FNL, 21148' FEL

BHL: SWNW Sec 25 T23N R8W

2221' FNL, 330' FWL

Sandoval, New Mexico

Lease Number: NM 36943, NMNM 81638, BIA-NO-G-1403-1912

Encana Oil & Gas (USA) Inc. Drilling Plan

1. ESTIMATED TOPS OF GEOLOGICAL MARKERS (TVD)

The estimated tops of important geologic markers are as follows:

Formation	Depth (TVD) units = feet
Ojo Alamo Ss.	1,091
Kirtland Shale	1,301
Fruitland Coal	1,569
Pictured Cliffs Ss.	1,687
Lewis Shale	1,809
Cliffhouse Ss.	2,503
Menefee Fn.	3,211
Point Lookout Ss.	4,045
Mancos Shale	4,249
Mancos Silt	4,770
Gallup Fn.	5,028

The referenced surface elevation is 7076', KB 7092'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,569
Oil/Gas	Pictured Cliffs Ss.	1,687
Oil/Gas	Cliffhouse Ss.	2,503
Gas	Menefee Fn.	3,211
Oil/Gas	Point Lookout Ss.	4,045
Oil/Gas	Mancos Shale	4,249
Oil/Gas	Mancos Silt	4,770
Oil/Gas	Gallup Fn.	5,028

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

3. PRESSURE CONTROL

- a) Pressure control equipment and configuration will be designed to meet 2M standards.
- b) Working pressure on rams and BOPE will be 3,000 psi.
- c) Function test and visual inspection of the BOP will be conducted daily and noted in the IADC Daily Drilling Report.
- d) The Annular BOP will be pressure tested to a minimum of 50 percent of its rated working pressure.
- e) Blind and Pipe Rams/BOP will be tested against a test plug to 100 percent of rated working pressure.
- f) Pressure tests are required before drilling out from under all casing strings set and cemented in place.

Lybrook G30-2307 03H

SHL: SWNE Sec 30 T23N R7W

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2221' FNL, 330' FWL

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- g) BOP controls must be installed prior to drilling the surface casing plug and will remain in use until the well is completed or abandoned.
- h) BOP testing procedures and testing frequency will conform to Onshore Order No. 2.
- i) BOP remote controls shall be located on the rig floor at a location readily accessible to the driller. Master controls shall be on the ground at the accumulator and shall have the capability to function all preventers.
- j) The kill line shall be 2-inch minimum and contain two kill line valves, one of which shall be a check valve.
- k) The choke line shall be a 2-inch minimum and contain two choke line valves (2-inch minimum).
- l) The choke and manifold shall contain two adjustable chokes.
- m) Hand wheels shall be installed on all ram preventers.
- n) Safety valves and wrenches (with subs for drill string connections) shall be available on the rig floor at all
- o) Inside BOP or float sub shall also be available on the rig floor at all times.

Proposed BOP and choke manifold arrangements are attached.

4. CASING & CEMENTING PROGRAM

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

- a) The proposed casing design is as follows:

Casing	Depth (MD)	Hole Size	Csg Size	Weight	Grade
Conductor	0'-60'	30"	20"	94#	
Surface	0'-500'	12 1/4"	9 5/8"	36#	J55, STC New
Intermediate	0'-5634'	8 3/4"	7"	26#	J55, LTC New
Production Liner	5434'-13039'	6 1/8"	4 1/2"	11.6#	B80*, LTC New

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

*B80 pipe specifications are attached

Casing design is subject to revision based on geologic conditions encountered

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

Lybrook G30-2307 03H

SHL: SWNE Sec 30 T23N R7W

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2221' FNL, 330' FWL

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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'	314 sks	HALCEM™ SYSTEM + 2% CaCl ₂ + 0.125lbm/sk Poly-E-Flake. 15.8 ppg, 1.174 cuft/sk	Surface	1 per joint on bottom 3 joints
Intermediate	0'-5634'	30% open hole excess Stage 1 Lead: 362 sks Stage 1 Tail: 365 sks Stage 2 Lead: 180 sks	Stage 1 Lead: HALCEM™ SYSTEM + 0.2% HR-5 + 5lbm/sk Kol-Seal + 0.125lbm/sk Poly-E-Flake. 12.3 ppg, 1.948 cuft/sk Stage 1 Tail: VARICEM™ CEMENT + .15% CFR-3 + 5lbm/sk Kol-Seal + 0.125% Poly-E-Flake. 13.5 ppg, 1.308 cuft/sk. Stage 2 Contingency: HALCEM™ SYSTEM + 5lbm/sk Kol-Seal + 0.125lbm/sk Poly-E-Flake. 12.3 ppg,	Surface	1 every 3 joints through water bearing zones
Production Liner	5434'-13039'	None - External Casing Packers	N/A	N/A	N/A

*Production liner clarification: Utilizing external swell casing packer system for zonal isolation will not use cement in the production liner

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

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

5. WELL PLAN & DIRECTIONAL DRILLING PROGRAM

The proposed horizontal well will have a kick off point of 2900'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5261'/13039'	Gallup

Lybrook G30-2307 03H

SHL: SWNE Sec 30 T23N R7W

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2221' FNL, 330' FWL

Sandoval, New Mexico

Lease Number: NM 36943, NMNM 81638, BIA-NO-G-1403-1912

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'-5279'/5634'	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"	5279'/5634'- 5261'/13039'	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 +/- 2488 psi based on a 9.0 ppg at 5317' 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.

Lybrook G30-2307 03H

**SHL: SWNE Sec 30 T23N R7W
1390' FNL, 21148' FEL**

**BHL: SWNW Sec 25 T23N R8W
2221' FNL, 330' FWL**

Sandoval, New Mexico

Lease Number: NM 36943, NMNM 81638, BIA-NO-G-1403-1912

9. ANTICIPATED START DATE AND DURATION OF OPERATIONS

Drilling is estimated to commence on November 8, 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: SE/4 NW/4 Sec 30 T23N R7W, 2255'			Encana Natural Gas				ENG: Ashley Lantz RIG: Aztec 950 GLE: 7076 RKBE: 7092		5/22/14		
County: Sandoval			WELL SUMMARY								
WELL: Lybrook G30-2307 03H											
MWD LWD	OPEN HOLE LOGGING	FORM	DEPTH TVDMD			HOLE SIZE	CASING SPECS	MW MUD TYPE	DEVIATION INFORMATION		
			60	60'		30	20" 94# 100sx Type I Neat 16.0ppg cmt	Fresh wtr 8.3-9.2			
Multi-Well pad - take survey every stand and run anti- collision report prior to spud	None					12 1/4	9 5/8" 36ppf J55 STC	Fresh wtr	Vertical <1°		
		Nacimiento 9 5/8" Csg	0 500	500.00			TOC Surface with 100% OH Excess: 314 sks of HALCEM™ SYSTEM + 2% CaCl2 + 0.125lbm/sk Poly-E-Flake. Mixed at 15.8 ppg. Yield 1.174 cuft/sk.	8.3-10			
Survey Every 60'-120', updating anticollision report after surveys. Stop operations and contact drilling engineer if separation factor approaches 1.5	No OH logs	Ojo Alamo Ss. Kirtland Shale	1,091 1,301			8 3/4	7" 26ppf J55 LTC	Fresh Wtr	Vertical <1°		
		Fruitland Coal	1,569				Stage tool @ ~ 1,859	TOC @ surface (30% OH excess) Stage 1 Total: 727sks If necessary, Stage 2 Total: 180sks Stage 1 Lead: 363 sks HALCEM™ SYSTEM + 0.2% HR-5 + 5lbm/sk Kol- Seal + 0.125lbm/sk Poly-E-Flake. Mixed at 12.3 ppg. Yield 1.946 cuft/sk. Stage 1 Tail: 365 sks VARICEM™ CEMENT + .15% CFR-3 + 5lbm/sk Kol- Seal + 0.125% Poly-E-Flake. Mixed at 13.5 ppg. Yield 1.308 cuft/sk. Stage 2: 180 sks HALCEM™ SYSTEM + 5lbm/sk Kol-Seal + 0.125lbm/sk Poly- E-Flake. Mixed at 12.3 ppg. Yield 1.946 cuft/sk.		8.3-10	
		Pictured Cliffs Ss. Lewis Shale	1,687 1,809								
		Cliffhouse Ss. Menefee Fn.	2,503 3,211								
		Point Lookout Ss. Mancos Shale	4,045 4,249								
Surveys every 30' through the curve	Mud logger onsite	KOP	2,900	2,900							
		Mancos Silt	4,770								
		Gallup Fn.	5,028								
		7" Csg	5,279	5,634'							
Surveys every stand to TD unless directed otherwise by Geologist	No OH Logs	Horizontal Target TD	5,317 5,261	13,039		6 1/8	200' overlap at liner top		Horz Inc/TVD 90.4 degdeg/5317		
		Base Gallup	5,346				7405' Drilled Lateral	TD = 13038.7 MD			
MWD Gamma Directional							4 1/2" 11.6ppf SB80 LTC	WBM 8.3-10			
							Running external swellable csg packers for isolation of prod string Plan on setting top packer within 100' of intermediate casing shoe				

NOTES:

- 1) Drill with 30" bit to 60', set 20" 94# conductor pipe
- 2) Drill surface to 500', R&C 9 5/8" casing
- 3) N/U BOP and surface equipment
- 4) Drill to KOP of 2900', 8 3/4 inch holesize
- 5) PU directional tools and start curve at 10deg/100' build rate
- 6) Drill to csg point of 5634' MD
- 7) R&C 7" csg, circ cmt to surface, switch to WBM
- 8) Land at 90 deg, drill lateral to 13039' run 4 1/2 inch liner with external swellable csg packers



Boomerang Tube LLC

CASING (OR) TUBING DESCRIPTION AND PERFORMANCE PROPERTIES

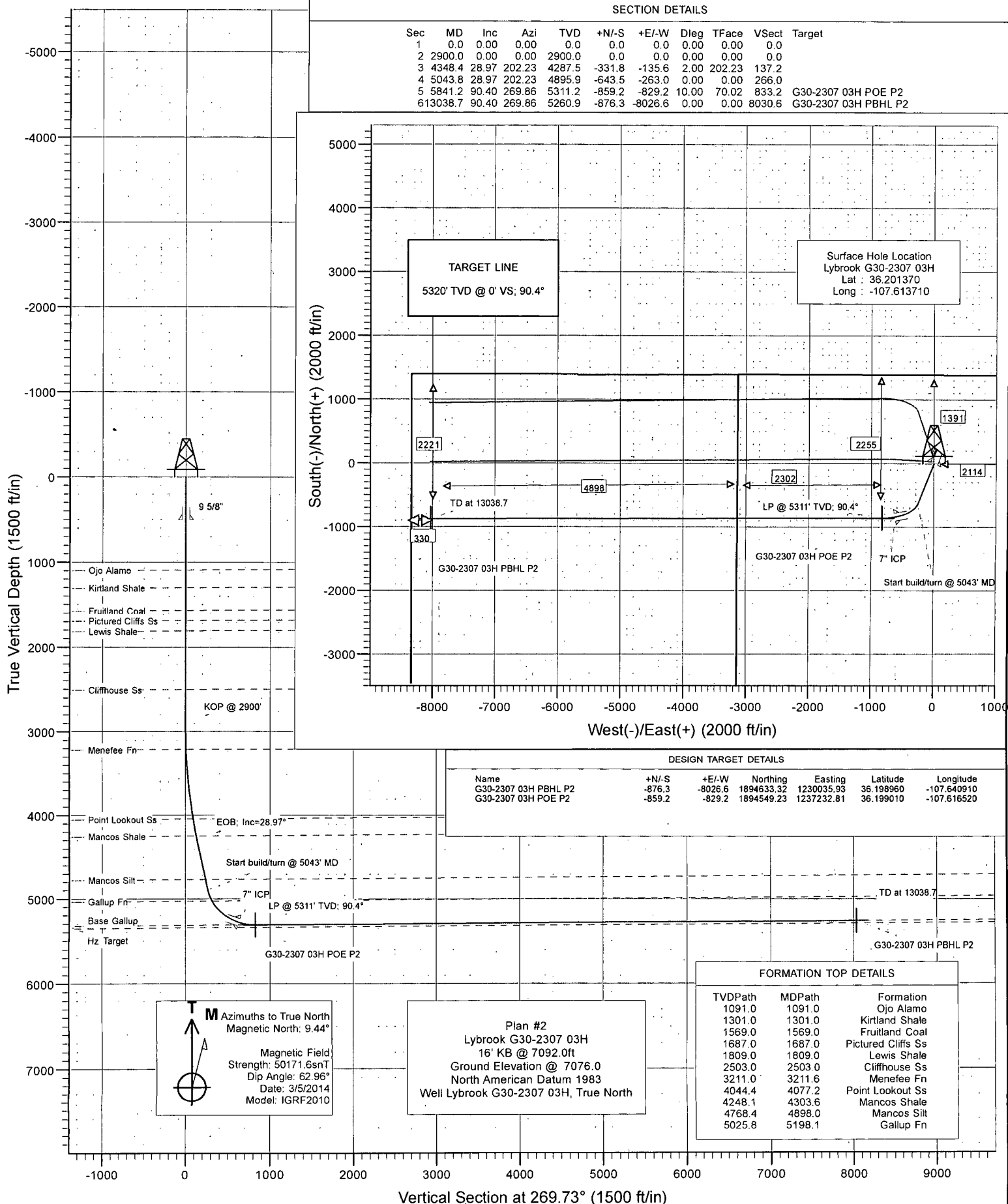
Pipe Outside Diameter (ins)	_____	4.500
Pipe Wall Thickness (ins)	_____	0.250
Nominal Weight Per Foot (lbs)	_____	11.60
Thread Name	_____	Long Thread CSG
Grade Name	_____	SB-80
Pipe Minimum Yield (psi)	_____	80,000
Pipe Minimum Ultimate (psi)	_____	90,000
Coupling Minimum Yield (psi)	_____	80,000
Coupling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

MAXIMUM DEPTH/LENGTH BASED ON MUD WTS & SAFETY FACTORS

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

API RELATED VALUES and INTERMEDIATE CALCULATION RESULTS

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



Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: S30-T23N-R7W
Well: Lybrook G30-2307 03H
Wellbore: HZ
Design: Plan #2

Local Co-ordinate Reference: Well Lybrook G30-2307 03H
TVD Reference: 16' KB @ 7092.0ft
MD Reference: 16' KB @ 7092.0ft
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	S30-T23N-R7W			
Site Position:		Northing:	1,891,883.94 ft	Latitude: 36.191750
From:	Lat/Long	Easting:	1,238,783.16 ft	Longitude: -107.611140
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence: -0.80 °

Well	Lybrook G30-2307 03H			
Well Position	+N/-S	0.0 ft	Northing: 1,895,396.71 ft	Latitude: 36.201370
	+E/-W	0.0 ft	Easting: 1,238,074.01 ft	Longitude: -107.613710
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level: 7,076.0 ft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/5/2014	9.44	62.96	50,172

Design	Plan #2			
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	269.73

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	
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,348.4	28.97	202.23	4,287.5	-331.8	-135.6	2.00	2.00	0.00	202.23	
5,043.8	28.97	202.23	4,895.9	-643.5	-263.0	0.00	0.00	0.00	0.00	
5,841.2	90.40	269.86	5,311.2	-859.2	-829.2	10.00	7.70	8.48	70.02	G30-2307 03H POE F
13,038.7	90.40	269.86	5,260.9	-876.3	-8,026.6	0.00	0.00	0.00	0.00	G30-2307 03H PBHL

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: S30-T23N-R7W
 Well: Lybrook G30-2307 03H
 Wellbore: HZ
 Design: Plan #2

Local Co-ordinate Reference: Well Lybrook G30-2307 03H
 TVD Reference: 16' KB @ 7092.0ft
 MD Reference: 16' KB @ 7092.0ft
 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	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	
1,091.0	0.00	0.00	1,091.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo
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	
1,301.0	0.00	0.00	1,301.0	0.0	0.0	0.0	0.00	0.00	Kirtland Shale
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	
1,569.0	0.00	0.00	1,569.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	
1,687.0	0.00	0.00	1,687.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs Ss
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	
1,809.0	0.00	0.00	1,809.0	0.0	0.0	0.0	0.00	0.00	Lewis Shale
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	
2,300.0	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	
2,503.0	0.00	0.00	2,503.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss
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	KOP @ 2900'
3,000.0	2.00	202.23	3,000.0	-1.6	-0.7	0.7	2.00	2.00	
3,100.0	4.00	202.23	3,099.8	-6.5	-2.6	2.7	2.00	2.00	
3,200.0	6.00	202.23	3,199.5	-14.5	-5.9	6.0	2.00	2.00	
3,211.6	6.23	202.23	3,211.0	-15.7	-6.4	6.5	2.00	2.00	Menefee Fn
3,300.0	8.00	202.23	3,298.7	-25.8	-10.5	10.7	2.00	2.00	
3,400.0	10.00	202.23	3,397.5	-40.3	-16.5	16.7	2.00	2.00	
3,500.0	12.00	202.23	3,495.6	-57.9	-23.7	24.0	2.00	2.00	
3,600.0	14.00	202.23	3,593.1	-78.8	-32.2	32.6	2.00	2.00	
3,700.0	16.00	202.23	3,689.6	-102.7	-42.0	42.5	2.00	2.00	
3,800.0	18.00	202.23	3,785.3	-129.8	-53.0	53.7	2.00	2.00	
3,900.0	20.00	202.23	3,879.8	-159.9	-65.4	66.1	2.00	2.00	
4,000.0	22.00	202.23	3,973.2	-193.1	-78.9	79.8	2.00	2.00	
4,077.2	23.54	202.23	4,044.4	-220.8	-90.2	91.3	2.00	2.00	Point Lookout Ss
4,100.0	24.00	202.23	4,065.2	-229.3	-93.7	94.8	2.00	2.00	
4,200.0	26.00	202.23	4,155.8	-268.4	-109.7	111.0	2.00	2.00	
4,300.0	28.00	202.23	4,244.9	-310.4	-126.9	128.3	2.00	2.00	

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: S30-T23N-R7W
 Well: Lybrook G30-2307 03H
 Wellbore: HZ
 Design: Plan #2

Local Co-ordinate Reference: Well Lybrook G30-2307 03H
 TVD Reference: 16' KB @ 7092.0ft
 MD Reference: 16' KB @ 7092.0ft
 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
4,303.6	28.07	202.23	4,248.1	-312.0	-127.5	129.0	2.00	2.00	Mancos Shale
4,348.4	28.97	202.23	4,287.5	-331.8	-135.6	137.2	2.00	2.00	EOB; Inc=28.97°
4,400.0	28.97	202.23	4,332.6	-354.9	-145.0	146.7	0.00	0.00	
4,500.0	28.97	202.23	4,420.1	-399.7	-163.4	165.3	0.00	0.00	
4,600.0	28.97	202.23	4,507.6	-444.6	-181.7	183.8	0.00	0.00	
4,700.0	28.97	202.23	4,595.1	-489.4	-200.0	202.3	0.00	0.00	
4,800.0	28.97	202.23	4,682.6	-534.2	-218.3	220.9	0.00	0.00	
4,898.0	28.97	202.23	4,768.4	-578.2	-236.3	239.0	0.00	0.00	Mancos Silt
4,900.0	28.97	202.23	4,770.1	-579.1	-236.7	239.4	0.00	0.00	
5,000.0	28.97	202.23	4,857.6	-623.9	-255.0	257.9	0.00	0.00	
5,043.8	28.97	202.23	4,895.9	-643.5	-263.0	266.0	0.00	0.00	Start build/turn @ 5043' MD
5,050.0	29.19	203.42	4,901.3	-646.3	-264.2	267.2	9.98	3.49	
5,100.0	31.30	212.43	4,944.5	-668.5	-276.0	279.1	10.00	4.23	
5,150.0	33.96	220.29	4,986.6	-690.1	-292.0	295.3	10.00	5.33	
5,198.1	36.93	226.82	5,025.8	-710.3	-311.2	314.6	10.00	6.18	Gallup Fn
5,200.0	37.06	227.06	5,027.3	-711.0	-312.1	315.4	10.00	6.54	
5,250.0	40.49	232.87	5,066.3	-731.1	-336.1	339.5	10.00	6.86	
5,300.0	44.17	237.91	5,103.3	-750.2	-363.8	367.3	10.00	7.36	
5,350.0	48.04	242.30	5,138.0	-768.1	-395.0	398.6	10.00	7.75	
5,400.0	52.06	246.18	5,170.1	-784.7	-429.5	433.2	10.00	8.04	
5,450.0	56.20	249.65	5,199.4	-799.9	-467.1	470.8	10.00	8.27	
5,500.0	60.42	252.79	5,225.6	-813.6	-507.3	511.2	10.00	8.45	
5,550.0	64.71	255.68	5,248.7	-825.6	-550.0	553.9	10.00	8.58	
5,600.0	69.06	258.38	5,268.3	-835.9	-594.8	598.8	10.00	8.69	
5,633.6	72.00	260.10	5,279.5	-841.8	-626.0	629.9	10.00	8.76	7" ICP
5,650.0	73.44	260.92	5,284.4	-844.4	-641.4	645.4	10.00	8.79	
5,700.0	77.85	263.34	5,296.8	-851.0	-689.4	693.4	10.00	8.83	
5,750.0	82.29	265.69	5,305.4	-855.7	-738.4	742.4	10.00	8.87	
5,800.0	86.73	267.99	5,310.2	-858.5	-788.1	792.1	10.00	8.89	
5,841.2	90.40	269.86	5,311.2	-859.2	-829.2	833.2	10.00	8.90	LP @ 5311' TVD; 90.4°
5,900.0	90.40	269.86	5,310.8	-859.4	-888.0	892.1	0.00	0.00	
6,000.0	90.40	269.86	5,310.1	-859.6	-988.0	992.1	0.00	0.00	
6,100.0	90.40	269.86	5,309.4	-859.8	-1,088.0	1,092.1	0.00	0.00	
6,200.0	90.40	269.86	5,308.7	-860.1	-1,188.0	1,192.1	0.00	0.00	
6,300.0	90.40	269.86	5,308.0	-860.3	-1,288.0	1,292.1	0.00	0.00	
6,400.0	90.40	269.86	5,307.3	-860.6	-1,388.0	1,392.1	0.00	0.00	
6,500.0	90.40	269.86	5,306.6	-860.8	-1,488.0	1,492.1	0.00	0.00	
6,600.0	90.40	269.86	5,305.9	-861.0	-1,588.0	1,592.1	0.00	0.00	
6,700.0	90.40	269.86	5,305.2	-861.3	-1,688.0	1,692.0	0.00	0.00	
6,800.0	90.40	269.86	5,304.5	-861.5	-1,788.0	1,792.0	0.00	0.00	
6,900.0	90.40	269.86	5,303.8	-861.7	-1,888.0	1,892.0	0.00	0.00	
7,000.0	90.40	269.86	5,303.1	-862.0	-1,988.0	1,992.0	0.00	0.00	
7,100.0	90.40	269.86	5,302.4	-862.2	-2,088.0	2,092.0	0.00	0.00	
7,200.0	90.40	269.86	5,301.7	-862.5	-2,188.0	2,192.0	0.00	0.00	
7,300.0	90.40	269.86	5,301.0	-862.7	-2,288.0	2,292.0	0.00	0.00	
7,400.0	90.40	269.86	5,300.3	-862.9	-2,388.0	2,392.0	0.00	0.00	
7,500.0	90.40	269.86	5,299.6	-863.2	-2,488.0	2,492.0	0.00	0.00	
7,600.0	90.40	269.86	5,298.9	-863.4	-2,588.0	2,592.0	0.00	0.00	
7,700.0	90.40	269.86	5,298.2	-863.6	-2,688.0	2,692.0	0.00	0.00	
7,800.0	90.40	269.86	5,297.5	-863.9	-2,788.0	2,792.0	0.00	0.00	
7,900.0	90.40	269.86	5,296.8	-864.1	-2,888.0	2,892.0	0.00	0.00	
8,000.0	90.40	269.86	5,296.1	-864.4	-2,988.0	2,992.0	0.00	0.00	

Cathedral Energy Services

Planning Report

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Project: Sandoval County, NM
Site: S30-T23N-R7W
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Wellbore: HZ
Design: Plan #2

Local Co-ordinate Reference: Well Lybrook G30-2307 03H
TVD Reference: 16' KB @ 7092.0ft
MD Reference: 16' KB @ 7092.0ft
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
8,100.0	90.40	269.86	5,295.4	-864.6	-3,088.0	3,092.0	0.00	0.00	
8,200.0	90.40	269.86	5,294.7	-864.8	-3,188.0	3,192.0	0.00	0.00	
8,300.0	90.40	269.86	5,294.0	-865.1	-3,288.0	3,292.0	0.00	0.00	
8,400.0	90.40	269.86	5,293.3	-865.3	-3,388.0	3,392.0	0.00	0.00	
8,500.0	90.40	269.86	5,292.6	-865.5	-3,488.0	3,492.0	0.00	0.00	
8,600.0	90.40	269.86	5,291.9	-865.8	-3,588.0	3,592.0	0.00	0.00	
8,700.0	90.40	269.86	5,291.2	-866.0	-3,688.0	3,692.0	0.00	0.00	
8,800.0	90.40	269.86	5,290.5	-866.3	-3,788.0	3,792.0	0.00	0.00	
8,900.0	90.40	269.86	5,289.8	-866.5	-3,887.9	3,892.0	0.00	0.00	
9,000.0	90.40	269.86	5,289.1	-866.7	-3,987.9	3,992.0	0.00	0.00	
9,100.0	90.40	269.86	5,288.4	-867.0	-4,087.9	4,092.0	0.00	0.00	
9,200.0	90.40	269.86	5,287.7	-867.2	-4,187.9	4,192.0	0.00	0.00	
9,300.0	90.40	269.86	5,287.0	-867.4	-4,287.9	4,292.0	0.00	0.00	
9,400.0	90.40	269.86	5,286.3	-867.7	-4,387.9	4,392.0	0.00	0.00	
9,500.0	90.40	269.86	5,285.6	-867.9	-4,487.9	4,492.0	0.00	0.00	
9,600.0	90.40	269.86	5,284.9	-868.2	-4,587.9	4,592.0	0.00	0.00	
9,700.0	90.40	269.86	5,284.2	-868.4	-4,687.9	4,692.0	0.00	0.00	
9,800.0	90.40	269.86	5,283.5	-868.6	-4,787.9	4,792.0	0.00	0.00	
9,900.0	90.40	269.86	5,282.8	-868.9	-4,887.9	4,892.0	0.00	0.00	
10,000.0	90.40	269.86	5,282.1	-869.1	-4,987.9	4,992.0	0.00	0.00	
10,100.0	90.40	269.86	5,281.4	-869.3	-5,087.9	5,092.0	0.00	0.00	
10,200.0	90.40	269.86	5,280.7	-869.6	-5,187.9	5,192.0	0.00	0.00	
10,300.0	90.40	269.86	5,280.0	-869.8	-5,287.9	5,292.0	0.00	0.00	
10,400.0	90.40	269.86	5,279.3	-870.1	-5,387.9	5,391.9	0.00	0.00	
10,500.0	90.40	269.86	5,278.6	-870.3	-5,487.9	5,491.9	0.00	0.00	
10,600.0	90.40	269.86	5,277.9	-870.5	-5,587.9	5,591.9	0.00	0.00	
10,700.0	90.40	269.86	5,277.2	-870.8	-5,687.9	5,691.9	0.00	0.00	
10,800.0	90.40	269.86	5,276.5	-871.0	-5,787.9	5,791.9	0.00	0.00	
10,900.0	90.40	269.86	5,275.8	-871.2	-5,887.9	5,891.9	0.00	0.00	
11,000.0	90.40	269.86	5,275.1	-871.5	-5,987.9	5,991.9	0.00	0.00	
11,100.0	90.40	269.86	5,274.4	-871.7	-6,087.9	6,091.9	0.00	0.00	
11,200.0	90.40	269.86	5,273.7	-872.0	-6,187.9	6,191.9	0.00	0.00	
11,300.0	90.40	269.86	5,273.1	-872.2	-6,287.9	6,291.9	0.00	0.00	
11,400.0	90.40	269.86	5,272.4	-872.4	-6,387.9	6,391.9	0.00	0.00	
11,500.0	90.40	269.86	5,271.7	-872.7	-6,487.9	6,491.9	0.00	0.00	
11,600.0	90.40	269.86	5,271.0	-872.9	-6,587.9	6,591.9	0.00	0.00	
11,700.0	90.40	269.86	5,270.3	-873.1	-6,687.9	6,691.9	0.00	0.00	
11,800.0	90.40	269.86	5,269.6	-873.4	-6,787.9	6,791.9	0.00	0.00	
11,900.0	90.40	269.86	5,268.9	-873.6	-6,887.9	6,891.9	0.00	0.00	
12,000.0	90.40	269.86	5,268.2	-873.9	-6,987.9	6,991.9	0.00	0.00	
12,100.0	90.40	269.86	5,267.5	-874.1	-7,087.9	7,091.9	0.00	0.00	
12,200.0	90.40	269.86	5,266.8	-874.3	-7,187.9	7,191.9	0.00	0.00	
12,300.0	90.40	269.86	5,266.1	-874.6	-7,287.9	7,291.9	0.00	0.00	
12,400.0	90.40	269.86	5,265.4	-874.8	-7,387.9	7,391.9	0.00	0.00	
12,500.0	90.40	269.86	5,264.7	-875.0	-7,487.9	7,491.9	0.00	0.00	
12,600.0	90.40	269.86	5,264.0	-875.3	-7,587.8	7,591.9	0.00	0.00	
12,700.0	90.40	269.86	5,263.3	-875.5	-7,687.8	7,691.9	0.00	0.00	
12,800.0	90.40	269.86	5,262.6	-875.8	-7,787.8	7,791.9	0.00	0.00	
12,900.0	90.40	269.86	5,261.9	-876.0	-7,887.8	7,891.9	0.00	0.00	
13,000.0	90.40	269.86	5,261.2	-876.2	-7,987.8	7,991.9	0.00	0.00	
13,038.7	90.40	269.86	5,260.9	-876.3	-8,026.5	8,030.6	0.00	0.00	TD at 13038.7

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: S30-T23N-R7W
Well: Lybrook G30-2307 03H
Wellbore: HZ
Design: Plan #2

Local Co-ordinate Reference: Well Lybrook G30-2307 03H
TVD Reference: 16' KB @ 7092.0ft
MD Reference: 16' KB @ 7092.0ft
North Reference: True
Survey Calculation Method: Minimum Curvature

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
G30-2307 03H PBHL P2	0.00	0.00	5,260.9	-876.3	-8,026.6	1,894,633.32	1,230,035.93	36.198960	-107.640910
- plan hits target center									
- Point									
G30-2307 03H POE P2	0.00	0.00	5,311.2	-859.2	-829.2	1,894,549.23	1,237,232.81	36.199010	-107.616520
- plan hits target center									
- Point									
G30-2307 03H POE	0.00	0.00	5,311.3	-243.9	-829.2	1,895,164.47	1,237,241.47	36.200700	-107.616520
- plan misses target center by 615.3ft at 5829.6ft MD (5311.2 TVD, -859.1 N, -817.7 E)									
- Point									
G30-2307 03H PBHL	0.00	0.00	5,279.2	-265.3	-5,423.7	1,895,207.72	1,232,647.12	36.200640	-107.632090
- plan misses target center by 604.9ft at 10434.4ft MD (5279.1 TVD, -870.1 N, -5422.3 E)									
- Point									

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
5,633.6	5,279.5	7" ICP	0.000	0.000
500.0	500.0	9 5/8"	0.000	0.000

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,091.0	1,091.0	Ojo Alamo		-0.40	270.00	
1,301.0	1,301.0	Kirtland Shale		-0.40	270.00	
1,569.0	1,569.0	Fruitland Coal		-0.40	270.00	
1,687.0	1,687.0	Pictured Cliffs Ss		-0.40	270.00	
1,809.0	1,809.0	Lewis Shale		-0.40	270.00	
2,503.0	2,503.0	Cliffhouse Ss		-0.40	270.00	
3,211.6	3,211.0	Menefee Fn		-0.40	270.00	
4,077.2	4,045.0	Point Lookout Ss		-0.40	270.00	
4,303.6	4,249.0	Mancos Shale		-0.40	270.00	
4,898.0	4,770.0	Mancos Silt		-0.40	270.00	
5,198.1	5,028.0	Gallup Fn		-0.40	270.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,900.0	2,900.0	0.0	0.0	KOP @ 2900'
4,348.4	4,287.5	-331.8	-135.6	EOB; Inc=28.97°
5,043.8	4,895.9	-643.5	-263.0	Start build/turn @ 5043' MD
5,841.2	5,311.2	-859.2	-829.2	LP @ 5311' TVD; 90.4°
13,038.7	5,260.9	-876.3	-8,026.5	TD at 13038.7

EnCana Oil & Gas (USA) Inc

Sandoval County, NM

S30-T23N-R7W

Lybrook G30-2307 03H

HZ

Plan #2

Anticollision Report

20 May, 2014

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S30-T23N-R7W
Site Error: 0.0ft
Reference Well: Lybrook G30-2307 03H
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #2

Local Co-ordinate Reference: Well Lybrook G30-2307 03H
TVD Reference: 16' KB @ 7092.0ft
MD Reference: 16' KB @ 7092.0ft
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Reference	Plan #2
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	Stations
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 1,550.0ft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	Systematic Ellipse
Scan Method:	Closest Approach 3D
Error Surface:	Elliptical Conic

Survey Tool Program		Date	5/20/2014		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	13,038.7	Plan #2 (HZ)	Geolink MWD	Geolink MWD	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
S30-T23N-R7W						
Lybrook G30-2307 01H - HZ - Plan #2	2,733.4	2,733.4	61.9	52.4	6.525	CC, ES
Lybrook G30-2307 01H - HZ - Plan #2	2,800.0	2,798.9	62.3	52.6	6.414	SF
Lybrook G30-2307 02H - HZ - Plan #2	2,900.0	2,900.0	32.8	22.7	3.255	CC, ES
Lybrook G30-2307 02H - HZ - Plan #2	13,038.7	13,111.5	899.4	504.7	2.279	SF
Lybrook O30-2307 01H - Hz - Plan #1						Out of range
Lybrook O30-2307 02H - Hz - Plan #1						Out of range
Lybrook O30-2307 03H - Hz - Plan #1						Out of range

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S30-T23N-R7W
Site Error: 0.0ft
Reference Well: Lybrook G30-2307 03H
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #2

Local Co-ordinate Reference: Well Lybrook G30-2307 03H
TVD Reference: 16' KB @ 7092.0ft
MD Reference: 16' KB @ 7092.0ft
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 G30-2307 01H - HZ - Plan #2													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	0.00	61.9	0.0	61.9					
100.0	100.0	100.0	100.0	0.1	0.1	0.00	61.9	0.0	61.9	61.6	0.29	211.087		
200.0	200.0	200.0	200.0	0.3	0.3	0.00	61.9	0.0	61.9	61.3	0.64	96.366		
300.0	300.0	300.0	300.0	0.5	0.5	0.00	61.9	0.0	61.9	60.9	0.99	62.434		
400.0	400.0	400.0	400.0	0.7	0.7	0.00	61.9	0.0	61.9	60.6	1.34	46.175		
500.0	500.0	500.0	500.0	0.8	0.8	0.00	61.9	0.0	61.9	60.2	1.69	36.635		
600.0	600.0	600.0	600.0	1.0	1.0	0.00	61.9	0.0	61.9	59.9	2.04	30.362		
700.0	700.0	700.0	700.0	1.2	1.2	0.00	61.9	0.0	61.9	59.5	2.39	25.923		
800.0	800.0	800.0	800.0	1.4	1.4	0.00	61.9	0.0	61.9	59.2	2.74	22.616		
900.0	900.0	900.0	900.0	1.5	1.5	0.00	61.9	0.0	61.9	58.8	3.09	20.058		
1,000.0	1,000.0	1,000.0	1,000.0	1.7	1.7	0.00	61.9	0.0	61.9	58.5	3.43	18.020		
1,100.0	1,100.0	1,100.0	1,100.0	1.9	1.9	0.00	61.9	0.0	61.9	58.1	3.78	16.357		
1,200.0	1,200.0	1,200.0	1,200.0	2.1	2.1	0.00	61.9	0.0	61.9	57.8	4.13	14.976		
1,300.0	1,300.0	1,300.0	1,300.0	2.2	2.2	0.00	61.9	0.0	61.9	57.4	4.48	13.809		
1,400.0	1,400.0	1,400.0	1,400.0	2.4	2.4	0.00	61.9	0.0	61.9	57.1	4.83	12.812		
1,500.0	1,500.0	1,500.0	1,500.0	2.6	2.6	0.00	61.9	0.0	61.9	56.7	5.18	11.948		
1,600.0	1,600.0	1,600.0	1,600.0	2.8	2.8	0.00	61.9	0.0	61.9	56.4	5.53	11.194		
1,700.0	1,700.0	1,700.0	1,700.0	2.9	2.9	0.00	61.9	0.0	61.9	56.0	5.88	10.529		
1,800.0	1,800.0	1,800.0	1,800.0	3.1	3.1	0.00	61.9	0.0	61.9	55.7	6.23	9.939		
1,900.0	1,900.0	1,900.0	1,900.0	3.3	3.3	0.00	61.9	0.0	61.9	55.3	6.58	9.412		
2,000.0	2,000.0	2,000.0	2,000.0	3.5	3.5	0.00	61.9	0.0	61.9	55.0	6.93	8.937		
2,100.0	2,100.0	2,100.0	2,100.0	3.6	3.6	0.00	61.9	0.0	61.9	54.6	7.27	8.508		
2,200.0	2,200.0	2,200.0	2,200.0	3.8	3.8	0.00	61.9	0.0	61.9	54.3	7.62	8.119		
2,300.0	2,300.0	2,300.0	2,300.0	4.0	4.0	0.00	61.9	0.0	61.9	53.9	7.97	7.763		
2,400.0	2,400.0	2,400.0	2,400.0	4.2	4.2	0.00	61.9	0.0	61.9	53.6	8.32	7.438		
2,500.0	2,500.0	2,500.0	2,500.0	4.3	4.3	0.00	61.9	0.0	61.9	53.2	8.67	7.138		
2,600.0	2,600.0	2,600.0	2,600.0	4.5	4.5	0.00	61.9	0.0	61.9	52.9	9.02	6.862		
2,700.0	2,700.0	2,700.0	2,700.0	4.7	4.7	0.00	61.9	0.0	61.9	52.5	9.37	6.606		
2,733.4	2,733.4	2,733.4	2,733.4	4.7	4.7	0.00	61.9	0.0	61.9	52.4	9.49	6.525 CC, ES		
2,800.0	2,800.0	2,798.9	2,798.9	4.9	4.9	-0.13	62.3	-0.1	62.3	52.6	9.72	6.414 SF		
2,900.0	2,900.0	2,896.7	2,896.6	5.0	5.0	-1.11	65.6	-1.3	65.7	55.7	10.06	6.531		
3,000.0	3,000.0	2,994.0	2,993.7	5.2	5.2	155.48	72.2	-3.5	74.1	63.7	10.40	7.126		
3,100.0	3,099.8	3,090.1	3,089.2	5.4	5.4	154.81	81.9	-6.8	89.1	78.3	10.73	8.298		
3,200.0	3,199.5	3,184.5	3,182.7	5.6	5.6	154.53	94.5	-11.1	110.4	99.4	11.06	9.986		
3,300.0	3,298.7	3,276.6	3,273.3	5.8	5.8	154.48	109.7	-16.3	138.0	126.6	11.37	12.136		
3,400.0	3,397.5	3,365.9	3,360.7	6.0	6.0	154.50	127.2	-22.3	171.6	159.9	11.68	14.699		
3,500.0	3,495.6	3,452.0	3,444.3	6.2	6.3	154.53	146.7	-28.9	211.0	199.1	11.97	17.630		
3,600.0	3,593.1	3,534.6	3,523.9	6.5	6.5	154.52	167.7	-36.1	256.0	243.7	12.26	20.886		
3,700.0	3,689.6	3,613.3	3,599.1	6.8	6.8	154.46	189.8	-43.6	306.2	293.7	12.54	24.427		
3,800.0	3,785.3	3,688.0	3,669.7	7.1	7.1	154.33	212.6	-51.4	361.4	348.6	12.81	28.212		
3,900.0	3,879.8	3,758.5	3,735.8	7.6	7.4	154.12	235.9	-59.3	421.2	408.2	13.08	32.202		
4,000.0	3,973.2	3,824.7	3,797.3	8.0	7.8	153.84	259.2	-67.3	485.4	472.1	13.35	36.357		
4,100.0	4,065.2	3,886.7	3,854.2	8.5	8.1	153.47	282.2	-75.1	553.6	540.0	13.62	40.633		
4,200.0	4,155.8	3,944.3	3,906.7	9.1	8.4	153.00	304.8	-82.8	625.5	611.6	13.91	44.976		
4,300.0	4,244.9	4,000.0	3,956.9	9.8	8.7	152.45	327.6	-90.6	700.9	686.7	14.21	49.328		
4,348.4	4,287.5	4,022.1	3,976.7	10.1	8.9	152.11	336.9	-93.8	738.5	724.2	14.36	51.435		
4,400.0	4,332.6	4,047.3	3,999.2	10.5	9.1	152.35	347.6	-97.4	779.1	764.6	14.56	53.518		
4,500.0	4,420.1	4,101.7	4,047.3	11.2	9.4	152.77	371.6	-105.6	858.7	843.7	14.96	57.404		
4,600.0	4,507.6	4,152.1	4,091.7	12.0	9.8	153.09	394.3	-113.3	938.8	923.4	15.36	61.104		
4,700.0	4,595.1	4,211.8	4,144.3	12.7	10.2	153.41	421.1	-122.5	1,018.9	1,003.1	15.79	64.548		
4,800.0	4,682.6	4,271.5	4,196.9	13.5	10.6	153.68	447.9	-131.6	1,099.1	1,082.9	16.21	67.784		
4,900.0	4,770.1	4,331.2	4,249.4	14.3	11.0	153.92	474.7	-140.7	1,179.3	1,162.6	16.65	70.830		

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

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S30-T23N-R7W
Site Error: 0.0ft
Reference Well: Lybrook G30-2307 03H
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #2

Local Co-ordinate Reference: Well Lybrook G30-2307 03H
TVD Reference: 16' KB @ 7092.0ft
MD Reference: 16' KB @ 7092.0ft
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 G30-2307 01H - HZ - Plan #2													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		
5,000.0	4,857.6	4,390.9	4,302.0	15.1	11.5	154.12	501.5	-149.9	1,259.4	1,242.3	17.09	73.701		
5,043.8	4,895.9	4,417.1	4,325.0	15.4	11.7	154.20	513.2	-153.9	1,294.6	1,277.3	17.28	74.905		
5,050.0	4,901.3	4,420.8	4,328.3	15.5	11.7	152.35	514.9	-154.5	1,299.5	1,282.1	17.39	74.723		
5,100.0	4,944.5	4,450.7	4,354.6	15.9	11.9	138.33	528.3	-159.0	1,339.4	1,320.9	18.44	72.641		
5,150.0	4,986.6	4,480.5	4,380.8	16.4	12.2	126.12	541.7	-163.6	1,378.7	1,359.0	19.65	70.175		
5,200.0	5,027.3	4,510.0	4,406.8	16.8	12.4	115.68	554.9	-168.1	1,417.2	1,396.3	20.87	67.899		
5,250.0	5,066.3	4,539.0	4,432.3	17.3	12.6	106.85	567.9	-172.6	1,454.7	1,432.7	22.02	66.075		
5,300.0	5,103.3	4,567.2	4,457.2	17.9	12.8	99.42	580.6	-176.9	1,491.1	1,468.1	23.02	64.767		
5,350.0	5,138.0	4,594.5	4,481.2	18.4	13.0	93.17	592.9	-181.0	1,526.2	1,502.3	23.87	63.935		

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Reference Site: S30-T23N-R7W
 Site Error: 0.0ft
 Reference Well: Lybrook G30-2307 03H
 Well Error: 0.0ft
 Reference Wellbore: HZ
 Reference Design: Plan #2

Local Co-ordinate Reference: Well Lybrook G30-2307 03H
 TVD Reference: 16' KB @ 7092.0ft
 MD Reference: 16' KB @ 7092.0ft
 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 G30-2307 02H - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: O-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	0.00	32.8	0.0	32.8					
100.0	100.0	100.0	100.0	0.1	0.1	0.00	32.8	0.0	32.8	32.5	0.29	111.752		
200.0	200.0	200.0	200.0	0.3	0.3	0.00	32.8	0.0	32.8	32.1	0.64	51.017		
300.0	300.0	300.0	300.0	0.5	0.5	0.00	32.8	0.0	32.8	31.8	0.99	33.053		
400.0	400.0	400.0	400.0	0.7	0.7	0.00	32.8	0.0	32.8	31.4	1.34	24.446		
500.0	500.0	500.0	500.0	0.8	0.8	0.00	32.8	0.0	32.8	31.1	1.69	19.395		
600.0	600.0	600.0	600.0	1.0	1.0	0.00	32.8	0.0	32.8	30.7	2.04	16.074		
700.0	700.0	700.0	700.0	1.2	1.2	0.00	32.8	0.0	32.8	30.4	2.39	13.724		
800.0	800.0	800.0	800.0	1.4	1.4	0.00	32.8	0.0	32.8	30.0	2.74	11.973		
900.0	900.0	900.0	900.0	1.5	1.5	0.00	32.8	0.0	32.8	29.7	3.09	10.619		
1,000.0	1,000.0	1,000.0	1,000.0	1.7	1.7	0.00	32.8	0.0	32.8	29.3	3.43	9.540		
1,100.0	1,100.0	1,100.0	1,100.0	1.9	1.9	0.00	32.8	0.0	32.8	29.0	3.78	8.660		
1,200.0	1,200.0	1,200.0	1,200.0	2.1	2.1	0.00	32.8	0.0	32.8	28.6	4.13	7.928		
1,300.0	1,300.0	1,300.0	1,300.0	2.2	2.2	0.00	32.8	0.0	32.8	28.3	4.48	7.311		
1,400.0	1,400.0	1,400.0	1,400.0	2.4	2.4	0.00	32.8	0.0	32.8	27.9	4.83	6.783		
1,500.0	1,500.0	1,500.0	1,500.0	2.6	2.6	0.00	32.8	0.0	32.8	27.6	5.18	6.326		
1,600.0	1,600.0	1,600.0	1,600.0	2.8	2.8	0.00	32.8	0.0	32.8	27.2	5.53	5.926		
1,700.0	1,700.0	1,700.0	1,700.0	2.9	2.9	0.00	32.8	0.0	32.8	26.9	5.88	5.574		
1,800.0	1,800.0	1,800.0	1,800.0	3.1	3.1	0.00	32.8	0.0	32.8	26.5	6.23	5.262		
1,900.0	1,900.0	1,900.0	1,900.0	3.3	3.3	0.00	32.8	0.0	32.8	26.2	6.58	4.983		
2,000.0	2,000.0	2,000.0	2,000.0	3.5	3.5	0.00	32.8	0.0	32.8	25.8	6.93	4.731		
2,100.0	2,100.0	2,100.0	2,100.0	3.6	3.6	0.00	32.8	0.0	32.8	25.5	7.27	4.504		
2,200.0	2,200.0	2,200.0	2,200.0	3.8	3.8	0.00	32.8	0.0	32.8	25.1	7.62	4.298		
2,300.0	2,300.0	2,300.0	2,300.0	4.0	4.0	0.00	32.8	0.0	32.8	24.8	7.97	4.110		
2,400.0	2,400.0	2,400.0	2,400.0	4.2	4.2	0.00	32.8	0.0	32.8	24.4	8.32	3.938		
2,500.0	2,500.0	2,500.0	2,500.0	4.3	4.3	0.00	32.8	0.0	32.8	24.1	8.67	3.779		
2,600.0	2,600.0	2,600.0	2,600.0	4.5	4.5	0.00	32.8	0.0	32.8	23.7	9.02	3.633		
2,700.0	2,700.0	2,700.0	2,700.0	4.7	4.7	0.00	32.8	0.0	32.8	23.4	9.37	3.497		
2,800.0	2,800.0	2,800.0	2,800.0	4.9	4.9	0.00	32.8	0.0	32.8	23.0	9.72	3.372		
2,900.0	2,900.0	2,900.0	2,900.0	5.0	5.0	0.00	32.8	0.0	32.8	22.7	10.07	3.255 CC, ES		
3,000.0	3,000.0	3,000.0	3,000.0	5.2	5.2	158.86	32.8	0.0	34.4	24.0	10.41	3.303		
3,100.0	3,099.8	3,099.8	3,099.8	5.4	5.4	161.58	32.8	0.0	39.3	28.6	10.75	3.657		
3,200.0	3,199.5	3,199.5	3,199.5	5.6	5.6	164.85	32.8	0.0	47.7	36.6	11.08	4.303		
3,300.0	3,298.7	3,298.7	3,298.7	5.8	5.7	167.86	32.8	0.0	59.5	48.1	11.39	5.223		
3,400.0	3,397.5	3,397.5	3,397.5	6.0	5.9	170.33	32.8	0.0	74.9	63.2	11.70	6.400		
3,500.0	3,495.6	3,495.6	3,495.6	6.2	6.1	172.23	32.8	0.0	93.8	81.8	12.00	7.816		
3,600.0	3,593.1	3,593.1	3,593.1	6.5	6.2	173.68	32.8	0.0	116.1	103.8	12.28	9.455		
3,700.0	3,689.6	3,689.6	3,689.6	6.8	6.4	174.79	32.8	0.0	141.9	129.3	12.55	11.304		
3,800.0	3,785.3	3,785.3	3,785.3	7.1	6.6	175.63	32.8	0.0	171.0	158.2	12.81	13.353		
3,900.0	3,879.8	3,879.8	3,879.8	7.6	6.7	176.28	32.8	0.0	203.5	190.4	13.05	15.591		
4,000.0	3,973.2	3,973.2	3,973.2	8.0	6.9	176.80	32.8	0.0	239.3	226.0	13.28	18.013		
4,100.0	4,065.2	4,065.2	4,065.2	8.5	7.1	177.21	32.8	0.0	278.3	264.8	13.50	20.613		
4,200.0	4,155.8	4,155.8	4,155.8	9.1	7.2	177.53	32.8	0.0	320.5	306.8	13.70	23.387		
4,300.0	4,244.9	4,244.9	4,244.9	9.8	7.4	177.80	32.8	0.0	365.9	352.0	13.90	26.331		
4,348.4	4,287.5	4,287.5	4,287.5	10.1	7.5	177.91	32.8	0.0	389.0	375.0	13.98	27.817		
4,400.0	4,332.6	4,332.6	4,332.6	10.5	7.5	178.04	32.8	0.0	413.9	399.8	14.15	29.251		
4,500.0	4,420.1	4,420.1	4,420.1	11.2	7.7	178.24	32.8	0.0	462.3	447.9	14.48	31.935		
4,600.0	4,507.6	4,507.6	4,507.6	12.0	7.8	178.41	32.8	0.0	510.8	495.9	14.80	34.502		
4,700.0	4,595.1	4,595.1	4,595.1	12.7	8.0	178.55	32.8	0.0	559.2	544.0	15.13	36.960		
4,800.0	4,682.6	4,682.6	4,682.6	13.5	8.1	178.66	32.8	0.0	607.6	592.1	15.45	39.314		
4,900.0	4,770.1	4,780.8	4,780.8	14.3	8.3	178.70	32.8	-0.8	655.9	640.1	15.80	41.515		
5,000.0	4,857.6	4,917.8	4,915.4	15.1	8.6	176.82	34.2	-24.3	699.7	683.5	16.25	43.065		

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

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S30-T23N-R7W
Site Error: 0.0ft
Reference Well: Lybrook G30-2307 03H
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #2

Local Co-ordinate Reference: Well Lybrook G30-2307 03H
TVD Reference: 16' KB @ 7092.0ft
MD Reference: 16' KB @ 7092.0ft
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 G30-2307 02H - HZ - Plan #2													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 Tooface (")	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	
5,043.8	4,895.9	4,976.4	4,970.6	15.4	8.7	175.30	35.3	-44.1	717.2	700.7	16.50	43.478	
5,050.0	4,901.3	4,984.5	4,978.0	15.5	8.7	173.77	35.5	-47.2	719.6	703.1	16.53	43.534	
5,100.0	4,944.5	5,049.0	5,035.6	15.9	8.9	162.06	37.2	-76.1	739.1	722.1	16.94	43.629	
5,150.0	4,986.6	5,111.9	5,088.3	16.4	9.2	151.59	39.2	-110.3	758.4	740.8	17.62	43.042	
5,200.0	5,027.3	5,173.1	5,135.7	16.8	9.6	142.34	41.4	-149.0	777.6	759.0	18.58	41.848	
5,250.0	5,066.3	5,233.0	5,177.8	17.3	10.0	134.19	43.9	-191.4	796.3	776.5	19.80	40.205	
5,300.0	5,103.3	5,291.5	5,214.4	17.9	10.6	127.02	46.6	-236.9	814.4	793.1	21.26	38.303	
5,350.0	5,138.0	5,348.7	5,245.6	18.4	11.3	120.70	49.4	-284.8	831.8	808.9	22.91	36.309	
5,400.0	5,170.1	5,404.8	5,271.3	19.0	12.0	115.13	52.3	-334.5	848.4	823.7	24.71	34.333	
5,450.0	5,199.4	5,459.6	5,291.6	19.6	12.9	110.21	55.2	-385.4	864.0	837.3	26.61	32.464	
5,500.0	5,225.6	5,513.3	5,306.7	20.3	13.9	105.89	58.2	-436.8	878.4	849.8	28.57	30.745	
5,550.0	5,248.7	5,565.9	5,316.8	20.9	14.9	102.09	61.2	-488.3	891.6	861.0	30.55	29.187	
5,600.0	5,268.3	5,617.3	5,322.0	21.6	15.9	98.78	64.2	-539.3	903.4	870.9	32.51	27.791	
5,650.0	5,284.4	5,670.6	5,322.8	22.4	17.0	95.86	67.3	-592.5	913.8	879.3	34.49	26.497	
5,700.0	5,296.8	5,732.7	5,322.4	23.1	18.3	93.44	70.1	-654.6	922.1	885.5	36.62	25.180	
5,750.0	5,305.4	5,796.7	5,322.0	23.9	19.7	91.76	72.0	-718.5	928.1	889.4	38.73	23.961	
5,800.0	5,310.2	5,861.8	5,321.5	24.7	21.1	90.83	72.9	-783.6	931.4	890.6	40.85	22.800	
5,841.2	5,311.2	5,913.8	5,321.2	25.4	22.3	90.61	72.8	-835.6	932.1	889.6	42.53	21.918	
5,900.0	5,310.8	5,972.6	5,320.7	26.4	23.6	90.61	72.4	-894.4	931.8	886.7	45.15	20.638	
6,000.0	5,310.1	6,072.6	5,320.0	28.2	26.0	90.61	71.7	-994.4	931.4	881.7	49.68	18.747	
6,100.0	5,309.4	6,172.6	5,319.3	30.0	28.3	90.61	71.0	-1,094.4	930.9	876.6	54.29	17.149	
6,200.0	5,308.7	6,272.6	5,318.7	32.0	30.6	90.61	70.3	-1,194.4	930.5	871.5	58.95	15.785	
6,300.0	5,308.0	6,372.6	5,318.0	34.0	33.0	90.62	69.7	-1,294.4	930.0	866.4	63.65	14.612	
6,400.0	5,307.3	6,472.6	5,317.3	36.1	35.4	90.62	69.0	-1,394.4	929.6	861.2	68.39	13.593	
6,500.0	5,306.6	6,572.6	5,316.6	38.3	37.8	90.62	68.3	-1,494.4	929.2	856.0	73.16	12.701	
6,600.0	5,305.9	6,672.6	5,315.9	40.5	40.2	90.62	67.6	-1,594.4	928.7	850.8	77.95	11.915	
6,700.0	5,305.2	6,772.7	5,315.2	42.7	42.6	90.62	66.9	-1,694.4	928.3	845.5	82.76	11.217	
6,800.0	5,304.5	6,872.7	5,314.5	44.9	45.0	90.62	66.2	-1,794.4	927.8	840.2	87.58	10.594	
6,900.0	5,303.8	6,972.7	5,313.8	47.2	47.5	90.62	65.6	-1,894.4	927.4	835.0	92.42	10.035	
7,000.0	5,303.1	7,072.7	5,313.1	49.5	49.9	90.62	64.9	-1,994.4	926.9	829.7	97.27	9.530	
7,100.0	5,302.4	7,172.7	5,312.4	51.8	52.3	90.62	64.2	-2,094.4	926.5	824.4	102.12	9.072	
7,200.0	5,301.7	7,272.7	5,311.7	54.2	54.8	90.62	63.5	-2,194.4	926.0	819.0	106.99	8.655	
7,300.0	5,301.0	7,372.7	5,311.0	56.5	57.2	90.62	62.8	-2,294.4	925.6	813.7	111.86	8.274	
7,400.0	5,300.3	7,472.7	5,310.3	58.9	59.6	90.62	62.1	-2,394.4	925.1	808.4	116.74	7.924	
7,500.0	5,299.6	7,572.7	5,309.6	61.2	62.1	90.62	61.5	-2,494.4	924.7	803.1	121.63	7.602	
7,600.0	5,298.9	7,672.7	5,308.9	63.6	64.5	90.62	60.8	-2,594.4	924.2	797.7	126.52	7.305	
7,700.0	5,298.2	7,772.7	5,308.2	66.0	67.0	90.62	60.1	-2,694.4	923.8	792.4	131.42	7.030	
7,800.0	5,297.5	7,872.7	5,307.5	68.4	69.4	90.62	59.4	-2,794.4	923.3	787.0	136.31	6.774	
7,900.0	5,296.8	7,972.7	5,306.8	70.7	71.9	90.62	58.7	-2,894.4	922.9	781.7	141.22	6.535	
8,000.0	5,296.1	8,072.7	5,306.1	73.1	74.4	90.62	58.0	-2,994.4	922.4	776.3	146.12	6.313	
8,100.0	5,295.4	8,172.7	5,305.4	75.5	76.8	90.62	57.3	-3,094.4	922.0	771.0	151.03	6.105	
8,200.0	5,294.7	8,272.7	5,304.7	78.0	79.3	90.62	56.6	-3,194.4	921.5	765.6	155.94	5.910	
8,300.0	5,294.0	8,372.7	5,304.0	80.4	81.7	90.62	56.0	-3,294.4	921.1	760.2	160.85	5.726	
8,400.0	5,293.3	8,472.7	5,303.3	82.8	84.2	90.62	55.3	-3,394.4	920.6	754.9	165.77	5.554	
8,500.0	5,292.6	8,572.7	5,302.6	85.2	86.6	90.62	54.6	-3,494.4	920.2	749.5	170.69	5.391	
8,600.0	5,291.9	8,672.7	5,301.9	87.6	89.1	90.62	53.9	-3,594.4	919.7	744.1	175.60	5.238	
8,700.0	5,291.2	8,772.7	5,301.2	90.1	91.6	90.62	53.2	-3,694.4	919.3	738.8	180.52	5.092	
8,800.0	5,290.5	8,872.7	5,300.5	92.5	94.0	90.62	52.5	-3,794.4	918.8	733.4	185.45	4.955	
8,900.0	5,289.8	8,972.7	5,299.8	94.9	96.5	90.62	51.8	-3,894.4	918.4	728.0	190.37	4.824	
9,000.0	5,289.1	9,072.7	5,299.1	97.3	99.0	90.62	51.1	-3,994.3	917.9	722.6	195.29	4.700	
9,100.0	5,288.4	9,172.7	5,298.4	99.8	101.4	90.63	50.4	-4,094.3	917.5	717.3	200.22	4.582	
9,200.0	5,287.7	9,272.7	5,297.7	102.2	103.9	90.63	49.8	-4,194.3	917.0	711.9	205.15	4.470	

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

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S30-T23N-R7W
Site Error: 0.0ft
Reference Well: Lybrook G30-2307 03H
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #2

Local Co-ordinate Reference: Well Lybrook G30-2307 03H
TVD Reference: 16' KB @ 7092.0ft
MD Reference: 16' KB @ 7092.0ft
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 G30-2307 02H - HZ - Plan #2													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	
9,300.0	5,287.0	9,372.7	5,297.0	104.7	106.4	90.63	49.1	-4,294.3	916.6	706.5	210.07	4.363	
9,400.0	5,286.3	9,472.7	5,296.3	107.1	108.8	90.63	48.4	-4,394.3	916.1	701.1	215.00	4.261	
9,500.0	5,285.6	9,572.7	5,295.6	109.5	111.3	90.63	47.7	-4,494.3	915.7	695.7	219.93	4.163	
9,600.0	5,284.9	9,672.7	5,294.9	112.0	113.8	90.63	47.0	-4,594.3	915.2	690.4	224.86	4.070	
9,700.0	5,284.2	9,772.7	5,294.2	114.4	116.2	90.63	46.3	-4,694.3	914.8	685.0	229.80	3.981	
9,800.0	5,283.5	9,872.7	5,293.5	116.9	118.7	90.63	45.6	-4,794.3	914.3	679.6	234.73	3.895	
9,900.0	5,282.8	9,972.7	5,292.8	119.3	121.2	90.63	44.9	-4,894.3	913.9	674.2	239.66	3.813	
10,000.0	5,282.1	10,072.7	5,292.1	121.8	123.6	90.63	44.2	-4,994.3	913.4	668.8	244.59	3.734	
10,100.0	5,281.4	10,172.7	5,291.4	124.2	126.1	90.63	43.5	-5,094.3	912.9	663.4	249.53	3.659	
10,200.0	5,280.7	10,272.7	5,290.7	126.7	128.6	90.63	42.8	-5,194.3	912.5	658.0	254.46	3.586	
10,300.0	5,280.0	10,372.7	5,290.0	129.1	131.0	90.63	42.1	-5,294.3	912.0	652.6	259.40	3.516	
10,400.0	5,279.3	10,472.7	5,289.3	131.6	133.5	90.63	41.4	-5,394.3	911.6	647.2	264.33	3.449	
10,500.0	5,278.6	10,572.7	5,288.6	134.0	136.0	90.63	40.8	-5,494.3	911.1	641.9	269.27	3.384	
10,600.0	5,277.9	10,672.7	5,287.9	136.5	138.4	90.63	40.1	-5,594.3	910.7	636.5	274.20	3.321	
10,700.0	5,277.2	10,772.7	5,287.2	138.9	140.9	90.63	39.4	-5,694.3	910.2	631.1	279.14	3.261	
10,800.0	5,276.5	10,872.7	5,286.5	141.4	143.4	90.63	38.7	-5,794.3	909.7	625.7	284.08	3.202	
10,900.0	5,275.8	10,972.7	5,285.8	143.9	145.8	90.63	38.0	-5,894.3	909.3	620.3	289.02	3.146	
11,000.0	5,275.1	11,072.7	5,285.1	146.3	148.3	90.63	37.3	-5,994.3	908.8	614.9	293.95	3.092	
11,100.0	5,274.4	11,172.7	5,284.4	148.8	150.8	90.63	36.6	-6,094.3	908.4	609.5	298.89	3.039	
11,200.0	5,273.7	11,272.7	5,283.7	151.2	153.2	90.63	35.9	-6,194.3	907.9	604.1	303.83	2.988	
11,300.0	5,273.1	11,372.7	5,283.1	153.7	155.7	90.63	35.2	-6,294.3	907.5	598.7	308.77	2.939	
11,400.0	5,272.4	11,472.7	5,282.4	156.1	158.2	90.63	34.5	-6,394.3	907.0	593.3	313.71	2.891	
11,500.0	5,271.7	11,572.7	5,281.7	158.6	160.7	90.63	33.8	-6,494.3	906.5	587.9	318.65	2.845	
11,600.0	5,271.0	11,672.7	5,281.0	161.1	163.1	90.63	33.1	-6,594.3	906.1	582.5	323.59	2.800	
11,700.0	5,270.3	11,772.7	5,280.3	163.5	165.6	90.63	32.4	-6,694.3	905.6	577.1	328.53	2.757	
11,800.0	5,269.6	11,872.7	5,279.6	166.0	168.1	90.64	31.7	-6,794.3	905.2	571.7	333.47	2.714	
11,900.0	5,268.9	11,972.7	5,278.9	168.5	170.5	90.64	31.0	-6,894.3	904.7	566.3	338.41	2.673	
12,000.0	5,268.2	12,072.7	5,278.2	170.9	173.0	90.64	30.3	-6,994.3	904.2	560.9	343.35	2.634	
12,100.0	5,267.5	12,172.7	5,277.5	173.4	175.5	90.64	29.6	-7,094.2	903.8	555.5	348.29	2.595	
12,200.0	5,266.8	12,272.7	5,276.8	175.8	178.0	90.64	28.9	-7,194.2	903.3	550.1	353.23	2.557	
12,300.0	5,266.1	12,372.7	5,276.1	178.3	180.4	90.64	28.2	-7,294.2	902.9	544.7	358.17	2.521	
12,400.0	5,265.4	12,472.7	5,275.4	180.8	182.9	90.64	27.5	-7,394.2	902.4	539.3	363.11	2.485	
12,500.0	5,264.7	12,572.7	5,274.7	183.2	185.4	90.64	26.8	-7,494.2	901.9	533.9	368.06	2.451	
12,600.0	5,264.0	12,672.8	5,274.0	185.7	187.8	90.64	26.1	-7,594.2	901.5	528.5	373.00	2.417	
12,700.0	5,263.3	12,772.8	5,273.3	188.2	190.3	90.64	25.4	-7,694.2	901.0	523.1	377.94	2.384	
12,800.0	5,262.6	12,872.8	5,272.6	190.6	192.8	90.64	24.7	-7,794.2	900.5	517.7	382.88	2.352	
12,900.0	5,261.9	12,972.8	5,271.9	193.1	195.3	90.64	24.0	-7,894.2	900.1	512.2	387.82	2.321	
13,000.0	5,261.2	13,072.8	5,271.2	195.5	197.7	90.64	23.3	-7,994.2	899.6	506.8	392.77	2.290	
13,038.7	5,260.9	13,111.5	5,270.9	196.5	198.7	90.64	23.0	-8,032.9	899.4	504.7	394.68	2.279 SF	

Anticollision Report

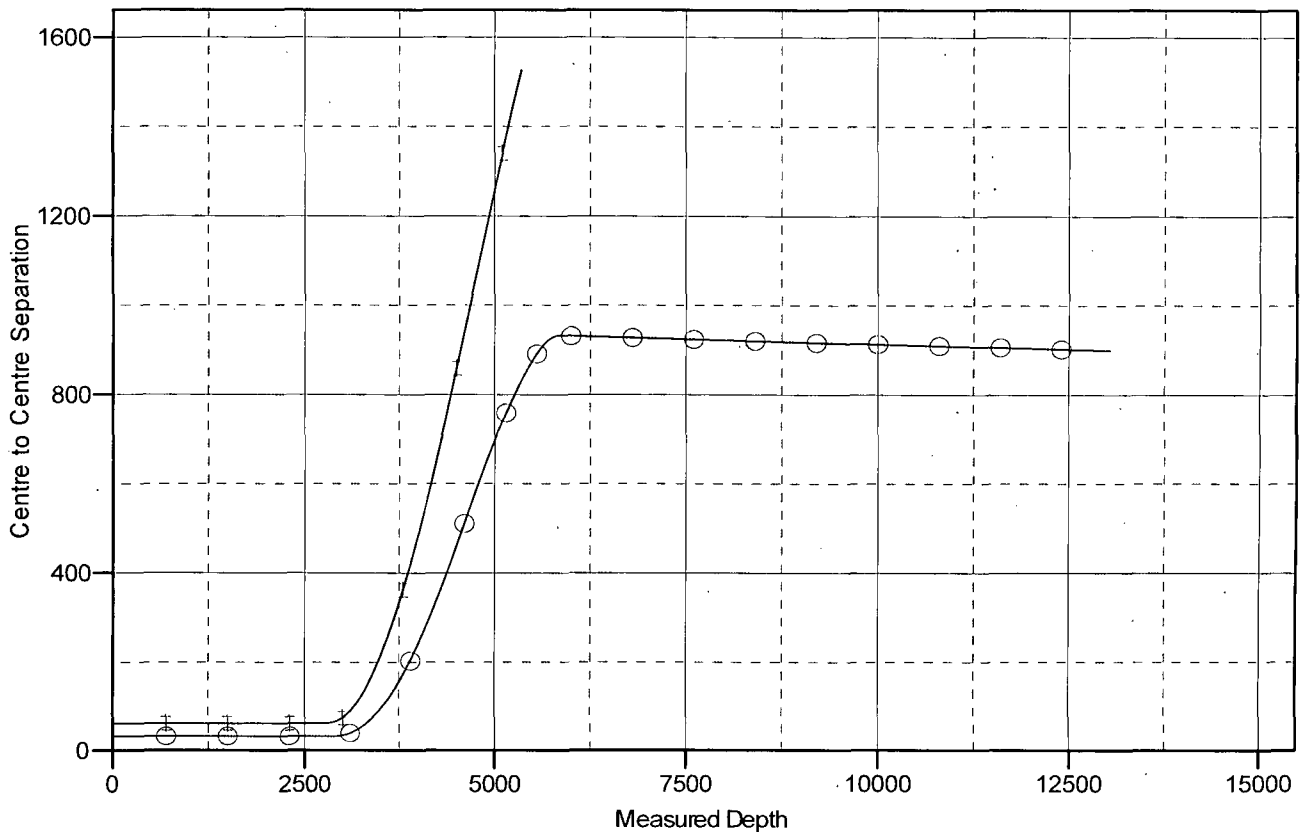
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S30-T23N-R7W
Site Error: 0.0ft
Reference Well: Lybrook G30-2307 03H
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #2

Local Co-ordinate Reference: Well Lybrook G30-2307 03H
TVD Reference: 16' KB @ 7092.0ft
MD Reference: 16' KB @ 7092.0ft
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 16' KB @ 7092.0ft
 Offset Depths are relative to Offset Datum
 Central Meridian is -106.250000 °

Coordinates are relative to: Lybrook G30-2307 03H
 Coordinate System is US State Plane 1983, New Mexico Central Zone
 Grid Convergence at Surface is: -0.81°

Ladder Plot



LEGEND

—+— Lybrook G30-2307 01H, HZ, Plan #2 V0 —○— Lybrook G30-2307 02H, HZ, Plan #2 V0

Directions from the Intersection of US Hwy 550 & US Hwy 64
in Bloomfield, NM to Encana Oil & Gas (USA) Inc. Lybrook G30-2307 03H
1391' FNL & 2114' FEL, Section 30, T23N, R7W, N.M.P.M., Sandoval County, NM

Latitude: 36.20137°N Longitude: 107.61371°W Datum: NAD1983

From the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM, travel Southerly on US Hwy 550 for 38.7 miles to Mile Marker 112.7;

Go right (Southerly) on County Road #7900 for 4.9 miles to fork in road;

Go straight (South-easterly) remaining on County Road #7900 for 0.2 miles to fork in road;

Go left (North-easterly) exiting County Road #7900 for 2.8 miles to three-way intersection;

Go left (North-easterly) for 0.2 miles to new access on right-hand side of existing roadway;

Go right (North-easterly) for 4149' along Encana Lybrook J31-2307 01H proposed access to new access on left-hand-side;

Go left which is straight (North-easterly) for 850' along Encana Lybrook G31-2307 01H proposed access to new access on right-hand side;

Go right which is straight (North-easterly) for 4603' along Encana Lybrook O30-2307 01H proposed access to new access on right-hand side;

Go right (Northerly) along Encana Lybrook G30-2307 03H proposed access which continues for an additional 3261' to staked Encana Lybrook G30-2307 03H location.

encana

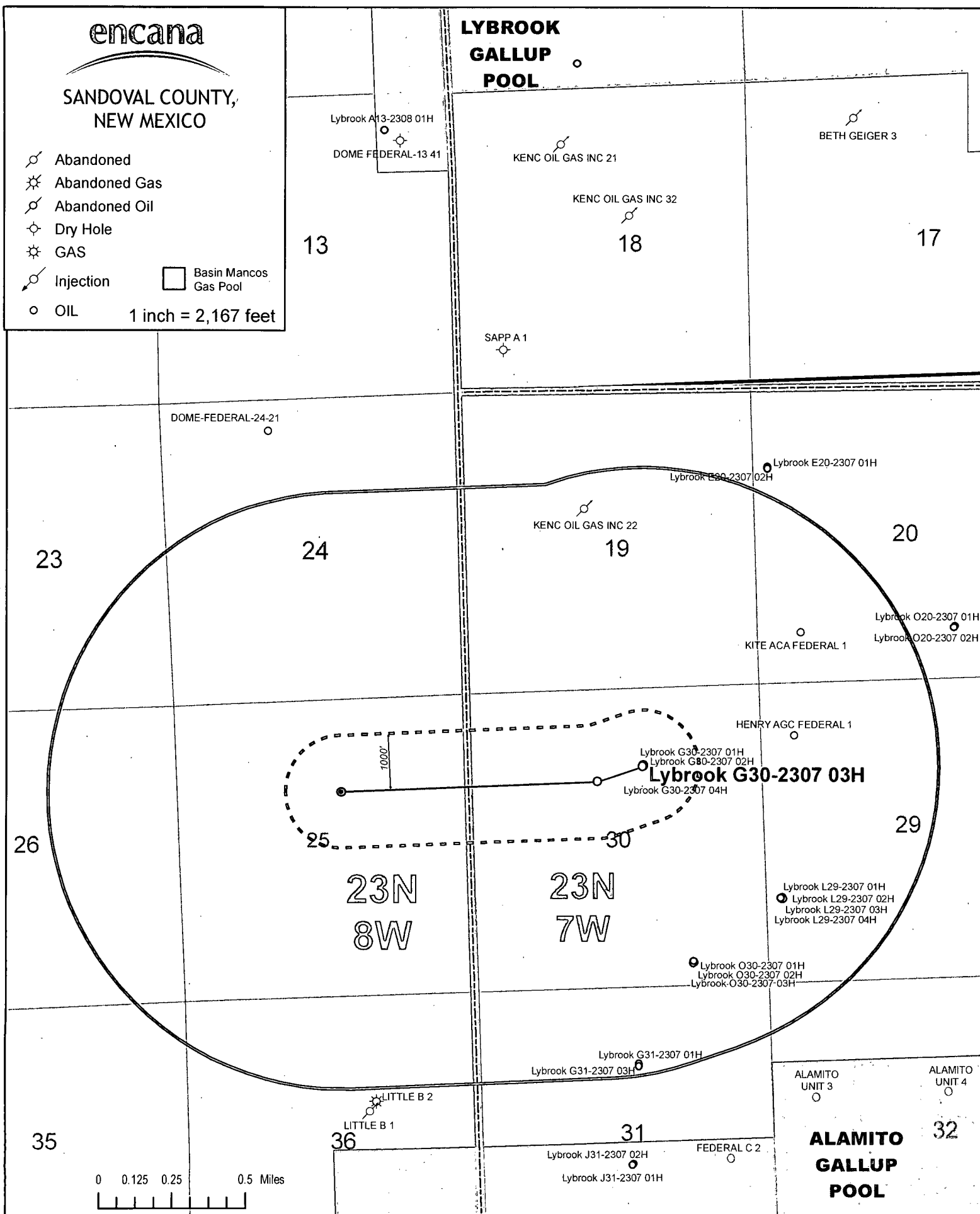
SANDOVAL COUNTY,
NEW MEXICO

- ⊘ Abandoned
- ⊘ Abandoned Gas
- ⊘ Abandoned Oil
- ⊘ Dry Hole
- ⊘ GAS
- ⊘ Injection
- ⊘ OIL

Basin Mancos
Gas Pool

1 inch = 2,167 feet

**LYBROOK
GALLUP
POOL**



WELLHEAD BLOWOUT CONTROL SYSTEM

encana

Well Name and Number:
Lybrook G30-2307 03H

